

PUBLIC USE OF URBAN SQUARES:
A HUMAN BEHAVIOR STUDY OF KIZILAY AND ULUS SQUARE

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By Maryam Karbasi Dehkharghani

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We certify that we have read this thesis and that in our opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Science.

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ABSTRACT

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PUBLIC LIFE OF URBAN SQUARES

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This study aims to consider the importance of interconnection between stationary activity and public physical space in urban studies. The amounts of stationary activities generally stand for the quality of urban public life which has a two directional relationship with public space. A high-quality public space can attract more visitors, and subsequently, having more visitors leads to a more valuable public space. In this regard, urban studies stress human centered approaches in investigating public spaces.

This project studies two significant public squares of Ankara (Kizilay and Ulus squares) based on human centered approach and provides a thorough comparison between the quality of their stationary activity. In doing so, first, a set of influential parameters in human behavior studies in urban areas, are extracted from the main resources. They are

classified in five categories: Thermal comfort, psychological comfort, aesthetics, human interaction and comfort of use. Afterwards, the relationship between physical features of each square is analyzed based on this classification. This analysis is carried out through in-site direct observation lasted three days for each square. Via using counting, mapping, keeping a diary and photographing tools, the results were recorded. Exploiting the Arc map software, the density maps of stationary activities were created for both squares. After the evaluation of these density maps, the results are illustrated and analyzed through a set of diagrams and tables. The results demonstrates that Kizilay square has 3 time more stationary activity than Ulus square. Detailed physical designed features such as providing shaded places, variety of view options, green areas, defined subspaces, variety of opportunities for different age and sex groups, the pond located in Guven park and presence of people itself were causal reasons in static activity difference between two squares.

Key word: Public behavior, Public life, Public squares, Kizilay square, Ulus square

ÖZET

KENTSEL MEYDANLARDA KAMU HAYATI

(KIZILAY VE ULUS MEYDANLARINDAKİ İNSAN DAVRANIŞLARI ARAŞTIRMASI)

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Bu çalışma, kentsel çalışmalarda durağan aktivite ve kamusal fiziksel alan arasındaki bağlantının önemini ele almayı amaçlamaktadır. Durağan etkinliklerin miktarı genellikle kamusal alanla iki yönlü bir ilişkisi olan kentsel kamusal yaşam kalitesini temsil eder. Yüksek kaliteli bir kamusal alan daha fazla ziyaretçi çekebilir ve daha sonra daha fazla ziyaretçiye sahip olmak daha değerli bir kamusal alana yol açar. Bu bağlamda kentsel çalışmalar, kamusal alanların araştırılmasında insan merkezli yaklaşımları vurgulamaktadır.

Bu proje, Ankara'nın iki önemli meydanını (Kızılay ve Ulus meydanları) insan merkezli bir yaklaşımla incelemekte ve durağan etkinliklerinin kalitesi kapsamında kapsamlı bir karşılaştırma sağlamaktadır. Bunu yaparken, ilk olarak, kentsel alanlardaki insan

davranışı alıřmalarında bir dizi etkili parametre ana kaynaklardan ıkarılır. Bunlar beř kateęoride sınıflandırılırlar: Termal konfor, psikolojik konfor, estetik, insan etkileřimi ve kullanım konforu. Daha sonra bu sınıflandırmaya dayalı olarak her bir meydanın fiziksel zellikleri arasındaki iliřki analiz edilmiřtir. Bu analiz, her bir meydan iin u ęun sren yerinde doęrudan gzlem yoluyla gerekleřtirilir. Sayma, haritalama, gnlk tutma ve fotoęraflama araları kullanarak sonular kayıt altına alınmıřtır. “ARCMAP” yazılımından yararlanılarak, her iki meydan iin duraęan aktivitelerin yoęunluk haritaları oluřturulmuřtur. Bu yoęunluk haritalarının deęerlendirilmesinden sonra, sonular bir dizi diyagram ve tablo aracılıęıyla gsterilir ve analiz edilir. Sonular Kızılay meydanının Ulus meydanından 3 kat daha fazla duraęan aktiviteye sahip olduęunu gstermektedir. Glgeli alanlar, grř eřitlilięi, yeřil alanlar, tanımlanmıř alt alanlar, farklı yař ve cinsiyet grupları iin eřitli olanaklar, Gven parkında bulunan glet ve insanların varlıęı gibi ayrıntılı fiziksel tasarım zellikleri, iki meydan arasındaki statik aktivite farkının nedenleridir.

Anahtar kelime: “Toplum” davranıřı, “Toplumsal Yařam”, meydanları, Kızılay meydanı, Ulus meydanı

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Chapter 1

Introduction

“...Please look closely at real cities. While you are looking, you might as well also listen, linger and think about what you see” (Jane Jacobs, 1961, XXIV).

Public life and public spaces are always regarded as a cohesive unite in urban studies (Carr, Francis, Rivlin, & Stone, 1992, Carmona, 2003, Gehl & Svarre, 2013). The constant reciprocal relationship between public life and public spaces influences the quality of both. Hence, considering the importance of human behavior in the physically built environment should not be overlooked in urban design investigations (Gehl & Svarre, 2013) due to the fact that humans are the only residents of cities (Holston, 1989). A wide range of studies discussed the necessity of ‘human-centered’ urban design and criticized modernistic ideologies in an urban environment that forgot the interplay of social behavior and public domain (Sitte (1889), Jacobs (1961), Cullen (1961), William H. Whyte (1970), Kevin Lynch (1984), Cooper Marcus & Francis (1990), Calthorpe, (1993), Carmona et al. 2003, Gehl & Svarre, 2013, Mattsson, 2019). In this work, the selected case study is a public square because of its vital role in facilitating social interactions and encouraging people to outdoor activities. Two famous public squares in Ankara were selected (Kizilay and Ulus) due to their noticeable difference in their quality of public life. This selection allows a comparison between them in order to find out the practical, physical attributes in directing human behavior and choice, causing such a distinction between different built

environments' public life quality. For this investigation, recent studies and methodologies that observed general behavior in public squares were reviewed and analyzed.

This study mainly focuses on the human-centered design approaches in studying the interaction between public life and public spaces. Human-centered design development emphasizes inclusive, social, and live urban settings by prioritizing human needs and interests above other potential interests (Mehta, 2013; Yang, 2016).

Human-centered approaches mainly deal with direct urban observation methodologies. Jacobs (1961) sees cities as a “laboratory of trial and error” that could be studied in real life than in academic practices. Gehl and Svarre (2013), in their book named, *How to Study Public Life*, mentioned walking around and look precisely at everything as a fundamental essential tool in gaining valuable data to know how humans and the environment interact. His suggestion of systematic observation and up-to-date methods in executing public life studies guided the methodological aspect of this work.

1.1. Research questions:

The following are the main questions that this study aims to answer:

1. Is choice and behavior of human being dependent on the physical built environment?
2. What are the environmental attributes that influence and differentiate the quality of public behavior in squares?

3. What is the relationship between environmental attributes and the squares?
4. How to evaluate how much a designed public square facilitates human requirements?

1.2. The selection of case study:

The case studies are two popular squares of Ankara city: Kizilay and Ulus square. These squares are located in the central area of the city, Cankaya district, and connected by one of the main roads, Ataturk boulevard. Kizilay Square is located at the junction of two main roads, Ataturk boulevard (north to south) and Gazi Mustafa Kemal Boulevard. The Ulus square is a four-way intersection. The boulevard to the south is Atatürk Boulevard, while the road to the north is Cankiri Street. Cumhuriyet Street is on the southwest side, while Anafartalar Street is on the east side.

The previous studies on Kizilay and Ulus square mainly dealt with the space and public behavior gets less attention. They focused on whether the historical background of their development, morphological aspects, or if they were dealing with people; it was questioner-based research involving people in interviews. There is a lack of observational-based research that look at users' action rather than their answer.

The reason behind selecting these two case studies is based on three main considerations that support this work. First, the difference between the public activity of the two squares took the attention to the search for the reason behinds it. When it comes to human behavior study, it is not easy to establish a perfect test setting (Mattsson, 2019) to determine which

elements are influential. In contrast, having two comparable test-bed will allow the focus on what makes one place better for public activity than the other. Secondly, having similar characteristics such as being located in the central part of the city, similar functions in their vicinities, and their essential value in the city's development make the same morphological situation for both. This will make focus more on the other external features such as physical design attributes in differentiating their public life and necessitate the need to a precise in-site observation in a micro-scale. This does not mean that morphological or functional considerations are unnecessary, but because they are nearly the same in both squares, the reason for contrast between their public life of two squares cannot be based on them. Third, it should be generally considered that both squares went through some changes during the political, economic, social, and modernization movements. These changes negatively affect the quality of public spaces in Ankara, and still, they are at risk of deterioration because of some traffic projects. So, it would be worthwhile to bring attention on some parameters that can enhance not perfectly but partially the quality of public spaces in Ankara city

1.3. Structure of thesis:

This thesis constituted of six-chapters. The first chapter starts with a brief introduction of the topic and the necessity to study it, research questions, the rationale behind the selected case study, and the structure of the thesis. The second chapter will discuss the related literature review about public spaces, public life of public spaces, the deterioration of public life resulting from modernizations and critics, the suggested approaches, and the

situation of public spaces in Ankara. In the third chapter, the history of public spaces in Ankara, a brief background of my case studies and their recent situation was presented. Chapter four will develop the methodology to study two square based on what Gehl and Svarre (2013) and Matsson (2019) offered. It will be done by direct observations on site. Additionally, it will discuss the extracted themes from primary resources to evaluate the physical features of squares based on them. Chapter five would be my analytic part which report my results of the experiment and observations. Chapter 6 conclude with the results.

Chapter 2

Public Squares as a Public Space in Urban Areas

This chapter focuses on the social life of public squares as a component of public space in cities. Before doing this, there is a need to clarify the definition of public space as a general concept and the placement of public square in it. Additionally, the importance of reconsidering social life and humanistic aspect in defining the public space and public square was emphasized in this section.

2.1. Definition of the public space

Public space is one of the significant elements of urban areas that goes beyond its physical boundary and obtains further meanings. Via providing an opportunity for individuals to socialize and the functions and events it hosts, public spaces have been the cultural, political, and economic center of cities from early civilizations to the present day. Thus, the topic of public space has been approached in different science and social disciplines through different perspectives with special interests and concerns (Carmona, 2003).

Describing a complete definition for public space is a delicate task due to its complex concept. However, a variety of ideas were adopted to perceive the public space and the related concept of public life. In this sense UK government provided the following definition:

"Public space relates to all those parts of the built and natural environment where the public have free access. It encompasses: all the streets, squares, and other rights of way, whether predominantly in residential, commercial, or community/civic uses; the open spaces and parks and the "public/ private spaces where public accessibility is unrestricted (at least during the daylight hours). It includes the interface with key internal and private spaces to which the public normally has free access" (Carmona et al., 2004).

Public accessibility, presence of people or social (common) activities of community are some of the main characteristics of public spaces that has been mentioned by different authors. Madanipour (1999) mentioned public space as an open area offered by authorities to be reachable and utilized by every single person. Public spaces should have physical and visual accessibility to people and provide a common place to bring people together and give the opportunities to socialize with friends, ritual activities or just linger or wander through. (Carre, etall, 1992, Tibbalds, 2001, Trancik, 1986).

Putting a differentiation between public and private space is another way to explain public spaces. Private spaces are distinguished from rest of the city by being protected with for example fences, walls, gates, or fixed working hours and in possession of specific entities (Madanipour, 1999). However, Sommer (2009) finds out a "false and too easy conflation" between private architectural figure and public urban ground. This means a broad range of as Carmona (2003) mentioned "pseudo public" spaces can be included in public space and its definition which poses some questions like weather charging an entrance fee makes a place private or not, if a public place or building is owned by a private organization should it be considered as a private space or if a public owned area is banned to be used for a like political reason by government is it still a public space or not?

To prevent the confusion between public and private space having a clear-cut distinction would be helpful in defining both spaces. However, this is not completely possible due to the fact that there could be always a degree of publicity in every private space and vice versa. On the other hand, meaning of public spaces could also differs among different people and describing even a temporary or partial definition would be weak or unreal. For this reason, what Carmona (2003) suggests is focusing on a broader idea of public life.

2.2. Social Life of Public spaces

Banerjee (2001) recommended urban designers' studies on public life rather than the public spaces. This was due to the fact that the value of public spaces is dependent on their public life. The more public space can satisfy human needs and make communication more possible, the more value they gain (Carr, Francis, Rivlin, & Stone, 1993). Public life means “open and universal social activities” rather than “intimate, shielded, controlled by individual relationship” (Loukaitou-Sideris and Banerjee, 1998).

Additionally, high-quality public spaces can also impact the economic lifetime of cities by attracting residents and visitors. Well-designed public environments such as good parks, squares, gardens, and other public spaces could be a significant business and marketing tool to increase the investments to accommodate more human settlements (Carr, Francis, Rivlin, & Stone, 1993, Selena and Kocyigit, 2019). Thus, in creating and designing public spaces, it is worth focusing on their quality. This interaction between public life and public space can be a reciprocal relationship that has benefits for both. Public space provides facilities to satisfy user's requirements, and with user's more

activity, the public space becomes more popular, and it shapes itself based on people's needs.

Also, from a historical point of view, public life and public space were always regarded as a cohesive unit. Constant interaction between the physical environment and human experience was the fundamental guideline in space creation in historic urban areas. Medieval cities developed organically based on human needs and rooted in long experience and instinctive feeling for human senses and scale (Gehl & Svarre, 2013). This encompassed a building tradition with the generations of experience as the fundamental guideline in creating cities where the interaction between life and space can happen. It was in the interest of those who built cities that cities were made to accommodate the natural behaviors and needs of the people walking and staying in them. They built traditions, formulas for how to accommodate the human experience (Gahle, 2010).

In this regard one of the key urban elements whose construction was a vital component in emphasizing the interconnection of human behavior and built environment was urban squares (Carmona et al. 1, 2003; Erdogan & Ayatac, 2015).

Therefore, public squares would be a rich case study to ponder the communication of human beings with its physical environment, and consider the effecting components of physical space that can define and direct this interaction. Hence, the definition of public squares and their important role in citizens' social interaction have been reviewed.

2.3. Public Squares as social spaces

Originality of the term plaza routes from Spanish which means ‘urban square’. Based on what The Dictionary of Architecture and Building Construction (2008, p.284) defines plaza as “any large open urban space, often linked to a prestigious building” and later defines urban square as “an urban public open space, often planted or paved, surrounded on all sides by, in front of or between buildings”. Researchers expand the definition of square more in detail. Urban plaza is defined by Moughtin (2003) as "a space enclosed by structures and an area meant to display its buildings to the best way as possible." Krier (1979) approaches urban space from a physical point of view and places the "square" in the core of city planning alongside roadways.

Palladio (1997) define public square functionally that it offers people to gather together and conduct business or communicate based on their needs and desires. This role of square shaped the essential elements to answer desires and needs. Additionally, public squares should let the general public walk and use them for leisure activities (Palladio, 1997). Cooper Marcus and Francis (1990) point out to public squares in two ways. First, they refer to J. B. Jackson (1985) who defines a plaza as "an urban shape that invites people together for passive enjoyment" and second, to Kevin Lynch's (1981) definition which is more detailed, noting features like “. . . it will be paved, enclosed by high density structures, and surrounded by streets, or in contact with them. It contains features meant to attract groups of people and to facilitate meetings”.

Also, throughout history, town squares functioned for community life. The earliest example of a square is observed in the Greek and Roman empires named Agora and

Forums. In these periods, public squares used to be in a square or rectangular shapes surrounded by buildings. A variety of social, political, and commercial activities were conducted in the Greek Agoras, such as musical, athletic competitions, and political gatherings. Later on, further activities, including the judiciary and religious assemblies, were included in the Roman Forums. In the Renaissance period, these different activities started to happen mostly in cathedrals and churches. Subsequently, public squares started to be shaped near religious buildings, known as piazzas (Memluk, 2013). However, after the 19th century, the rise of the population due to the industrial revolution cause the application of additional functions to urban squares to satisfy people's new demands. Instead of accommodating human activities, now public squares are empty rooms for traffic. they lost their original intention which was initiating social communication. Their variety of means such as furniture, monuments and comprehensible human scale to achieve a diverse environment to answer human social needs was forgotten somewhere in the middle of the 19th century with industrialization, modernization, and car advent. This lost made many problems arise in arrangement of public spaces specially, their significance in urban spaces and their functions in gathering the people together.

2.4. Deterioration of public life in public spaces

As a consequence of modernization, the understanding of the interplay between human activity and public space was forgotten (Gehl, 2010). Industrialization made many people migrate from rural areas to cities. The steady population growth of city inhabitants was an encumbrance of the urban areas. This situation led to several squalors and public health

issues, and severe overcrowding. (Colquhoun, 2002, Carmona et al. 1, 2003, Gehl, 2010). Another issue was also the invention of the car in 1886. Due to automobile needs for practical transportation, the scale of streets, the relationship between buildings, and the speed at which we experience our environment needed to be changed. (Kunstler, 1998; Calthorpe, 1993, Carmona, et al. 1, 2003). Old cities were unable to meet the demands and issues of all newly appeared alteration and accommodate them.

This conflict between existing cities and the need to accommodate rapid development is resolved by a set of entirely new modern systematic ideas with denial of history, which is seen as a positive way to obtain insight into urban reality (Kaplan, 2010, Talen & Ellis 2007). 1960 and onwards was characterized by a development of modernistic ideologies and conceptions of the city as, fundamentally, a machine with separate functions and parts. The emphasis on the connection between human and civic form was replaced with more extensive systems such as traffic. The understanding of the interplay between human activity and public space was forgotten (Gehl, 2010).

The industrialization of mass production obliterated the tradition of experience-based craftsmanship too. Cities have been built on the foundations of craftsmanship for centuries. City space was created in a more or less intuitive manner, with adjustments made as needed. The concern for public space and public life was alleviated by increased specialization and rationalization. No one was in charge of life between the buildings, and traditional knowledge of the interaction of urban life and space was lost in the midst of this rapid transition (Gehl and Svarre, 2013).

Consequently, the city is locked in a growth loss of community, human scale, and nature. The car started to define the technology of our build environment, set the form of our cities, and dictated the quality of our living environment, and cities became places for automobiles and projections of ideologies (Holston 1989, Kunstler, 1998; Calthorpe, 1993, Carmona, et al. 1, 2010). Concerns about larger systems such as traffic have replaced the connection between human and civic forms. The interplay between human activity and public space had been lost (Gehl, 2010). Transportation engineers focused on traffic, landscape designers on green spaces, architects on the construction project, and urban planners on the larger picture. Design and construction were given significant consideration, but public life and the interplay of life and space were overlooked (Gehl and Svarre, 2013).

These issues affected every constitutive element of urban spaces socially and morphologically. Huge boulevards and highways for cars replaced human-scale streets and avenues, and large blocks of buildings appeared. Nevertheless, more significantly, most of the changes were implemented to public squares.

This was the time that urban experts started to criticize the contemporary urban squares and compared them to ones built until 20th century. Some main characters in urban studies such as Zucher (1959), Jacobs (1961), William H. Whyte (1970), Kevin Lynch (1981), J.B. Jackson (1985), Cooper Marcus & Francis (1990), and Gehl (2010) rethought of older urban environments, which had been constructed layer by layer during the time and saw the need to study and admire the principles of ancient times' public squares to extract the reasons behind their quality to avoid losing them. They provided some methods like direct

observation to understand the relationship between human behavior and public plazas. Their broad ideas will be explained in the rest of the text.

2.5. Critics of contemporary public spaces

A general representation of critical insights into the consequence of urban modernization throughout the history was provided in this section. Reviewing these critics have three objectives. First is bringing the focus on the issue of degraded human-city communication and how it was reconsidered through different perspectives. Second is to derive and summarize some general principles in rebounding the relationship between human life and public space. The last one is trying to create a theoretical framework from derived principles as a checklist to study the urban areas.

Camillo Sitte, a late 19th-century architects, had an important role in public square observations. He tried to look at city plans from different times to extract the key elements of old cities that produce harmonious effects and modern plans that produce sloppy and boring experiences. He criticized modern city planning as an unimaginative, monotonous, and drab practice that had overlooked the most basic artistic elements required for creating civic designs in cities. Given the modern complications posed by issues such as hygiene, planners and civic artists should consider which aspects of ancient city planning could be applied to modern city planning. According to Sitte, this is the only way to resolve the preservation of urban development. By identifying the elements that make up ancient artistic designs for public spaces and buildings, those elements can be replicated in new construction. He also mentioned the difficulty of extracting general principles and patterns

from a variety of artistically designed public spaces, as well as the importance of doing so because it will reveal the old masters' instinctual artistry that has been lost and replaced by their predecessors' inflexible geometrical principles (Sitte, 1889). The enclosed character of the public square, the form, and expanse of public squares, the irregularity of ancient public squares, were some of the aesthetical elements Sitte finds essential in old public squares. He criticized modern urban squares for the lack of these principles.

In contrast to Sitte who had artistic perspective into ancient public designs, Jane Jacobs in 1961 in his seminal work, *The Death and Life of Great American Cities*, criticized treating cities like a work of art. However, Jacobs' criticism, on the other hand, was directed at a specific method of imposing aesthetic order on the city: the top-down application of rigid ideas that necessitated architects and planners' "complete, absolute, and uncontested authority" (Jacobs, 1961). In some ways, Jane Jacobs was correct in saying that cities should not be viewed like works of art. Cities are not an individual's works of art like paintings, sculptures, or tiny models. They don't perform well under authoritarian rule. Thousands of separate tests and modifications that cannot occur during the execution of a design must have free play (Ellis and Tallen, 2004). In this sense Sitte and Jacobs are not merely against each other. None of them denied the necessity of irregularity and complexity in public spaces, although they had different approach to meaning of art in urban spaces. This is not where the similarities between them end. Same as Sitte, the book of Jacobs is a critique of modern city planning but in the 1950s American orthodoxy. She also offered an introduction to alternative principles like intricacy, sun, and enclosure. The first principle in his books is, public spaces are difficult to comprehend; simply placing a square in a neighborhood will not make it a nice feature. Jacobs responds to the call for

more open space by asking, "More open space for what?" To create a vacuum between buildings or provide more open areas for people to enjoy and use (Jacobs, 1961).

Additionally, Jacobs had a significant contribution in public life studies by arguing that cities are the best laboratory for learning more about how cities work and, as a result, how they should be built. She believes practitioners of city construction can test their theories on cities through trial and error techniques. This opportunity was passed up, unexpected successes were overlooked, and the knowledge of why spaces fail or succeed was lost. Rather than what happens in cities, development is dictated by what cities should be and what urbanites should do. Over years of irrational wishes, this pseudoscience of city planning evolved into a complex dogma replete with superstitions, symbols, and oversimplifications. The great expedition of probing cities has yet to be undertaken by urban planning and design. Cities and the squares that make them up are distinct physical locations. The information must be gathered, not from metaphysical concepts, but from observational data of physical occurrences to understand their behavior. One such observation is that vitality attracts more vitality while lifelessness repels life. People want to be in the same place as other people (Jacobs, 1961).

In the same way, in his book, *A Pattern Language*, Christopher Alexander outlined what he deemed timeless – though forgotten – ideas for designing anything from bookshelves to bus stops to whole metropolitan areas while considering human needs. In contrast, modernism opposed the traditional manner of creating cities and structures based on human demand. Alexander wanted to reinterpret earlier ways of building cities and buildings by learning from the interaction between public life and public space (Alexander, 1971). Alexander's criticism of today's functionalistic and modernistic

designers is that they do not grasp or have the ability to generate the intricacies of city life. This intricacy, according to Alexander, is what gives life, beauty, and site-based/place-specific harmony. In his following book, *The Timeless Manner of Constructing* (1979), Alexander claims that there is a timeless way of building cities that allows people to feel alive again. A change from abstract, excessively rationalized design to focused on people's actual everyday needs is required (Alexander, 1979). Adding to this, some of the parameters he stressed their importance in his book are tree effect, enclosure, positive and negative space, edge effect, optimal square dimensions, water effect.

In the debate of bringing focus on human need and activity in urban studies, in 1970, William H. Whyte, an American 20th-century urbanist, writer, and enthusiastic "people-watcher," founded The Street Life Project, a small study group with the innocuous goal of looking at city areas. He established the link between characteristics of urban features and the degree of activities in them. He tried to answer what attracts people to a place, and instead of focusing on people's answers, he emphasized their actions. Whyte references the classic supply and demands economic paradigm, but he flips it on its head. Rather than demand necessitating supply, demand is generated by supply. A statement along the lines of "If you build it, they will come."

According to Whyte, slight physical modifications in the environment might significantly reorganize and enhance the use of space and increase social interaction. He goes on to describe specific spatial characteristics that aid in this process. The arrangement of the area, the availability of shared access, spatial dimensions and size, landscape features and furnishings, views, specified movement patterns, and the position and surrounds of the structures are some of these aspects (layout, form, height, facade, etc.)

In the same way of what Whyte did in direct observation of people, another example is Clare Cooper Marcus, a city planner who monitors people in public casually. Francis was also particularly fascinated by the interaction between humans and their surroundings (Marcus Cooper & Francis, 1990). In their book, they discussed the central issue of public spaces, namely, that the need for plazas, squares, and piazzas has dwindled due to cultural and technological advancements that have privatized many of the activities that traditional public spaces once provided. Cooper Marcus & Francis acknowledged that personal solutions are replacing the functions of old public spaces but highlighting the inherent loss of public life that comes with such privatization. The fact that most daily needs, such as occupation, socialization, entertainment, cultural enlightenment, and so on, can be met from the comfort of one's own home does not negate the desire for the experience of public life, nor does it diminish the importance of the contemporary plaza. Indeed, such privatization may amplify people's desire for public interaction, necessitating the creation of suitable urban public spaces. Cooper Marcus & Francis says that the traditional activities that took place in the town plaza have been replaced by segregated spaces that meet the needs of a specific clientele and that this function-user specialization is a fundamental fact of contemporary life in urban spaces. This differentiation between function and form is an aspect of public life that is often overlooked. While old Italian piazzas cannot provide designs for contemporary functions, the forms of medieval public areas, in terms of the enclosure, height-to-width ratio, and furnishing, can be very instructive in improving the use of modern urban public plazas and squares. They were mentioning that the reaction to public plazas in modern cities is dissatisfaction. Although there is no differentiation between modern piazzas and traditional one, both are connected

to the buildings of power; in medieval times, the cathedral, in modern, the skyscraper, the type of activities happening in them differs a lot (Mattson, 2019).

Cooper Marcus & Francis (1990) classifies different plazas into categorizations intended to give information to help understand the many locations that may be defined as urban plazas, their categorization, and the creation of plaza rules. Plazas may be classified into various categories like size, distance from the street, primary function, location, usage, style, architectural form, and so on. They give also some design recommendations in improving the quality of public squares such as location, size, visual complexity, boundaries and transitions, subspaces, seating, planting variety, importance of color and fragrance, aesthetic and psychological effects of level changes, raised plazas, public art and fountains.

Adding to this, another set of principles: the edge effect, piano effect, attractive seating location, primary and secondary seating, benches and chairs, cafés, the importance of scale, good experience, and aesthetic quality were discovered by Jan Gehl a Danish architect who was interested in urban growth for more than 50 years. His studies were oriented towards the interconnection between human beings and public physical forms. His categorizations public behavior study methods are clearly direct and applicable guidelines in urban studies. For example, in his book, *Cities for People* (2010), he focused on three types of different activities that occur in public spaces. First one is necessary activities like waiting for the bus, going to school or work, bringing goods to customers. Second one is optional activities which are things people choose to do: enjoying a view, sitting, standing or walking, enjoying the weather, taking a stroll through the city and third is social activities which happen between people in public space and involve all forms of

communication such as greeting and talking to acquaintances, spontaneous meetings, small talk at vendors or market booths, talking while waiting, asking for directions and so on. Among these activities, optional activities are frequently recreational, and they are what defines a city's attractiveness; thus, evoking them necessitates good city quality. Optional activities are influenced by factors such as the weather, whereas required activities take place regardless of the weather.

He also categorized activities into stationary and moving activities. His focus is primarily on stationary activities. People sit, remain, and stand in the city where the city asks them to do so, according to Gehl. Because a significant portion of the activity is naturally voluntary, the quality of the city affects its utilization. In fact, the quantity of stationary activity in an urban public area may be used to assess its quality. Heavy pedestrian traffic might imply insufficient transportation alternatives or sparsely spread services in the city, and stationary activity is preferred to moving activity. As a result, a city with high pedestrian numbers may be a sign of lousy city quality, whereas a city with high staying activity is generally a sign of solid city quality.

Mentioned above, urban design pioneers of the 1960s studied the short idea of public life and its interconnection with physical public environments and buildings. What is common between all of them is first, they went through the existing traditional cities to obtain basic information about the principles influential in the interaction of people and physical surrounding. Secondly, they are all agree on doing more direct practices and observation in actual cities than in academic universities. In this regard the theoretical frame work of this thesis is based on the concepts and methods these authors mentioned. Thus, mentioned

principles by them were gathered and categorized to be as a checklist in selected case study observations.

All of these discussions are said to demonstrate the importance of bringing focus on people's behavior in urban design examinations and how providing conditions for people to spend their time in cities will create high quality urban spaces. But to meet this goal a strategic process to realize people's demands is needed. This is especially crucial in economically developed cities, where, aside from commuters, individuals are no longer forced to go down the street to work, sell trinkets, do errands, and so on. However, less economically viable cities are also affected since the fast-increasing amount of motorized traffic and accompanying infrastructure creates difficulties for pedestrians and causes noise and air pollution in many people's everyday lives (Gahle, 2013).

Ankara as a developing city is also going through modernization of historical vicinities and rapid construction of suburban areas. Additionally in result of some political, economic, and social movements, public spaces in cities were affected negatively (Batuman, 2013, Cinar Ozdil, Vejre and Bilsel, 2020). Creating public area have gradually decreased and some events like the military coups in 1960 and 1980 made use of public venues for gatherings and marches outlawed. Some public space development projects were put on hold by the administration until the coup ended in 1980 (Cinar Ozdil, Vejre, and Bilsel, 2020). As a consequence, Ankara city went through some dispersion process and thereby it lost its squares and public spaces. Dispersion process was mostly the result of commercial and residential construction on periphery of city. Although some suggestions offered in building public squares in city plans, they are mainly voids, unoccupied areas, transit hubs, or plazas in retail malls (Ataöv, 2007; Shaftoe, 2008).

Many preexisting squares and public spaces, on the other hand, have been sacrificed in the name of transportation considerations and private sectors' investments (Zeka, 2011).

Additionally, there is an adverse relationship between elite-designed public places and their utilization by the general populace. These areas became worthless for inhabitants that does not satisfy their needs (Aydin, 2005). The main public spaces in Ankara are still under risk of demolition as a result of traffic planning choices made by upper ruling authorities. Due to the degradation of urban squares/plazas and their social importance, “Human- centered design” has taken on a crucial role to be investigated further. Now it is essential to clarify urban squares from the standpoint of users' need (Zeka, 2011).

Kizilay square and Ulus square are the two most important public areas in Ankara City that were influenced physically and functionally by Ankara's evolution during its planned history. In this regard and the socializing potential squares offered for community it would be important to bring focus to the study of two significant squares in Ankara.

Chapter 3

Case study: Ulus and Kizilay square

For testing the influential parameters in Kizilay and Ulus, this study was conducted in four corners of both square with focusing on the relationship of their physical features with stationary activity of people. In order to do this, studying the physical structure of squares in detail will be needed. Therefore, the physical features of case studies were mapped in the last section. Considering the definition of square provided in literature review, both plazas are not squares but public platforms which were created by the junction of roads and extension of pedestrian areas. Therefore, their functions are inherently for moving activities than stationary activities. However, in southern western part of Kizilay square and southern eastern corner of Ulus, Guven park and open plaza around Ataturk statue were located respectively. These spaces provide some spaces for stationary activities. It should be considered that other corners in both areas are pedestrian areas, however; they are experiencing some amounts of static activities as well. Therefore, they were also part of the study area.

3.1. Ulus Square

Ulus Square, located in the center of Ulus District, where the city's principal axes converge (Atatutk Boulevard towards south, Cumhuriyet Road towards west, Anafartlar Road

towards east and Çankırı Road toward north) was one of the most important public open spaces. function of buildings around the square are official, museum, educational and commercial (Figure 1). Ulus Square has a significant part in Ankara's history since it represents the values of many eras.

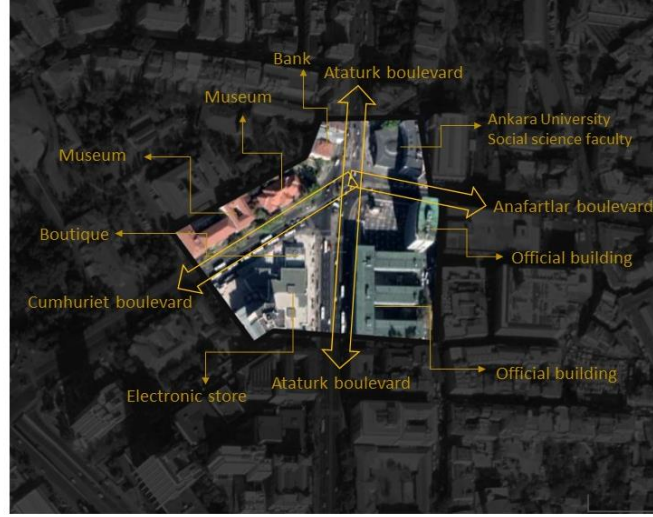


Figure 1. Buildings and routes defining Ulus square

3.1.1. Historical background of Ulus square

The Ulus region in Ankara was the city's first open public space, dating back to the Roman era, and its growth continued until the nineteenth century. On the western foot of the hill, where the old city of Ancyra was situated, the area arose as a public open space. Ancyra was founded by the Galatians in 278 BCE and subjugated to the Roman Empire in 25 BCE. Because it was part of the Agora and the location of the palace, “Ulus Square was presumably utilized for commercial, administrative, and social activities throughout the Roman period. Ankara changed hands often after Roman control and finally became part of the Ottoman Empire. Ulus Square began to gain importance in the late nineteenth century, and it eventually became Ankara's only public open square (Koçyiğit, 2019).

During the final quarter of the nineteenth century, “Ulus Square” and its immediate surroundings underwent a variety of physical modifications. The building of Taşhan (Stone han) on the area at the end of Karaolan (at the location of today's Sümerbank) in 1888 marked the beginning of the Ulus square (Tunçer, 2001 and Sarolu, 1995) (Figure 2, 3 and 4). The goal of constructing it was to provide short-term lodging for the everyday tourists. Furthermore, the construction of a railway connecting Istanbul and Ankara (Ortayl, 2000) has expedited the shaping of squares and the effect structure of urban infrastructure (Tekeli, 1994). The region between the train station and Taşhan, which had previously been a large vacant lot dotted with graves, began to be redeveloped with contemporary stores, cafés, restaurants, and hotels. This was in keeping with the European

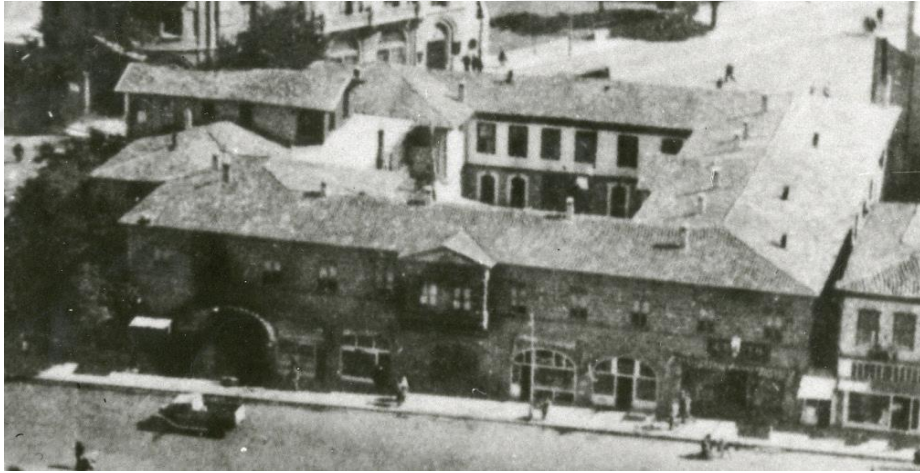


Figure 2. Taşhan, 1931 (VEKAM Library and Archive, Inventory no. 1687).



Figure 3. Taşhan at Karaoğlu, 1890's (VEKAM Library and Archive, Inventory no. 0975)



Figure 4. Courtyard of Taşhan, 1921 (Streit, 2011)

(Koçyiğit, 2019). Ulus Square's western boundary grew more defined and clearer in 1915-1916, with the erection of a structure for the İttihat ve Terakki Cemiyeti [The Committee of Union and Progress] (Figure 5). A tavern named Fresko/ Fresco, which was located in the southern portion of Millet Garden (Tanyer, quoted in Gülekli and Onaran, 1973), was another notable building whose construction in the 19th century created a distinct border for square (Koçyiğit, 2019).



Figure 5. The İttihat ve Terakki Cemiyeti building (VEKAM Library and Archive, Inventory no. 0820)

From the 1910s onwards, Ulus square saw a steady alteration in terms of its physical, functional, and aesthetic elements, as well as its significance. Despite the fact that residents had previously referred to this open area as a "square," it was impossible to envision it as a functional urban square with a distinct form and boundary. However, after constructions of Darülmualimin to the east, Millet Garden and Fresco to the south-west/south, Darülmualimin to the east, the İttihat ve Terakki Cemiyeti building to the west, and Taşhan to the northeast, Ulus Square occupied a definite area (Figure 6). With the

enlargement of the area and the operation of the surrounding structures, this public open space enclosed by magnificent buildings and a public park, while it had an irregular shape, was clearly recognized as square and the everyday usage of Ulus Square expanded. As a

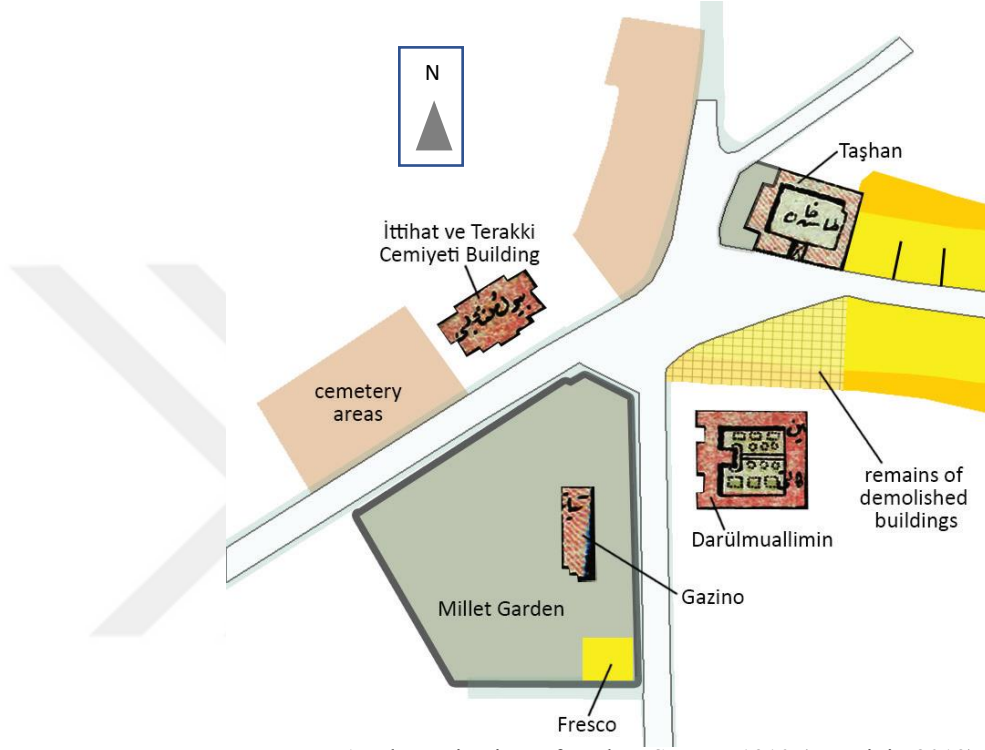


Figure 6. A schematic view of Taşhan Square, 1910 (Kocyiğit, 2019).

result, the square became one of the city's most important public open spaces, with regular meetings and gatherings (Ibid).

The state authorities recognized the significance of Ulus Square for the city and were eager to improve it so that it could reflect and promote the state's philosophy. As a result, the newly formed nation-state attempted to give the square a new identity that would disclose a communal memory via everyday behaviors (Yalm, 2017). To accomplish this, officials commissioned Heinrich Krippel, an Austrian artist, to create a memorial. On November 24, 1927, his monument Zafer (Atatürk) Ant [The Victory Monument] was revealed during an inauguration ceremony in the center of the plaza (Cengizkan, 2004).

Taşhan was demolished by safety panels in the beginning of March 1935 (Sarolu, 1995). With doing so, Ankara lost a structure of historic, practical, and memory importance for the whole city (Kocyigit, 2019).

To reflect the Republic's industrialization of Ankara, Sumerbank was constructed at the city center's most significant site, where Tashan had previously stood in 1937 and 1938 (Figure 7 and 8). Ulus Square entered a new phase after the building of Sümerbank. Sümerbank became a monument for both Ankara and the entire country, because of its name, meaning, architectural elements, and, most significantly, the way it transformed the aesthetic and function. At the same time, a new financial center was forming in the region. Several banks, notably İş Bankas [Business Bank] on the western side of Ulus Square (Ibid).

An architectural proposal competition was organized between 1952 and 1953 to design structures to occupy the empty site where Darülmualimin had been built but had burned down in 1947 (Ibid). Winning designs, Ulus İşhane ve Carşisi [Ulus Office Block and Bazaar], was inspired by the international style of the time, with both sides of their tall office block design consisting of rectangular prisms of various heights and convex facades



Figure 7. Tashan, 1931



Figure 8. Sumer bank, 1940

(VEKAM Library and Archive, Inventory no. 1207)

(VEKAM Library and Archive, Inventory no. 0846)

(Aslanolu, 1994) (Figure 9). The building's construction began in 1955, and it prompted a succession of additional physical alterations in Ulus Square during the 1960s. Ulus Square and its immediate surroundings entered a new era after the 1960s, with the construction of projects focusing on buildings and open spaces with new architectural styles (Kocyigit, 2019).

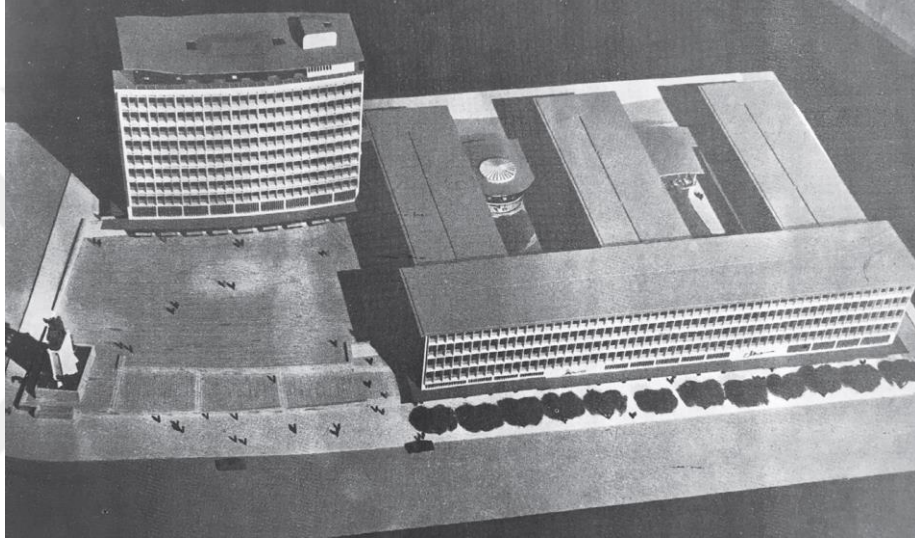


Figure 9. The building model of Ulus İşhanı ve Carşısı project (Cengizkan and Kılıckıran, 2009).

As a result of drastic modifications in building height and mass limits Ulus square were turned into a congested traffic hub (Batuman, 2017). As a consequence of other changes like the decrease of green spaces, the chopping down of trees to expand roads, the increase in building heights and masses, and the growth in building density and population, Ulus Square had undergone a rapid transformation in terms of its physical, functional, socio-cultural, and visual elements and had lost its importance as a central public square.

On the other hand, due to its concentration of commercial, financial, administrative, and leisure activity, Kizilay gained more value compared to Ulus. By diverting construction operations to the west and south, as well as by constructing a new residential and

administrative district at Yenışehir a new city core had begun to emerge around Kizilay. By the end of 1960s Kizlay became the city's primary center.

3.1.2. Current use of Ulus square

Now, Ulus Square serves as the center for the majority of the public bus and dolmuş lines that link Ankara's north and south sides. A large number of people utilize this region for transportation due to the numerous buses and dolmuş stations. Visitors to the region for commercial and tourism purposes, on the other hand, enhance the density of the area in addition to the pedestrian and vehicle traffic produced by transportation operations. As a result of these conditions, the Ulus area takes on a chaotic aspect as the rush of everyday routines takes over (Koçyiğit, 2019).

However, Ulus square offers less chance for stationary activities of people. While it serves lots of shops, historical areas to visit, it does not bring people together to spend their time there. Compare to Kizilay square, although it has a rich historical identity for locals, its popularity is negative among people. The sense of violation prevents citizens, specially, women from having social and leisure activities there. Since amount of stationary activity demonstrates social life of public squares (Gehl and Svarre, 2013), it could be worth to have a precise look to understand influential parameters causing lack of public life in square.

3.1.3. Physical design of Ulus square

There are variety of physical features in Ulus square. Public and private buildings, dilapidated building, transportation components (supports for circulation within and through the setting), stairs, archways and columns were components of the pedestrian street-side environment in Ulus square (Figure 10). The curb was discovered to be divided into three sections, each with its own set of activities. As shown in blue color, the wall-side was filled by persons sitting, standing, and window shoppers. The center part was used by the majority of walkers; which was demonstrated by yellow and the street-side mapped by red, was occupied by street furnishings and walkers who want to pass the street. The dimension of square is nearly 196.4 in 194.2 meter.

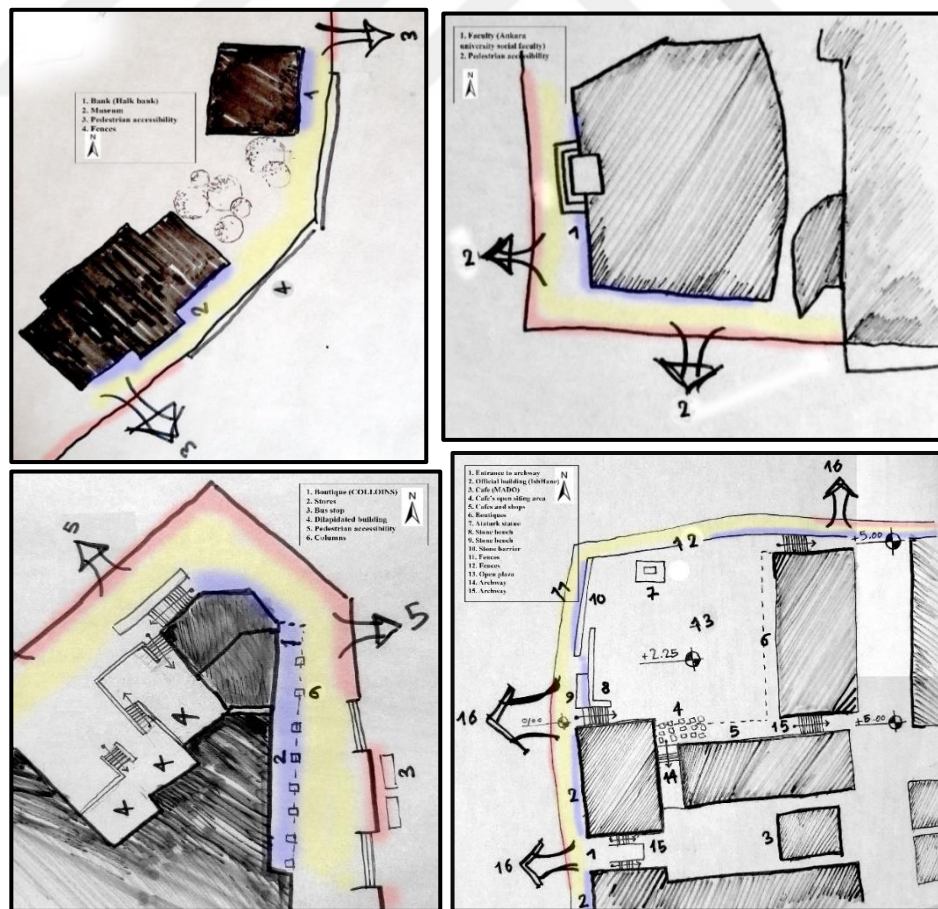


Figure 10. Physical features of Ulus square

3.2. Kizilay square

Kizilay is the most significant square in the entire area since it forms the major link connecting the most essential activities (e.g., Parliament, Sakarya District Leisure Zones, Residential Zones, and Güven Park). It is a lively square in the southern section of the spine, distinguished by the malls, restaurants, and hotels that surround it (Figure11).

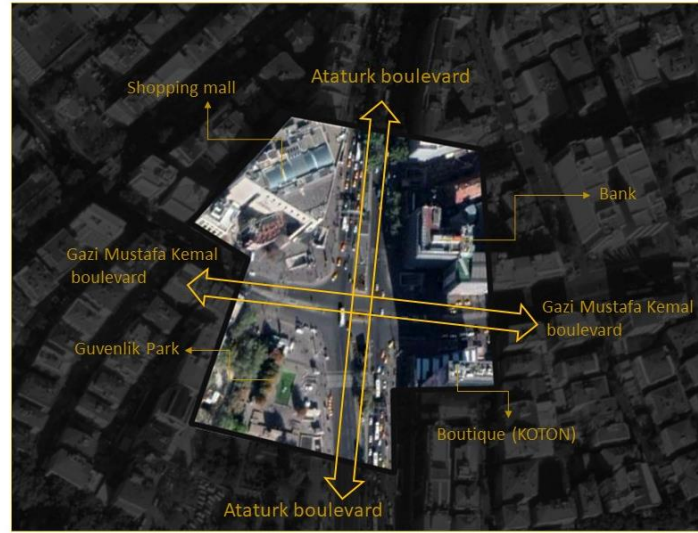


Figure 11. Buildings and routes defining Ulus square

3.2.1. Historical background of Kizilay square

Kizilay Square is the heart of Ankara's Yenisehir (New City) district. Kizilay's history begins after the 1920s, when the bureaucracy formed and regulated the new modern urbanist actions. At initially, the plaza was only an empty lot next to the new boulevard (Ataturk Boulevard) that connected Yenisehir to the city's ancient district, Ulus District. However, beginning in 1925, Kizilay underwent many development phases in order to become a famous square symbolizing the nation-state (Batuman, 2013).

The demand for new residential areas arose as the population of the capital city grew rapidly as individuals from all across the state moved to the metropolis. This inevitably resulted in the city's growth to the north and south of the ancient quarters. Dr. Christopher Carl Lörcher prepared the first plans for Ankara for Ulus district and Yenisehir-Kizilay district in 1924 and 1925, respectively. This expansion resulted in the emergence of a new city center in the south, which had in fact been proposed by Lörcher and became known as Yenisehir [New City]. He employed new urbanism technologies and developed a modern planning technique during the planning process. This was the first time a report on Ankara's urban history had been written (Cengizkan et al., 2004). One of Lörcher's goals was to design attractive and practical urban public spaces for a healthy society. Lörcher's goal was to integrate the ancient and modern city centres and urban activity while respecting historical assets (Cengizkan et al., 2004).

The Lörcher Plan was deemed insufficient, especially in the Yenisehir (new city) area, which was constructed piecemeal and at random until 1927. (Tankut, 1993; Bilsel, 2010). Jansen proposed the finest fit and consistency plan with Lörcher's in 1932. He assessed the process within the Yenisehir (Kizilay) and Eski shehir (Ulus) connection and won the competition by maintaining the initial plan's aims while enhancing its poor parts (Cengizkan et al., 2004; Gunay, 2012).

Between 1932 and 1950, the city expanded in accordance with the Jansen Plan (Sey, 1998). Jansen suggested linking the north and south with Ataturk Boulevard, as well as a secondary route running parallel to the railroad from east to west across the city (Ozdil, Bilsel and Vejre, 2019). Jansen's planning approach used Camillo Sitte's humanistic

design ideas, which defined the city as an aesthetic object and described public spaces as instruments for integrating society's many groups (Yigit Turan, 2016). Kilinc et al., 2012).

However, throughout the 1950s, significant population expansion necessitated more land for houses and other urban services. Despite the fact that the Jansen Plan was still in effect, the city progressively slid into an uncontrolled growth process due to the landowners' and bureaucrats' interest-based views. Due to the economic downturn and housing shortages, unauthorized and irregular home projects sprang on property beyond the plan's control (Tankut, 1993). The Planning Administration Committee cancelled Jansen's contract as a consultant at the end of 1938, claiming that his services were no longer required (Ozdil, Bilsel and Vejre, 2019).

The Jansen Plan era was a top-down planning experience, developed as a government project with political elite backing. His proposal was slammed by political elites who had decision-making authority in the city's planning, as well as stakeholders who saw the plan's conclusions as conflicting with their own interests. Despite Jansen's desire to build a city that appealed to all sectors of society, the plan was criticized for not intervening sufficiently in the old city, where the inhabitants resided, and for the new development zones' target group being the middle-high status groups. (2016, Sengul)

The Second World War had a significant detrimental impact on the Turkish economy. In 1951, as the demand for housing and workplace grew. (Sey, 1998). In 1955, a new urban design competition was launched in response to squatter growth in the city's outskirts, housing issues, and land and property speculation. The competition's winners were architects Nihat Yucel and Rasit Uybadin, whose plan proposal was accepted in 1957.

Highrise developments in the existing urban fabric were meant to alleviate the density problem, according to the architects. The Uybadin–Yucel Plan, like earlier plans, envisaged mono-centered city growth. The Ulus District was retained as the city core, with the intention of becoming a commercial hub (Uybadin and Yucel, 1957). The public space development suggestions in the Uybadin–Yucel Plan were not as far-reaching as the judgments on the density issue. The plan options remained constrained by the need to preserve existing public spaces (Resuloglu, 2011). According to Günay (2006), the Plan made no particular recommendations for the Kizilay District. Only Ataturk Boulevard served as a link between the ancient (Ulus) and modern (Kizilay) centres. This circumstance, therefore, hampered the Jansen Plan's future development. In Yenisehir the north-south (Ataturk Boulevard) and east-west spines (Gazi Mustafa Kemal and Ziya Gökalp Boulevard) were unable to establish an effective function in connection to morphological and perceptual characteristics (Günay, 2006).

The Uybadin–Yucel Plan, which was in effect from 1958 to 1968 was crucial in shaping Ankara's current urban structure. The lack of appropriate urban services and the proliferation of illegal squatter settlements underlined the necessity for a new planning organization (Akin, 2007).

Between 1970 and 1975, the Ankara Metropolitan Area Master Plan Bureau drafted the 1990 Master Plan. Ulus District was retained as the commercial core, while Yenisehir District was suggested as the second administrative center to be built. New residential and industrial zones were created in various regions of the city based on the plan's subcenter development concept (Ozdil, Bilsel and Vejre, 2019).

The shift to a more liberal economy, as well as the military coup d'état in 1980, had a considerable impact on urban politics in the early 1980s. Numerous urban development projects specially, public areas were halted during this time, and many mayors were removed from office (Basaran, 1989). The neoliberal economic policies of the 1980s cleared the stage for private-sector businesses to become the primary players in land privatization, profit-driven urban redevelopment initiatives, and the city's competitive real estate market. The increasing number of retail malls in various sections of the city, as well as newly constructed housing neighbourhoods near them, led to the decline of several public spaces. Kizilay Park, which was created in conjunction with the Kizilay building's construction in 1929, was decommissioned as a public park in the 1980s. Kizilay Square and Guven-park were covered with the open space infrastructure. After the Kizilay building was demolished in 1979, the park was converted into a parking lot. This negative shift resulted not only in the loss of public space, but also in the conversion of Kizilay Square into a traffic crossroads (Figure 11). With the public rallies, marches, and huge civic events that took place there throughout the 1960s and 1970s, Kizilay Square was more than just a city open space; it also had a political connotation in the public memory. Following the military coups of 1960 and 1980, the use of the plaza as a platform for democratic expression was outlawed. With the permission of the Ankara Municipality in the mid-1970s, about 5,000 square meters of Guvenpark grounds were set aside for bus stops. The quantity of green in the park diminished, and it became a commuting route rather than a recreational place (Sargin, 2012).

After the rejected 2105 and 2025 plans, the city's poorly planned development proceeded. Meanwhile, several of the city's public spaces saw negative alterations. Since the 1990s, new traffic laws have been implemented that prioritize motor traffic, particularly in the city centre. The building of vehicle underpasses and pedestrian overpasses on Ataturk Boulevard contributed to a decline in pedestrian comfort in the city centre. Those initiatives also had an impact on Kizilay Square. The conversion of Kizilay Square into a traffic crossroads was aided by the installation of vehicle traffic boosters. In 1992, the Kizilay building was demolished and replaced with a new commercial structure, resulting in the square's functional loss (Figure 12) and the fragmentation of Guvenpark–Kizilay Park–Kizilay Square integrity. Despite the fact that the architecture and spatial elements of most of the squares have remained largely unchanged for almost ninety years, they have now been turned into traffic crossroads (Ozdil, Bilsel and Vejre, 2019).



Figure 12. Kizilay Building and its garden (A), Kizilay Shopping Center that was built after Kizilay building was demolished (B). Source: Photograph Archives of General Directorate of Education Technologies 2006 (A), Mimdap (B).

3.2.2. Current use of Kizilay

Kizilay Square is the city's political plaza, hosting a variety of events like as concerts, rallies, and protests. Around the square variety of restaurants and cafes were provided for any kind of taste and preference. Shopping mall in north-west of square provides also indoor activities in any bad weather condition. On the other side, Guven park with a historical statue and pond giving the opportunity of having more relaxing area to sit and rest. High quality brands and shops alongside the good quality product with reasonable price attract all group of people with different level of income. These are some of the general reasons that make Kizilay square to have more social life compare to ulus square. However, these are not the only reason in its popularity. Bringing focus on more physical feature will clarify the role of physical built environment on people's choices and behaviours. This will enlighten us with the space qualities that can make differences between good and bad places.

3.2.3. Physical design of Kizilay square

The constitutional components in four corners of Kizilay square are commercial buildings, cafes and restaurants, transportation components, sitting areas, park, taxi station and one electric bar in each corner. The dimension of square is 213.27 meter in 242.925 meter which 65 percent of it is allocated for pedestrians and buildings and the rest are used by cars. These dimensions and percentage are valid in the study area (Figure 13).

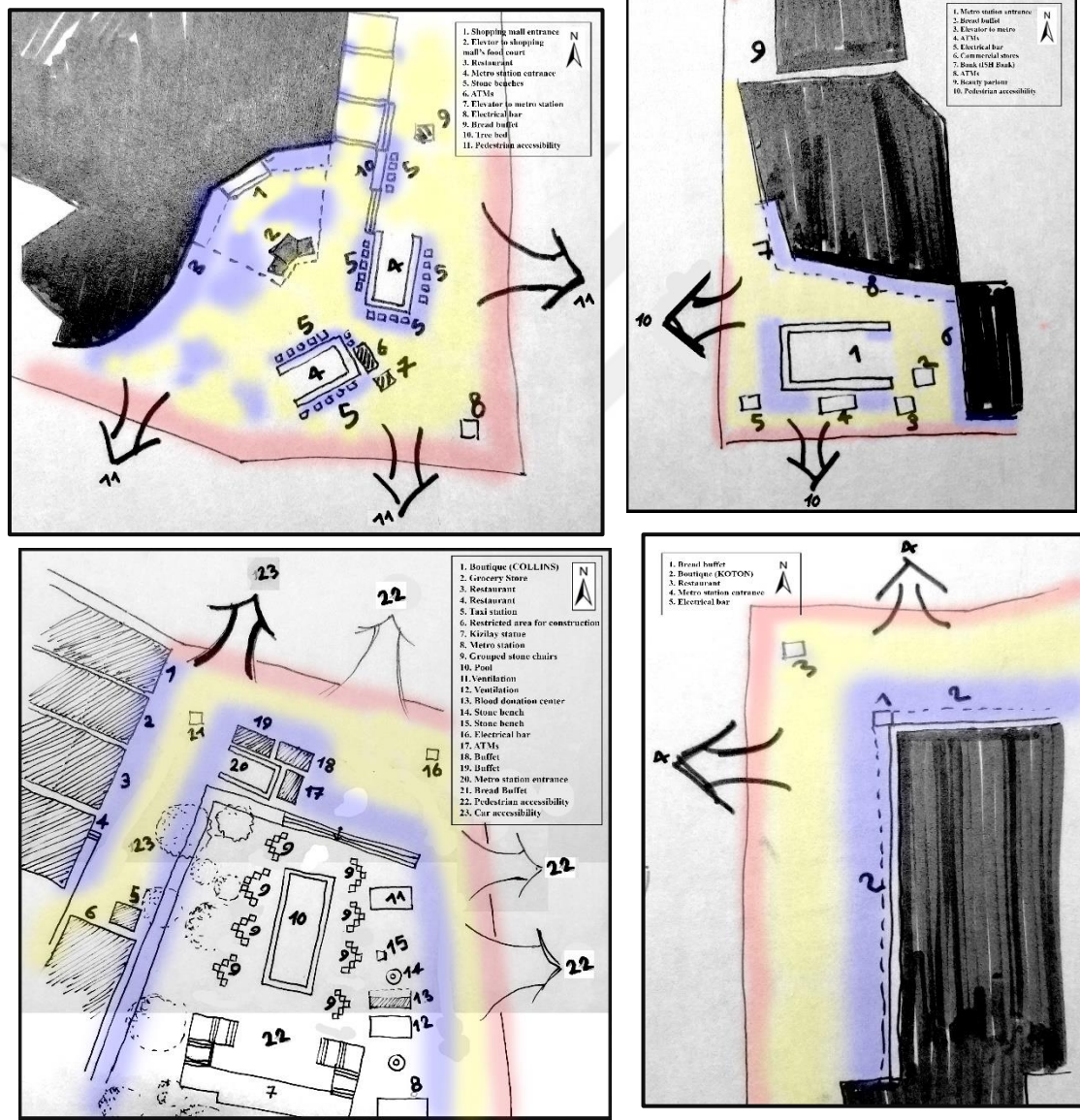


Figure 13. Physical features of Kizilay square

Chapter 4

Methodology of Human Behavior Study in Urban Space

The used method in this research contains two stages of study. First one is descriptive stage in which the relevant key resources was reviewed in order to study the relation between public behavior and physical environment. Additionally, some of the prominent ideas expounded by influential characters (Sitte (1889) Jacobs (1961), William H. Whyte (1970), Cooper Marcus & Francis (1990), Carmona et al. 2003, Gehl & Svarre (2010)) was investigated to extract fundamental principles in urban studies. These principles shaped the basics of theoretical frame work of this study and were classified into five categories (Thermal comfort, psychological comfort, human interaction, aesthetics, comfort of use). Second stage is the analytical part that compares famous squares of Ankara city (Ulus and Kizilay) in terms of their stationary activity level based on driven parameters from literature. For doing this, direct observation of people's stationary activity was conducted at each square for three days After that, collected data from observation were analyzed and compared between two squares based on five mentioned parameters. The results were supported by photos, maps, diagrams and tables.

4.1. Framed literature outline

A general description of main insights throughout history (Sitte (1889) Jacobs (1961), William H. Whyte (1970), Cooper Marcus & Francis (1990), Carmona et al. 2003, Gehl & Svarre (2010)) about the critics of contemporary modern urban areas was provided in

chapter two. These authors also demonstrated a set of necessary principles about the design of physical environment of urban area. This section focuses on a number of key principles that are selected from what these authors provided based on their influence on human behavior in urban areas.

Desirable microclimate

The microclimate in a plaza or urban open space is critical for achieving the desired comfort that would encourage people to spend time there. Sun, temperature, wind, and humidity are the most important elements that influence outdoor comfort. To optimize the sunshine conditions for the summer and winter seasons, consideration must be given to the flow of sunlight in the plaza. Cooper Marcus & Francis (1990) cite Gehl (1987) and Pushkarev & Zupan (1975) studies to show that at a temperature of 13 centigrade degree, pleasure activity increases significantly. Shaded spaces and seats should be provided in places where temperatures will reach 24 degrees Celsius. Wind phenomena such as wakes, corner flows, and downwashes generated by tall buildings deflect wind downwards, making sitting, standing, and walking more difficult. Alternative building envelopes and harmonizing linkages between the sizes and forms of neighboring structures to the impacted region, according to Cooper Marcus & Francis (1990), are the solutions.

Optimal Elevation

The visual component of level shifts in plazas has a psychological influence on plaza users. A plaza with a little but perceptible level difference is typically favored to one with no level change at all. There are also practical benefits to use level change: it can separate seating and walking circulation, serve as a temporary stage for performances and

speeches, and act as a space divider to create smaller human-scale sub spaces. The elevation shift will naturally give a vantage position for people watchers to stand and gaze down on others on the lower level. This aspect heightens the interest of those who are watching. According to Cooper Marcus and Francis (1990), Gordon Cullen's (1961) theories regarding level shifts in the city, especially that height in the townscape correlates to privilege, which would explain the frequency of individuals watching from a vantage point.

Enclosure

When buildings effectively surround the space, they provide enclosure. According to Sitte (1889), enclosure is one of, if not the most important, characteristics of a public square. A comparison to a room is used to convey the point that what defines a location is to a large degree the solid masses that surround it. A square without enclosure is not square, and a room without walls isn't a room. The placement of permeable and impermeable components in relation to the square is the basis for producing suitable enclosure of public squares. To put it another way, how much of the square is in contact with roadways as opposed to structures. Columns with porticos are among the other enclosing components (ibid.). In addition to buildings and roadway configurations, rows of trees and minor level variations can serve as border articulators, marking where one area stops and another begins (Cooper Marcus & Francis, 1990). Also, trees (Whyte, 1980) and cafes' umbrellas (Cooper Marcus & Francis, 1990) provide an above enclosed experience.

Positive and Negative space

As previously said, outdoor areas must be enclosed in order to be defined. This defined space was named as positive space by Alexander (1977). He labeled the difference between negative and positive space construction. Negative spaces have no shape and are left behind buildings that are positive and stand alone on land. It is desirable when buildings dictate the geometry of outdoor space rather than being freestanding objects in space. In this situation, the shape of the space is just as essential as the shape of the surrounding structures. The figure and ground map, as well as its inversion, clearly demonstrate this fact (Alexander, 1977).

Subspaces

According to Cooper Marcus & Francis (1990), large open areas without furniture, plants, or other people create a frightening atmosphere. Because most people prefer the enclosed experience to the exposed one, areas that are left open and undefined will see individuals moving through fast or remaining around the boundaries. Planting, seating, level shift, and building can all be used to create subspaces. These divisions are also visually appealing that make places appear more densely filled than being left as ambiguously undivided. Additionally, they encourage people to find and stay in their own confined pockets of space.

A clear but subtle differentiation of spatial divisions required, as well as careful consideration of how to build an effective subspace that creates this illusion of division while without producing a place that is separated from other spaces. The size of these subspaces is also essential; make it too tiny and it will be viewed as a private chamber into which no one should trespass; make it too large and individuals will feel frightened or

alienated if they're alone (ibid.) Colonnades and archways, rows of bollards, and rows of trees may be used to create smaller areas where walkers can feel intimate while still having a perspective of the greater city space (Gehl, 2010).

Edge Effect

When remaining for an extended period of time, people prefer to seek out locations on the outside of space. The convenience of this location derives from the fact that it is away from the regular pedestrian flow, making it a subtle addition rather than an obvious annoyance. (Gehl, 2010). According, to Gehl (2010), the genesis of this predilection for edge space may be traced back to cavemen sitting with their backs against the cave wall. The phenomena may also be seen at ballrooms, when individuals stand as "wall-flowers" along the hall's walls between dances. In public areas where strangers live, prime real estate around margins is extremely essential. Nobody likes to be alone amid a wide expanse of emptiness, which just adds to their sense of loneliness. People can at least turn to the facade for support if it is accompanied by one.

Piano Effect

Humans are drawn to columns, furnishings, and corners along the aforementioned edge that can sustain a longer stay and help distinguish the location from being just another spot along the wall to one with a distinct personality. The term of the effect comes from the common occurrence of party goers positioning themselves along walls near supporting equipment, such as a piano. The piano provides company and an item for the visitor to "control." The wall gives a safe and unassuming location, while the piano provides company and an object for the guest to "control." Inventory, façade features, and

equipment can all be used as support points in the edge zone. Even if edges have an intrinsic gravitational influence on individuals who want to stay for a long, combining the edge zone with gorgeous façades will create the most appealing staying location conceivable. Smooth, closed facades with no distinguishing features do not create an impression that invites passers-by to stop and look (Gehl, 2010).

Optimal Square Dimensions

Squares of depth are smaller than squares of expanse, while squares of expanse are larger than squares of depth. The placement of the square's primary building determines which measurements of the square signify depth and breadth. If a church is situated on one of the rectangular square's two shortest sides, the square is said to be of depth. It's a square of expanse if the main structure is on one of the longer edges of a rectangular square. This is due to the fact that the main building is the focal point for visitors to the plaza, and therefore the direction they will be looking. Principal structures with slender forms are more suited to squares of depths, while those with remarkable breadth are better suited to squares of expanse (Sitte, 1889).

As Sitte argues, determining a general guideline for the link between the size of a square and its surrounding structures is challenging. He merely states that there must be a harmonious equilibrium. A square that is too tiny gives no benefit to the major structures that surround it, whereas a square that is too large diminishes the monumental structure's effect and reduces its proportions. Sitte (ibid.) does, however, offer some criteria for estimating the size of a square. Begin by distinguishing between squares of depth and squares of expanse. Squares of depth should have a depth proportional to the height of

their main structure, whereas squares of expanse should have a breadth proportional to the height of their main structure.

Following are some general guidelines. A square's lowest proportional dimension should be equal to the height of its major building, and its maximum proportionate size should be twice the height of the principal structure. To explain, the depth of a square of depth should be between the height of its main building and two times that height, and the breadth of a square of expanse should be between the height of its main building and two times that height (ibid.).

Size is a tough concept to grasp since every space has a context that influences its size. Cooper Marcus & Francis provide two recommendations (1990). According to Kevin Lynch (1971), the proportions of a square should be between 12 and 24 meters to create an intimate human-scaled area. According to Gehl (1987), the maximum square dimension should be between 70 and 100 meters, and the maximum distance to observe facial expressions should be between 20 and 25 meters.

Proportions, dimensions, and spatial quality are the elements of places that require the most examination. These characteristics define the general feeling of well-being and comfort that is associated with pleasant locations. If such locations are to be constructed, there must be a relationship between the human body and sensory apparatus, as well as size and dimension in space. The simple and obvious premise is that if there are welcoming and pleasant locations to stay, meetings in the form of contacts, exchanges, and events will occur. The fundamental thesis is that the spatial connection and size of places impact how people perceive them and whether they entice them to remain, and that

recommendations for human-scaled urban design may be derived by observing locations that do see a lot of activity. One of the defining elements for a location's success is its size. Gehl (2010) looks to historic towns for inspiration for squares, presenting the magical 40 by 80meter dimensions that generate a location where people can recognize each other's faces and enjoy the full space from wherever in the square.

Planting

Smaller spaces necessitate a wide range of plants to create a diversified and aesthetically appealing environment that will attract sitters and passers-by. This diversity of plants is particularly essential for plaza users who are alone, without a clear behavioral prop such as a lunch or book, or who are in a plaza with few people going by. The color scheme of a plaza has a natural impact on how much people love it. Plants with a variety of colors, such as trees and bushes, as well as annual and perennial flowers, will provide this impression. Aside from the aesthetic value of plants, providing scent to a plaza is a nice touch (Cooper Marcus & Francis, 1990).

According to Whyte (1980), seated activities should cluster around trees, according to the 'tree effect.' According to all observations made throughout Whyte's study, the best spot to sit is watching the scene of public life while dwelling under the comforting protection of a tree. Tree serves as an enclosure in the same manner as the umbrellas of a street café do. Trees also provide ideal microclimate management by cooling people down with their shade.

Water Effect

Water may be found in a variety of forms in public places, including waterwalls, fountains, sluiceways, waterfalls, pools, rapids, and meandering brooks. Water is not only essential because it exists; it is also significant because it is accessible. Whyte (1980) shows his delight by mentioning the appearance and feel of it. Water should be easy to reach, touch, and splash. Water has a pleasing sound as well. The sound of water acts as white noise, drowning out the disagreeable noises of the city. It also conceals dialogue, allowing individuals to speak loudly to one another without worry of being overheard by onlookers.

The sound of flowing water is universally admired and attracts people's attention. The sound produced may be defined as noisy and loud, which is technically accurate but de facto wrong. The music isn't terrible, and it creates a relaxing atmosphere. People can also relax by listening to the sound of flowing water (Cooper Marcus & Francis, 1990).

Visual Complexity

Visitors' favorable reactions are linked to the impression of the area as including a range of visual elements, such as textures, colors, landscape elements, seating options, and so on, according to research from New York, San Francisco, and Vancouver (Joardar & Neill, 1978). A complicated and unexpected atmosphere is welcomed as a welcome change from the repetitive flow of visual components that recur day after day in city center offices (Cooper Marcus & Francis, 1990). A nice view might be in the form of excellent architecture, trees, flowers, water, art, or the people that are present at the place (Gehl, 2010).

Multiplier Effect

The primary premise of most of Whyte's (1980) work, as well as that of some of his contemporaries like Jacobs (1961) and Gehl (2010), is that what draws people to a location is the presence of other people. People engaged in social activities in city spaces, which include all types of communication. Communication is not limited to talking; seeing or hearing other people is also a kind of social interaction. Other social activities include greeting and conversing with acquaintances, impromptu meetings, small chat at vendors or market booths, conversing while waiting, and so on (Gehl, 2010).

People are naturally drawn to other people, and collecting knowledge through social activities in public areas becomes a normal behavior throughout life. Any architectural drawing that is without mistake decorated with joyful individuals enjoying the urban world is testimony of this inherent human behavior. Cities are known for their constant changes between purposeful movement, relaxing, chatting, remaining, and halting. The abundance of unplanned, surprising, and spontaneous activities, in particular, generates an appealing metropolitan atmosphere (ibid.).

Male & Female Users

Cooper Marcus & Francis (1990), as well as other research, dispute some of Whyte's (1980) results regarding the difference between male and female users show that, contrary to Whyte's assertion that female users are pickier, a better explanation for the over-representation of male users in plazas is that a specific sex, age, or ethnic group appropriates public space, making others wary of intruding.

Whyte (1980) noticed a difference in preferred sitting, which Cooper Marcus & Francis (1990) observed in research in San Francisco. Men favor the front of the plaza, while women prefer the isolated sections of the plaza, which Cooper Marcus and Francis (1990) refer to as the urban oasis. One important conclusion is that when the plaza is used more frequently, the variety of users in terms of sex increases (PPS, 1978).

Cooper Marcus & Francis (1990) cite research by Louise Mozingo (1984) that looked into the gender differences in preferences. Women's personal space was invaded twice as often as men's space in the research, leading Mozingo to the conclusion that women don't want to be placed on display in public. Men see the public sphere as a place for human contact, thus they are more tolerant of personal intrusion. Women see the public domain as a respite from the office environment and urban stress, and so prefer safe nature settings. These contrasts, according to Mozingo, should be posed as a challenge for the designer to combine the two purposes into the same plaza, rather than a struggle between comfort and engagement, respite and social contact.

Triangulation Effect

Triangulation happens when an external stimulation piques the attention of strangers, allowing them to communicate with one another. Some activities bring the two persons together and allows them to share their thoughts. Sculptures, singers, and performers are examples of components that trigger a triangulation effect (Whyte, 1980).

Optimal Seating Attributes

These characteristics are split into sitting height, mobility, grouping, and social comfortability and are based on Whyte's (1980) study in New York. The recommended seating height ranges from 30 to 91 cm. Options for mobile seating give an almost unlimited amount of options, such as sitting in groups, alone, in the sun, in the shade, facing the sidewalk theater, sitting in private contemplation, and so on. To avoid singular sitting, seating must be grouped; the lone seat is inconvenient since it compels individuals to be alone. The term "social comfortability" refers to the range of seating options available at a location, such as in the sun, on the side, in the shade, at the rear, in groups, upfront, and alone.

Intricacy

The variety of reasons that a square may provide for individuals to spend time in it is directly related to its complexity. Diverse people's motivations for visiting the same plaza might be very different, but the same person's motives can also be very different. A person may visit a square to sit and relax, to watch a game, to play, to brag, to make an appointment, to fall in love, and nearly always to enjoy the company of others. There is little incentive to visit a square that just gives one view, as in, if a square can be entirely experienced from one viewpoint, since it would not suit the range of moods and purposes of urbanites. Squares that only provide areas that provide the same experience as the rest of the square are in the same boat. Furthermore, such monotony will not need further investigation. The supply of detailed features at eye level achieves a degree of complexity.

The grouping of trees, ground level alterations, and openings to focus points are examples of what Jacobs (1961) calls "subtle manifestations of contrasts."

Access

One of the most important characteristics of design is the capacity to access other people, activities, resources, services, information, or locations, as well as the number and variety of components that may be reached. The design and placement of buildings have dictated accessibility in the urban environment (lynch, 1981). also this accessibility should be comfortable for different group of people in terms of their age, sex or their physical condition. For example disable people need to be provided by ramps in any for level differences.

All of these described principles are influential on different aspect of human behavior. Therefore, they are categorized in seven groups. This will make their analysis process more comprehensible as well (Table 1).

Table 1. Framed literature outline (adopted from Mattsson, 2019).

Theme	Hypothesis	Observation Criteria	Source
Thermal Comfort	Desirable Microclimate	Sunlight	Cooper Marcus & Francis (1990), Whyte (1980), Jacobs (1961)
		Sky Condition	
		Acceptable Temperature	
		Acceptable Wind Conditions	
Psychological Comfort	Optimal Elevation		Cooper Marcus & Francis (1990),
	Enclosure		Sitte (1889), Jacobs (1961), Cooper Marcus & Francis (1990), Gordon Cullen (1960), Alexander (1977)

	Positive and Negative Space		Alexander (1977)
	Sub Spaces		Cooper Marcus & Francis (1990), Gehl (2010)
	Edge Effect		Gehl (2010), Alexander (1977)
	Piano Effect		Gehl (2010)
	Optimal Square Dimensions		Sitte (1889), Cooper Marcus & Francis (1990), Gehl (2010), Alexander (1977)
Aesthetics	Planting		Alexander (1977), Whyte (1980), Cooper Marcus & Francis (1990)
	Water Effect		Whyte (1980), Cooper Marcus & Francis (1990), Alexander (1977)
	Visual Quality		Cooper Marcus & Francis (1990), Simon Bell (2004), Bently (1985), Gehl (2010), Cysek-Pawlak & Pabich (2020)
Human Interaction	Multiplier Effect		Whyte (1980), Gehl (2010), Lynch (1981)
	Triangulation Effect		Whyte (1980)
	Male & Female Users		Cooper Marcus & Francis (1990)
Comfort of use	Access		Lynch (1981)/ Lynch (1961)/ Bently (1985)
	Intricacy		Jacobs (1961)/ Lynch (1981) Bently (1985/ Cysek-Pawlak & Pabich (2020)
	Optimal Sitting Attributes	Height	Whyte (1980)
		Mobility	
		Grouping	
		Social Comfortability	

4.2. Human behavior study methods

The techniques employed in this research is based on the guidelines from "How to Study Public Life" book written by Gehl & Svarre (2013) and human behavior and Urban squares by Mattsson (2019).

One of the influential studies in the field of public behavior and their physical environment is a joint work of Jan Gehl and researcher at Gehl Architects Birgitte. Gehl mentioned that public life studies are straightforward. The basic idea is for observers to walk around while taking a good look. His key instrument is direct observation, which is primarily simple and cheap, and secondly, users are often not actively involved in being questioned; rather, their actions and behavior are monitored and mapped in order to better understand the user requirements and how city areas are used. In other words, individuals are not questioned, they are not directly involved in the research, and they do not realize that they are engaging in one study in most of the situations. By joining the public realm, they offer their consent to be watched. The survey is based on an analysis of users' behavior in open space, which are then mapped and utilized to determine the basic requirements of public space users.

Direct observations aid in understanding why some places are utilized while others are not. Putting observations into a system provides exciting information about the interaction of public life and public space. Gehl and Svarre (2013) suggested counting in providing quantitative data to evaluate the qualifying the observed space.

"If we know how many people are staying in a square, and we then improve the square and count the number of people again, we can evaluate the success of the renewal project. If the objective was for more people to stay at the square, counting how many using the

same methodology on comparable days will quickly reveal the degree of success or failure" (Gehl and Svarre, 2013, p13).

Gehl also described the questions that should be outlined in the survey. Gehl & Svarre's guidelines for inquiries are straightforward yet effective: how many, who, what, where, and for how long? These fundamental questions should be integrated to offer a general understanding of the relationship between public behavior and public space. By addressing the basic questions, intertwined queries such as who travels where may be examined automatically. These data may then be utilized to deduce trends in public behavior and specific knowledge about how a particular location is utilized (Ibid).

Additionally, Gehl (2013) provided various techniques to register and systematize direct observations from the location to respond to the preceding questions. He suggested counting, mapping, tracing, keeping a diary, and photographing as useful tools in recording direct observations (Ibid).

The other study is human behavior and urban squares by Matsson (2019). He examined the interaction between public human life and urban squares to uncover descriptive connections between design and behavior. First, he studied the main literary works in the public life studies field as they related to public squares and summarized the principles of the interaction between human behavior and public spaces based on the literature. Then made a direct observation of human's stationary activities at Sergels Torg and Körsbärsdammen squares using Arcmap and Microsoft excel displayed data via maps and diagrams. In the end, he evaluated and compared stationary human activities using the principles as a framework (Matsson, 2019).

4.2.1. Strategic in-site observation

Gehl & Svarre (2013) noted the necessity of answering four kinds of critical questions about the activities seen in the case study: how many people perform their daily activities in this place? Who are these people? From which groupage? Are they male or female? What are they doing? Sitting, standing, talking, playing, etc.? and where are these activities happening?

For answering these questions counting, mapping, photographing, and keeping a diary are the tools used in this work. Based on Mattsson (2019), three days of studying in a row from 8:00 in the morning to 5:00 p.m. for each square were allocated. Kizilay square from the 25th to the 27th of June and Ulus square from the 5th of July to the 7th of July in 2021 were observed. People who were present in square were categorized into four groups: standing female, standing male, sitting female, and sitting male. Observation and counting of these four groups were done in 10 mins every hour and were recorded hourly on a marking sheet (Figure 14 and 15). Counting was inadvertently enabled through mapping by simply counting the amounts of markings. Because mapping is performed manually, the registrar made a qualitative distinction between the type of users and the type of activity at the sites.

The two techniques of counting and mapping made it possible to address all four questions (who, Where, When, And what). The qualitative component (why the activity is occurring at this site area, why females are drawn to this spot, why are people sitting in this space) underpinning the four questions was investigated using photography and taking notes. Almost every occurrence in public life may be recorded (Gehl & Svarre, 2013), such as

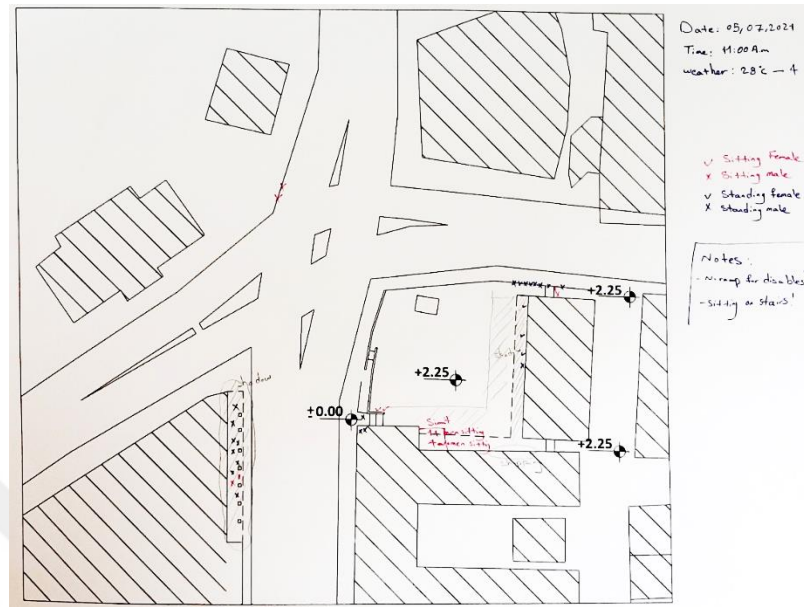


Figure 14. Marking sheet for Ulus

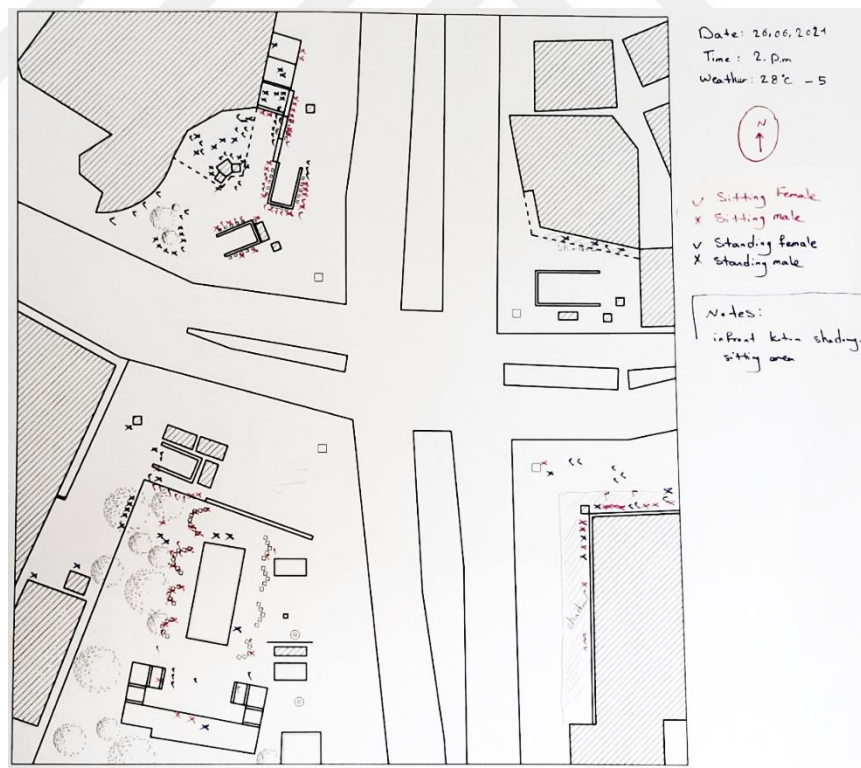


Figure 15. Marking sheet for Kizilay

how many people are sitting, standing, chatting, strolling, what gender the users are, how old they are, did they arrive in a group, how many are looking at their phones, and so on. The choice of gender (female or male), posture (seated or standing), and position of these interrelated categories are influenced by the constraints of the method's implementation as well as the research's focal area. Only the data that is required to answer the study questions will be collected. There would be no use in gathering data on how many individuals are wearing sunglasses if it didn't help the study's goal or answer the research objectives (Mattsson, 2019).

The choice to investigate stationary activity rather than moving activity or both kinds of exercise stems from the fact that static activity is more accessible. A stable activity's categorization is easier to understand than a moving activity's classification. Moving activity has a route of places, whereas stationary activity has a single location. Stationary activity nearly always needs an enticing aspect, and they necessitate a significant level of city quality. The vast majority of activities that may be done while staying are optional. The location must be seen as attractive, pleasant, significant, and pleasurable to make individuals spend their time. The use of squares as a focal area follows a similar logic: squares represent staying activity, whereas streets show moving activity. Two squares of Ankara city, Kizilay and Ulus were chosen to be investigated for stationary activity.

4.2.2. Visualization of data

The gathered data from the site were converted to Arc map and Microsoft excel. The points on the marking sheet are transformed to dots in different colors and shapefiles based on four groups (Sitting female, sitting male, standing male, standing female). Ten shaped

files (for every hour from 8 a.m. to 5 p.m.), which each of them shows the hourly average stationary activity for three days were created. Then, the combination of shapefiles is used to create a density map by Kernel density tools. The produced map was displaying overall stationary in a day.

In order to demonstrate data on diagrams, the whole information was transformed to tables in Excel (Appendix). Gender (male and female) and activity (sitting and standing) were used to categorize the participants and the linked categories of sitting females, sitting males, standing females, and standing men. By using chart tool in Excel, necessary diagrams through tables to compare four different groups were made separately.

Chapter 5

Analysis and Results

In the city of Ankara, it seems there is a noticeable difference between public activity of two well-known square, Kizilay and Ulus square. To claim this difference, the study of human activity in both squares and understanding the reasons behind it is needed. This work looks for the key reasons and impactful principles that influence human activity in public spaces, their relationship with physical environment in selected case studies and a methodology to study them. The focus of the study is on the stationary activities due to two reasons. First it is easy to track and record than moving activities and secondly it more represents the people's interest in a space and the quality of space in attracting people.

A three days experiment in each square was done to count and map the number and location of people who are sitting or standing. This information was recorded on a marking sheet to create density maps of users' stationary activities in both square. Additionally, the approximate number of people in doing static activities at each square was gathered. The result shows despite the fact that they are both public spaces of nearly equal size and share many similar surrounding land uses, Kizilay square have three times more activity than ulus square (Figure16). The plenty of reasons may make people prefer to spend their time in Kizilay more than ulus. This section tries to approach the reasons behind this difference from physical design point of views. Physical features of environment are tangible to measure and analyze. However, the impact of social, commercial, political and

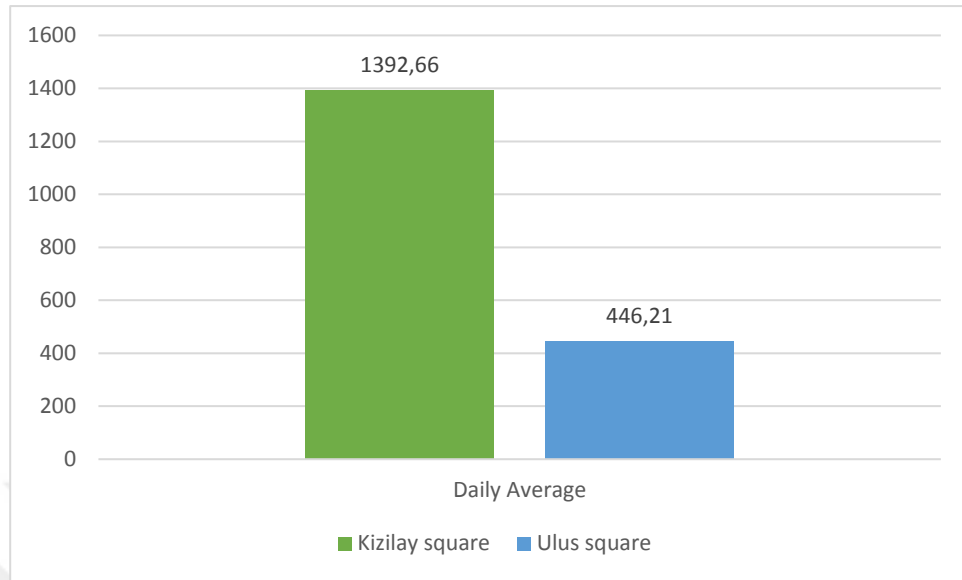


Figure 16. Average daily stationary activities for Kizilay and Ulus

cultural factors should not be overlooked. Considering these factors and changing lens of land use will give another explanation for distinction of stationary activity between two squares than the results of this study. But it is impossible to enable a complete test bed when it comes to human behavior. This study focuses on both case study in micro scale to discover the relationship between physical design and stationary behavior. Stationary activity includes standing and sitting activity. Public spaces should provide some spaces for people to rest. Sitting can be because of variety of reasons like waiting for someone, talking to a friend or having lunch with, or it could be just because of relaxing for a moment or enjoying a view. Pubic environments are responsible to be able to satisfy this need. When compared to sitting, standing requires less effort. compared to walking—sitting—walking, going from walking to standing and back to walking is a minor action. Sitting usually entails a longer stay (Gehl, 2010), so a 'sit' indicates a greater impact on public life than a 'stand' because it denotes a typically longer-staying activity.

Standing, unlike sitting, is a more fleeting activity that demonstrates the ability to perform a humbler staying activity. Sitting implies a more active choice of seat, location, and direction. A series of standing activities can be included in a single standing activity. The stander will frequently choose a location and direction, then realize that another location might be a better fit, and switch locations. Sitters are less likely to engage in this behavior because it takes more effort to get up and change seats than it does to simply walk over and resume a stationary upright activity in a different location. The stander demonstrates that being unsure of one's position is acceptable, as is contemplation (Mattsson, 2019). In this section the relationship between five parameters of thermal comfort, psychological comfort, aesthetic, human interaction and comfort of use and stationary activity of public in two squares were analyzed.

5.1. Thermal comfort: (Desirable microclimate)

Human activity has been shown to be influenced by comfortable conditions in the past, particularly in relation to sitting activity (Matsson, 2019). The feeling of sitting at a shaded place in hot summer days and the sensation of being warm due to the sun in cold days of winter seems to be desirable condition for habitants of Ankara City.

Sunlight

Stationary activities, as previously stated, rely heavily on sunlight (Whyte, 1980). In the time of the study both Kizilay and Ulus suqares were experiencing nearly high temperature of year. Therefore, the distribution of public activity during the day relies

partially upon sunlight. Generally, in Kizilay square infront of KOTON plus under the trees in Guvenpark and in Ulus square, infront of Cafe or on stairs are the most common shaded spots to sit or stand (Figure 17 and 18).

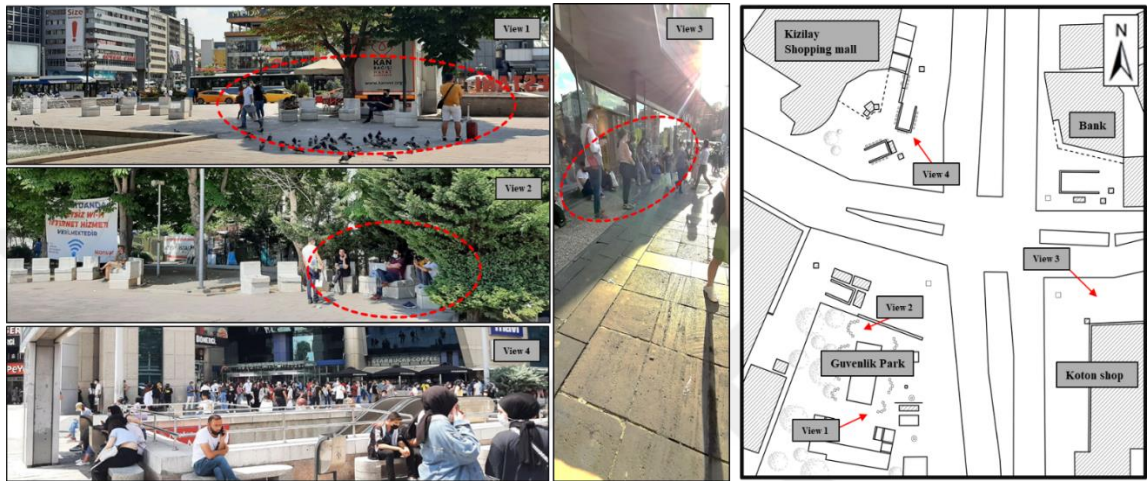


Figure 17. People's stationary activities based on sunlight at Kizilay



Figure 18. People's stationary activities based on sunlight at Ulus

However, density map of Kizilay shows that most used sitting area is the front part of the shopping mall (Figure 19). It should be mentioned that based on the observations during the study, no one was sitting there for a long time. The people who were sitting in this area,

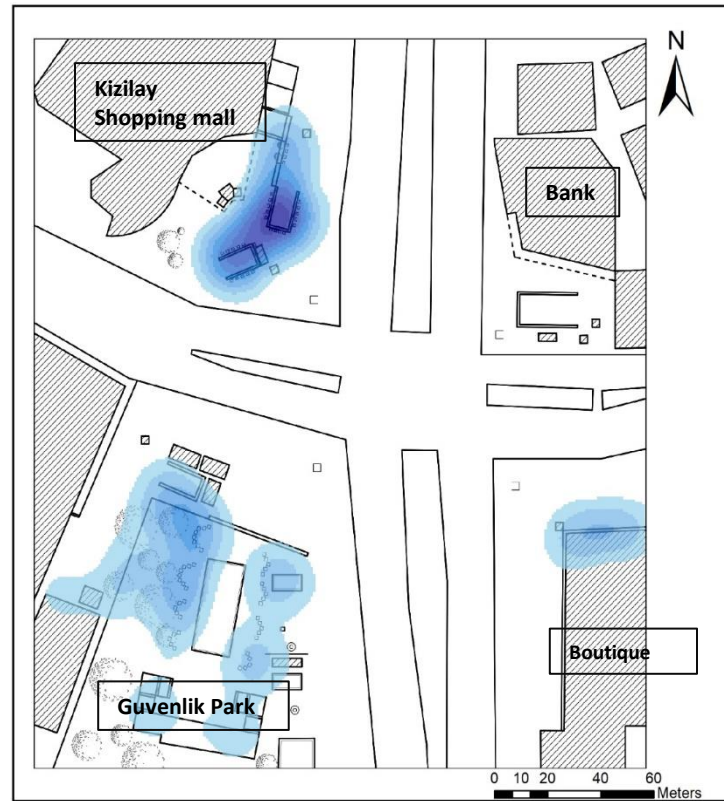


Figure 19. Density Map for total daily sitting activity at Kizilay Square.

they were usually waiting for someone or they were sitting to just have a phone call. No body normally sat for a long time to relax. The chairs in Guven park are most common place to relax and enjoy sitting. On the other hand, it was noticeable that during the day weather gets warmer and intolerable to be outdoors, it seems that other factors outrank avoiding from hot sunlight. At eight o'clock in the morning, the skyscraper in the south east of square obstructs the sunlight shining from east and create a noticeable shaded place on the pond in Guven park and mild stationary activities in morning were happening in this area. The sunlight widens as the day progresses and the sun rises high above Kizilay, coating a larger portion of the square. And with more sunlight, stationary activity becomes more focused on special shaded areas.

The sunlight brightens more of the space, the focused distribution of stationary activity continues in front of Kizilay shopping mall under the roof in front of entrance, Guven park from right side of the pond to the left side and boutique (KOTON). One indicator for the movement of sunlight is the gradual evolution of activity around the food court elevator, in Guven park from right side of the pond to the left side and in front of KOTON from the northern entrance to western entrance. As mentioned before, there are still activities at the entrance to the shopping mall after 12 o'clock. This shows a partial disconnection between the sun factor and standing activity. So, what is Whyte (1980) said about the heavy dependence of stationary activities on sunlight was not observed in this study.

Acceptable temperature

Temperature was not an effective factor for public activity during the time of this work. During the 6 days of this study, the weather temperature was were nearly the same and too hot all days and it was not in the range of desirable temperature which is 13 to 20 centigrade-degree. Additionally, because of the lockdown people have to do their outdoor activity during the day time as soon as possible. So, they did not have the choice of moderate temperature to go out. This means temperature were not a heavy effective parameter to affect people's behavior in this time of the year.

Comfortable temperatures are a widely mentioned requirement for a pleasant outdoor climate that encourages sitting activity (Whyte, 1980; Cooper Marcus & Francis, 1990; Gehl, 2010; Gehl & Svarre, 2013). However, temperature alone will not suffice to explain why people sit so much. For example, because of hot summer days, during the morning and evening hours which is cooler, higher sitting activity rate is expected than around

noon when the temperature reaches its peak. But, because of the Pandemic and quarantine situation after 9 o'clock, people had to finish their outdoor plans during the day. In result around midday hours Kizilay square had nearly the same crowd of sitting activity as in the evening around 17 and in ulus square after midday sitting activity reduces (figure 20).

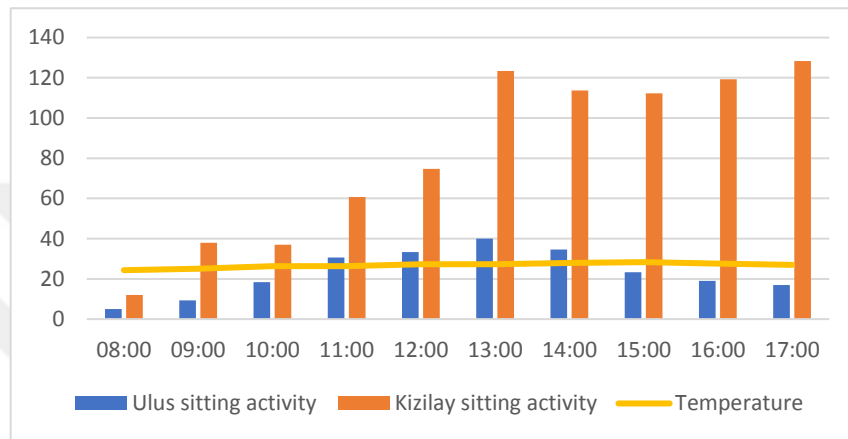


Figure 20. Sitting activities and respective average temperatures

Sky condition

Apart from temperature, sky condition is another microclimate sub category that influence people's sitting activity in a particular sky condition. Sky condition was graded on a scale from one to five where one stands for rain, two; overcast, three; partly cloudy, four; sunny but cool and five: very hot sunny. A comparison of two days at Kizilay with different sky condition revealed that a day with almost completely unobstructed sunlight have greater sitting activity than that of a day which is overcast and rainy in the afternoon. Due to the possibility of rain, an overcast sky makes people leave the outdoor spaces as soon as possible. The effect is amplified by the fact that the days have similar activity around noon, when the sky conditions are similar, but diverge in the afternoon (Figure 21). This study is conducted in summer. Therefore, it was mostly a sunny day with high temperature

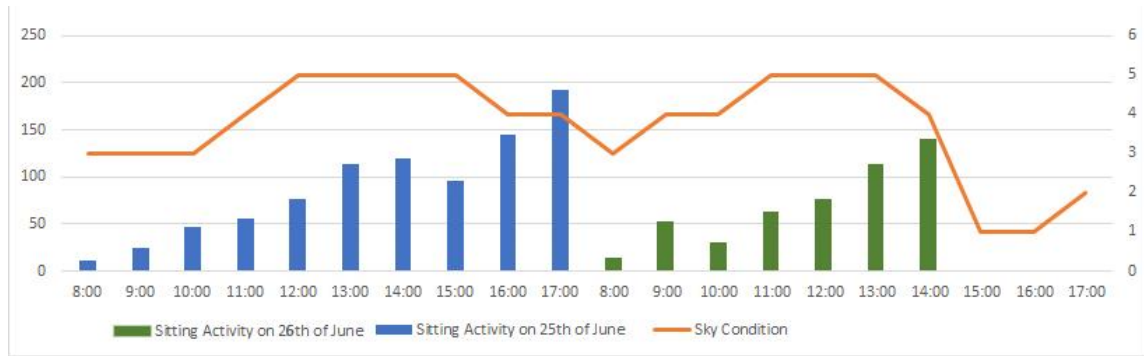


Figure 21. Sitting activities and respective sky conditions for June 26th and June 25th at Kizilay

Thus, sitters prioritize shaded places to sit. In Guven Park the seats and stone benches under the tree provides a cool place to spend time. Also, around midday people prefer to sit in front of boutique at the west south of square (KOTON) on the entrance stairs because of the shady area it offers (Figure 17). However, a quick glimpse to density map in Kizilay square proves that the difference in sitting activity rates between the spaces is not due to microclimate alone (Figure 19). The seats in front of Kizilay shopping mall without any shelter to be protected from sunlight are the crowded places for the sitting activity. This is mostly because the facilities provided for people in this corner is more various to satisfy different needs of people. For example: direct accessibilities to metro station, being close to shopping mall, cafes and restaurant increase people's preference for sitting in this area (Figure 17).

Based on the density map of sitting activity in Ulus square it seems the interesting space for sitting is in front of cafes (Figure 22). There is no other proper seating opportunity in any other part of the square, however, sometimes people sit on the stairs. But it should be considered that open plaza offers enough space to contain some amounts of stationary

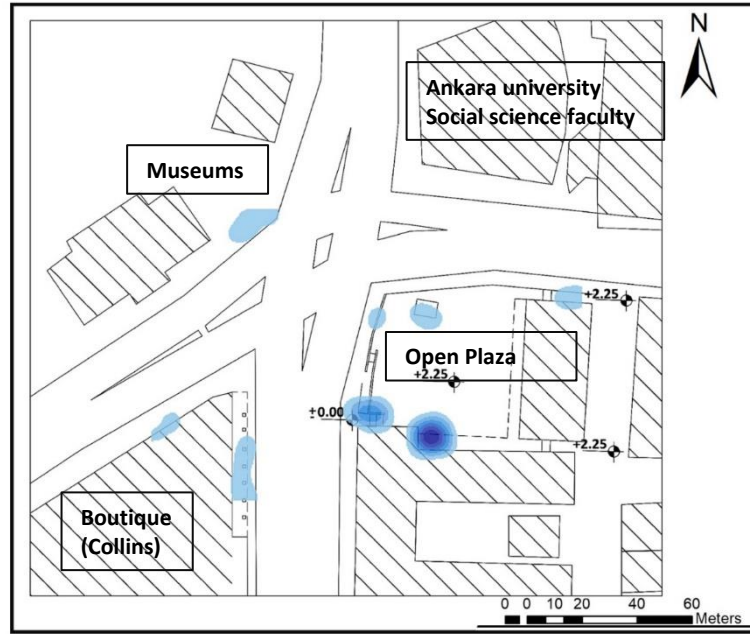


Figure 22. Density Map for total daily sitting activity at Ulus Square

activities. For example, adding more restaurants and cafes around the square or creating some green areas may bring more people to plaza.

Acceptable wind conditions

Except from 2 hours of study in Kizilay from 3pm to 5pm on 25th of June 2021 in which it was very wet and windy, the other 3 days study did not go through a windy situation. It was observed that the only place that was provided to protect people from strong wind in that time was behind the column of food court elevator. It was impossible to stand outside in that rainy windy day. Even the open space of cafes located near the entrance of shopping mall entrance, although they have roof, they were so wind catching and it was uncomfortable to sit there until rain and wind stop. The reduction of sitting activity because of rainy weather continued after the rain had stopped due to wetness of sitting areas (Figure 23).

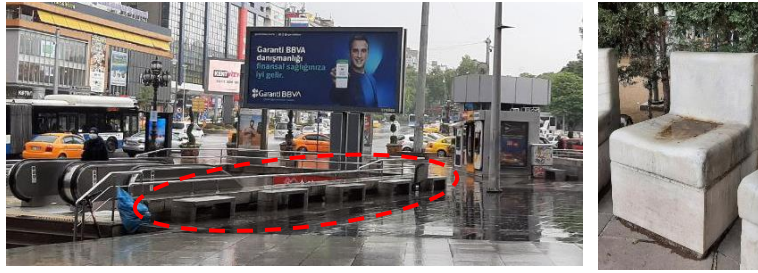


Figure 23. Sitting areas condition after rain

5.2. Psychological Comfort

Outdoor activities are triggered by a variety of factors, including how comfortable one's body feels, sunlight, and temperature, as well as the internal effect of the physical environment. The degree to which a space is used is determined by how the human brain reacts to physical elements in their environment. The correlation between perceived safety and human activity is evidence of this (Weinstein et al, 1999; Loukaitou-Sideris, 2006).

The physical layouts of the two squares are vastly different. One has an open big plaza whilst the other is divided into sub spaces, one has significant level changes whilst the other have delicate ones and one is set up as a open empty hall whilst the other is furnished like a living room. Previous studies, personal observation, and empirical data from each square, as well as the relative magnitudes between them, are used to determine the significance of psychological impacts of physical design. According to correspondence from various sources, the form-behavior interaction is more important.

The differences in physical, social, and thermally comfortable seating, triangulation elements, and sunlight levels between the two squares are insightful factors that help to

explain the difference in stationary activity among different spaces in each square and between them. Also, this difference between two squares can be explained by the average hourly number of people doing stationary activities per 100 square meters (Mattsson, 2019). This amount for Kizilay is 1.26 and for Ulus is 0.83.¹ This means, for every one and half person staying at Ulus, almost two and a half people stays at Kizilay. This section tries to explain this difference through some of psychological factors.

5.2.1. Optimal Elevation

“In any public place where people loiter, add a few steps at the edge where stairs comedown or where there is a change of level. Make these raised areas immediately accessible from below, so that people may congregate and sit to watch the goings-on.” (Alexander, 1977, 125).

Both of the squares under consideration are designed with elevation changes. However, this is where the similarities end. In Kizilay except from Guven park plaza which is nearly 0.8 meter higher than street level other areas are in the same level of street and you don't need to go up from stairs to reach them. In contrast, the open plaza in Ulus square is 2.25 meters higher than Ataturk boulevard and people have to go up around 15 stairs to reach the open plaza (Figure 24).

¹In calculating the area of square for stationary activity I did not consider the area allocated for cars.

Elevation changes in urban spaces provide plenty of opportunities for people watchers, a common breed of public space users. Photographers who want a good shot of Kizilay or Ulus should stand in the highest corner to get a good perspective and the best view of the

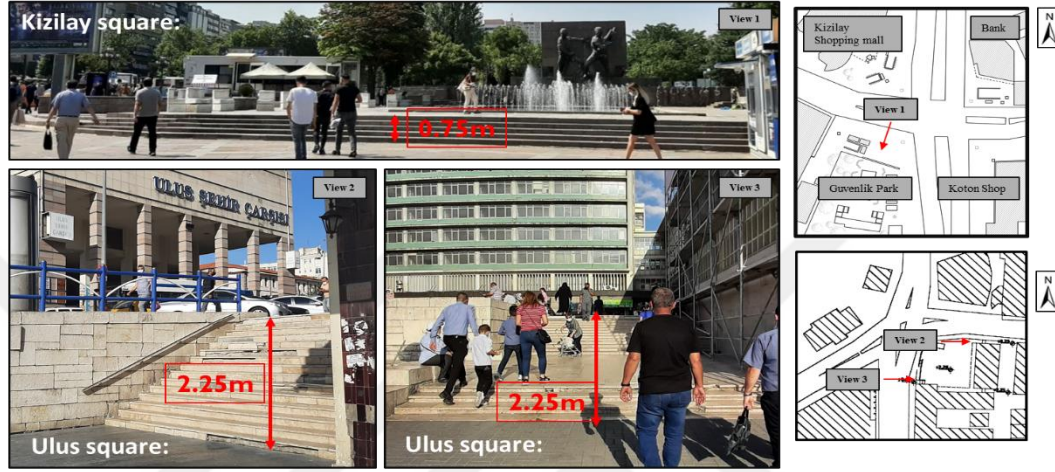


Figure 24. Elevation difference at Ulus and Kizilay

square's life. It seems this is interesting for Ulus visitors to go up from stairs, and have a comprehensive view to the square, even though it is not possible from every corner of plaza. For example, standing in front of eastern shops of plaza, does not give possibility of view to street due to the wideness and height level of plaza. Additionally, it was interesting for old people to stand on the pedestrian area in Anafartlar caddesi which is 2.25 meters higher than plaza level and have a look to the activities of plaza for a moment. At the time of study there was an upkeep project for monument which made people stand there and check it for a while. This level change and the opportunity that pedestrians can stop on their way and wait for a moment to watch what is happening in the plaza can be an opportunity in order to hold some public events like public arts, theater and exhibitions (Figure 25).

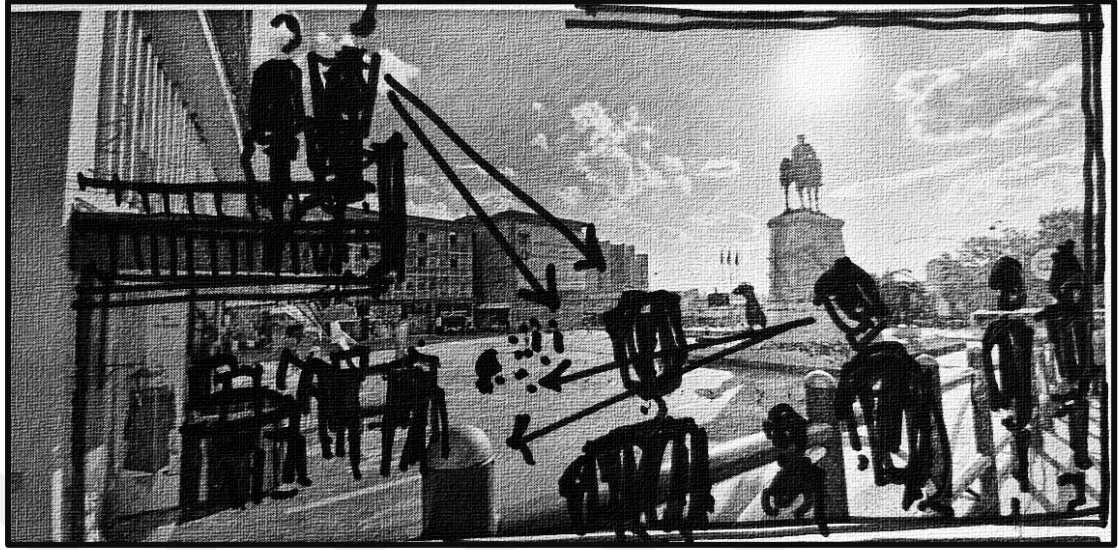


Figure 25. Advantage of level difference between pedestrian area and open plaza

In Kizilay square row of benches on the left side of the pond steps is a great place to sit for its proper elevation to the street, which gives it a view of all the other elements at the square, human, cars and otherwise. Other than regarding the considerable height difference of statue platform, going up through its provided stairs and sitting on this platform, is fun activity to visitors of park (Figure 26).

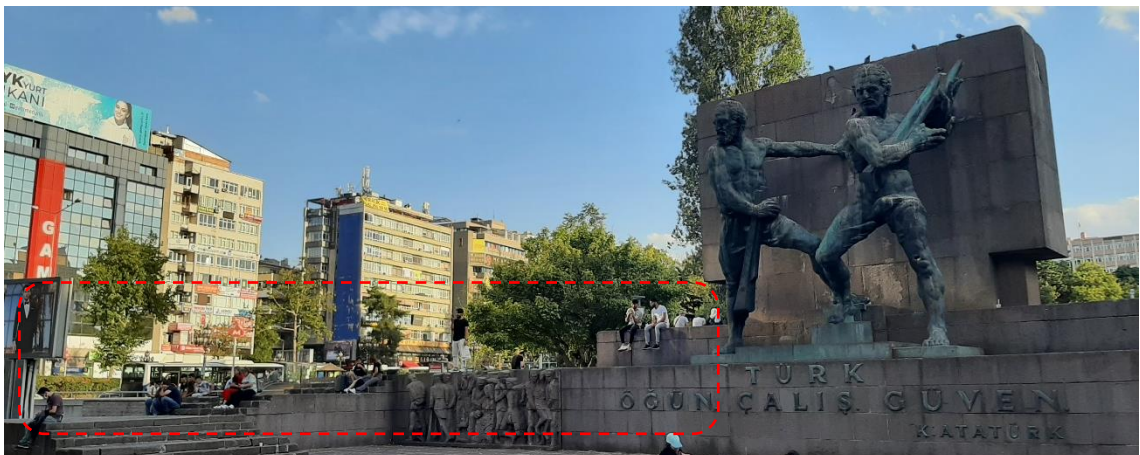


Figure 26. Sitting activity of people on stairs of statue

5.2.2. Enclosure

Enclosed spaces encourage more activity because the process of defining them gives them a sense of purpose, distinguishes them from surrounding spaces, and allows people to connect to the forms that bound them. Enclosure, or the boundary of space, is a fundamental definition of space. Enclosure can be accomplished in a variety of ways and with varying degrees of boundaries. Boundaries can be solid and completely impermeable, but there are also visual boundaries that, while permeable, still give space an enclosing quality. Based on what Cullen (1961) said enclosure reflects the feeling of arrival, inward looking and static which is in contrast with the sense of progression and traffic. One of the problems in recent modern created open spaces specially squares is lack of enough boundaries to shape the space. Spaces is not being enveloped by objects. Buildings as freestanding blocks were placed in a widely open space. So, there were no reciprocal relationship which used to characterize the existence of both. A mutual relationship in which objects used to shape the space and space used to define the borders of objects. Kizilay and Ulus square are not exceptional from this fact as well. With looking at their maps, generally a defined shape of space cannot be recognized (Figure 27 (A) and (B)). However, there are some enclosed sub spaces in both.

In ulus square the open plaza has a moderate physical and visual enclosure. Two sides of plaza are closed by the building but they are permeable through the arcades. The other two boundary sides of plaza near the street are defined physically by the fences although they are not making strong barriers visually. Also, in the right down corner of square where there is Colins shop, the line of pillars going along the pedestrian area – and hence the ceiling creates a sense of an enclosing archway. This is most likely the result of

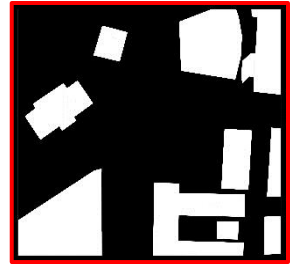
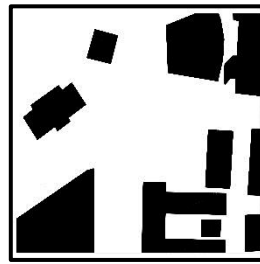


Figure 27 (A). Figure-Ground map of Kizilay

Figure 27 (B). Figure-Ground map of Ulus

prioritizing the most effective supporting construction over any artistic consideration of enclosure and it gives the space modernist context (Figure 28).

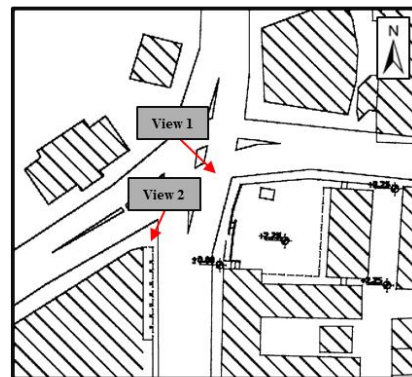


Figure 28. Enclosed subspaces in Ulus square

Generally, Kizilay square also represents some semi enclosed subspaces. In Kizilay square, in the space between the lift and entrance of shopping mall you may feel a separated semi closed space because of its roof which provides shelter for people from wind, rain and burning sunshine. However, the height of roof is too much to completely feel inside a surrounded space from top. On the other side of square, the row of trees in western side of Guven park and the linear statue in the southern part defined the space in front of them (Figure 29).

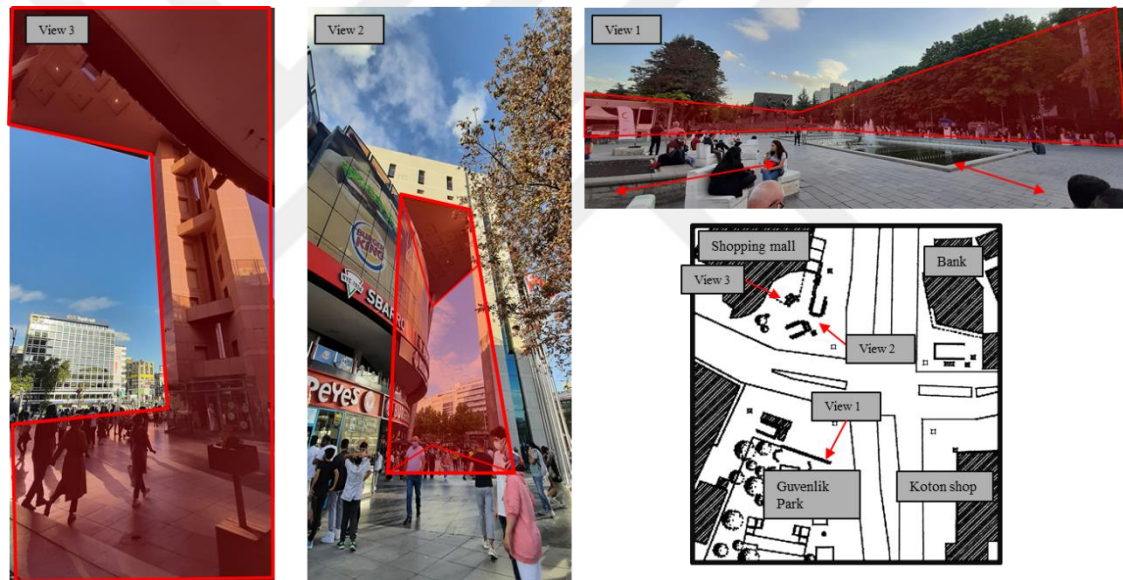


Figure 29. Enclosed subspaces in Kizilay square

5.2.3. Positive and Negative space

As previously mentioned, outdoor spaces need to be given some enclosure to be defined and not left over between buildings. Alexander (1977) called this definite space as a positive one. He categorized the gap between building in negative space and positive space. Negative spaces are shape less and left behind the building which are positive and placed on land independently. Outdoor space is positive when building defines its shape

instead of being as freestanding objects in space. In this case the form of the space is as important as form of the surrounded buildings. This fact can easily be recognized by figure and ground map and its reversal (Alexander,1977).

With a look at the plan of both square I recognize that buildings are as the figure and the square is as ground. Reversal of map is not possible and you cannot see the in between space as figure with a distinct form (Figure 27 (A) and (B)).

People does not feel comfortable in spaces which are negative and such spaces usually remained useless. Because the public spaces are not decorated and designed, but only the buildings are and the main requirement of public square which is enclosure is lost (Alexander, 1977; Sitte, 1986; Carmona et all, 2010).

5.2.4. Edge effect

At the edges of both squares the hot spot of activities are located (Figure 30). At Ulus square in front of cafes and shops in open plaza, where shadow, shops and cafes are available, the edge effect can be seen. Kizilay square sees edge activity mainly at the walls beside the KOTON shop and shopping mall entrances and from the rows of seats that are supported with edge-zone qualities by the row of trees behind them.

The psychological impact of locating near an edge is the historical reincarnation of a long line of humans' vital need to find a safe haven. Edge positioning provides safety from unrecognized perpetrators by protecting from behind. Human beings are less able to

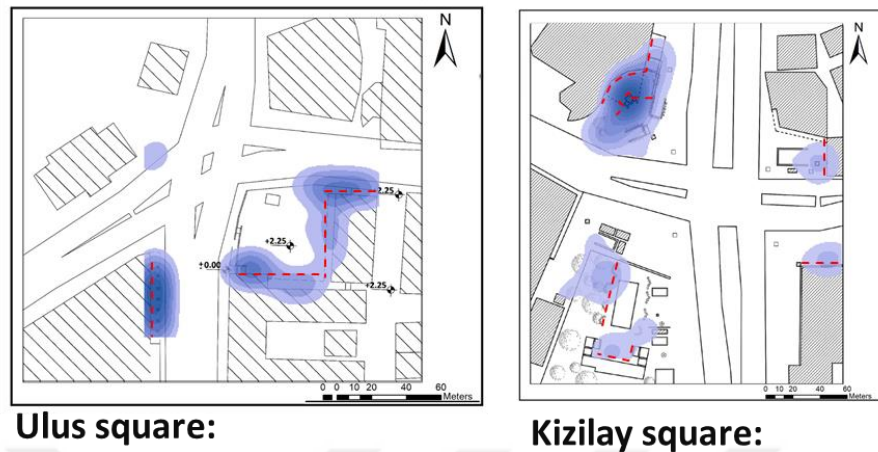


Figure 30. Edge effect in Kizilay and Ulus square

investigate via their backs because humans have a frontal perceptual apparatus – with forward facing eyes and nose, and sideways facing ears (figure 31) (Matson, 2019).

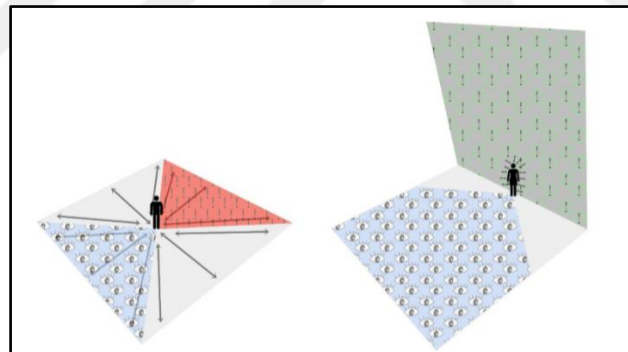


Figure 31. The psychological benefits of edge placement (Mattson, 2019)

However, the effect is psychological rather than physical. This can be seen at Kizilay, in Guven Park, where the edge is made up of a very permeable line of trees rather than an impermeable wall. In the minds of people, the edge pattern created by the linear allocation of trees is associated with backwards protection and safety. The edge effect describes a behavioral pattern that represents the human need for security. For reasons related to microclimate, the edge is also a good location. Because it usually protects from wind and provide shadow. Alexander (1977) also mentioned that the choice of a person to sit in an

outdoor space is not in the middle of the space. He usually tries to find a tree or a wall or a natural cleft to back against to feel partial enclosed and sheltered. The life of the public square is dependent on its edge. It never becomes active and alive if the edge of the square fails. So, the focus should be brought to the edge of public gathering spaces and pockets of activities should be provided there which make people to stop and get involved naturally (Alexander, 1977).)

Unless something blocks the view, the edge position provides the best overview of any space. As you move inwards from the edge, less and less of the space is visible. This is useful for gathering information as well as observing the scene, whether searching for something specific, as a late-running friend, or merely to enjoy the unexpected drama of public life. Also being close to, or leaning against, the edges provide a sense of belonging. Generally, the edge spots are more active in Kizilay than ulus, however; Ulus has the potential at the open plaza to improve the vitality of its edges. For example, more restaurants and cafes in ground floor of plaza's surrounded buildings can be added. Also, the permeability of southern edge of open plaza can be increased by creating an archway to make a connection to the space behind (Figure 32).

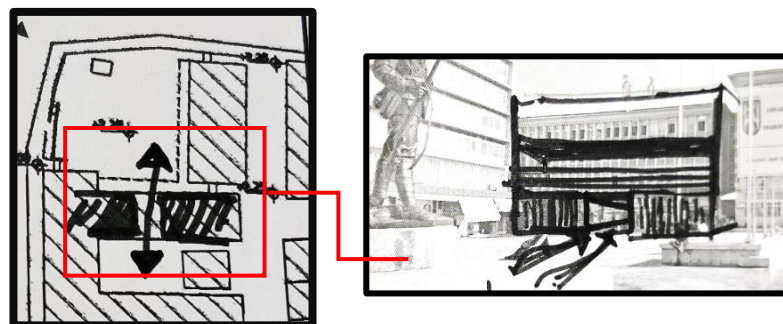


Figure 32. Creating an archway in southern edge of open plaza

5.2.5. Piano Effect

Similar association between edges and safety can also be discovered between supportive physical elements and physical comfort. The public furnishings that allow people to lean against them provide more than just a place to lean; they also provide the option of leaning or not leaning. In contrast to a situation without these features, which only allows for one possible posture, a piano allows people to choose between two options: standing or leaning.

Instead of passively living in the imposed vastness of undefined space, people can actively shape the way they want to experience the public sphere. With a nearby support element, the option to alter posture is always available. As Whyte (1980, p.34) puts it:

The possibility of choice is as important as the exercise of it. If you know you can move if you want to, you feel more comfortable staying put (Whyte, 1980).

The piano, on the other hand, is more than just a place to lean against. The fact that most of the people at Ulus's support pillars, demonstrates this. They prefer to be in close proximity to them. The mere presence of any physical element provides people with focal points in which to ground their stationary activity.

Make the furniture appealing, and the services it provides will draw in more customers. The main elevator to food court in front of shopping mall at Kizilay provide similar physical comfort benefits as the pillars at Ulus. Standers and sitters can lean against the pillars. Adding to this, pillars also give the opportunity of choosing between standing under sun or in shadow.

5.2.6. Optimal Square Dimensions

The two squares are nearly similar in total dimensions, at least the parts studied. Sitte's measures for the form of square and its principle-building cannot be applied in this study because as it was discussed before none of the squares has a definite shape or in another word they are not positive spaces. However, an imaginary boundary is adopted to make the dimension analysis easier (figure 33 and 34).

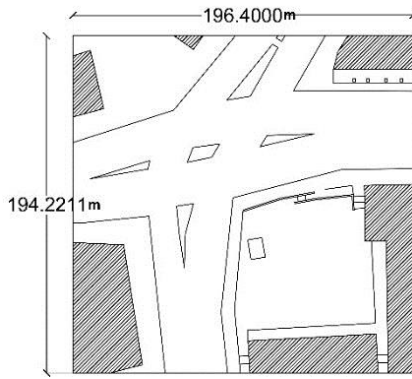


Figure 33. Dimensions of Ulus square



Figure 34. Dimensions of Kizilay Square

Alexander (1977) noted that public squares need to be in a reasonable size. In modern cities the temptation to build public squares too large made them desolate and dead. The proportions that Sitte offered for the size of a square is that the shorter dimension of square ought to be the same length as the height of the principal building and the longer dimension be maximum twice the height of the principal building (Sitte, 1889). If we consider the main shopping mall in Kizilay as the principle building with the height of 125m and Ish Hane building with the height of nearly 60m in Ulus, none of the square would be based on Sitte's suggestion for square dimension. Both squares are too larger

than the standard size they were supposed to be. The dimensions could provide more information about human preferences. People can recognize human activity and expressions in three-dimensional space and reasonable proportions are needed to be comprehensible for human mind.

5.2.7. Sub-space

The two squares are almost same in both size and dimensions but the pond and furniture in Guven park divide the open plaza to smaller scales which is more comprehensible to visitors. In contrast, Ulus square's plaza is left unclearly open and undivided. Because it lacks smaller subspaces, the square never allows people to stay close enough to each other for long periods of time. However, by furnishing the plaza by trees or furniture it can be divided to small parts (Figure 35).

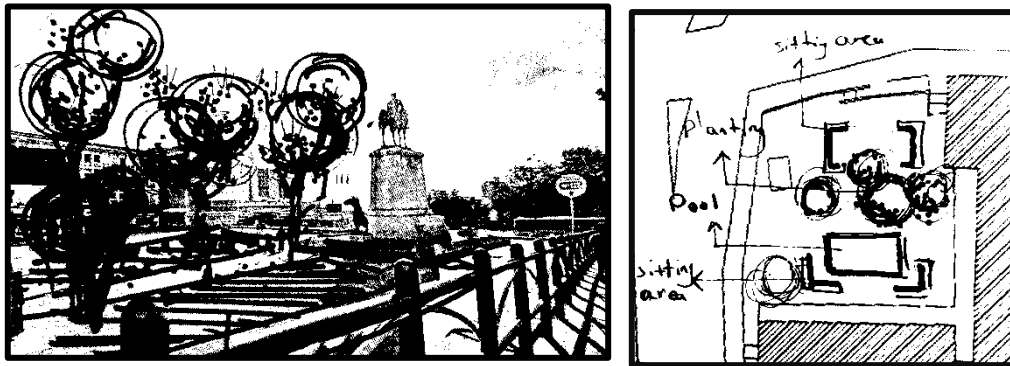


Figure 35. Creating subspaces in open plaza of Ulus

5.3. Aesthetics

What one person considers to be an aesthetically pleasing environment may not be perceived as such by another. Nonetheless, some paintings have been sold for hundreds

of thousands of dollars. Isn't it strange that a work of art generates a more annual return than its weight in gold? (Renneboog and Spaenjers, 2013). This shows that there could be common taste among people about the prettiness of something.

5.3.1. Planting

The trees' aesthetic quality is related with having the capability of creating contrast with surrounding environment. The green color, contrasts with the surrounding buildings' which otherwise would have muted color palette and square floor. The brain and eye have cells that can only respond to changes in luminance, or edges, which is why contrast is appealing. These cells are used to gather data and focus attention. Edges denote change zones, and thus information. Edges are thus more eye catching, more interesting, than areas with homogeneous colors and thus no change, no data, and thus no reason to pay attention to it. The allure of contrast is that it serves as an object-discovering tool, with contrast – edges or changes in luminance – defining the boundaries between objects (Ramachandran and Hirstein, 1999). In both square specially in ulus square there is not enough green space to provide people visual aesthetics and this makes the area look so dead and soulless.

Additionally, the concentration of people choosing to sit under the trees in the park shows the impact of trees on the choice of sitting activity. Guven park's rows of trees on the one side of the pond provide a unique experience of moderate enclosure. They provide a barrier for the sitting area from behind and their branches create an upper enclosure. Other desirable feature is the ability to sit under their branches protected from direct sunlight (Figure 36).



Figure 36. Planting in Kizilay square

5.3.2. Water effect

While it is impossible to make any statistical claims about the impact of water, However, unofficial observations support Whyte's (1980) findings, namely that if water is present, people will interact with it. The vast majority of people enjoy the sound of water (Guastavino, 2006; Yu & Kang, 2008), because it is masking unwanted sounds with the sound of water and this is a recommended solution (Brown & Rutherford, 1994).

The sound of water is mesmerizing, relaxing, invigorating, and meditative to everyone sitting there. Humans require water to survive and cannot go without it for long periods

of time; water evokes memories of their mothers' wombs; water reflects light, that is another source of life; and the ability to accomplish thermal equilibrium through showering (Strang, 2005). While the origins of our fascination with water and its sound are unknown, its universality is not. Water has a fundamental roll in our psychology. The constant access to water in our cities is necessary, a large proportion of our body is water, we came from water (Alexander, 1977). One of the enjoyable features of Kizilay is the pond in Guven park. The seating is positioned around the pools to drown out the unwanted sound of traffic, which would otherwise detract from the space's sensory comfort (Figure 37). However, it is not possible to touch and feel the water in it. There could be the possibility of making water available for visitors in a way that they can sit near it or dangle their feet. Building and living near water can be considered in any designing projects. Ulus square does not offer any water effect.



Figure 37. Water effect in Kizilay square

5.3.3. Visual aesthetic

Part of the need of visual satisfaction is dependent on some physical features of environment. Characteristics of environmental elements, whether they are natural or man-made, determine the visual quality of the built environment (Lynch, 1960). Based on the organized model of Simon Bell (2004) in general basic visual aesthetic parameters of landscape, it is necessary to balance unity with diversity and to respect the genius loci, the spirit of place (Bell, 2004). In both Kizilay and Ulus square an unbalanced variety of buildings, signs, boards, cars are observable. Any object in the square tries to overpower the environment and take the whole attention to itself without any consistency with the surrounded context (Figure 38).



Figure 38. Unbalanced variety of signs

For example, main shopping mall is a huge structure in the square which is out of scale compared to the buildings next to it. It does not fit into the square even in terms of its shape. Very modernistic facade design with its diagonal line which is in opposite with the perpendicular lines of other buildings (Figure 39). Another example is the tall skyscraper upon the boutique (KOTON) which is out of human's comprehension because of its high height. The user had to look upward to even notice the existence of building there, which



Figure 39. Unbalanced scale of shopping mall in Kizilay square

is impossible during the day because of the sun shine (Figure40). Another issue was variety of activities happening altogether in square and the observer of the square would be a witness of a chaos happening in a visual shot which is complicated for mind to comprehend in a moment. Diversity could be a positive characteristic to make a level of complexity and sense of curiosity in an environment, however too much diversity can undermine the unity of the whole.



Figure 40. Unbalanced scale of skyscraper in Kizilay

In Ulus square buildings are more in harmony with each other and human scale because of its historical background. Generally, the area does not provide enough visual diversity to make people pause for a second and watch. However, the dilapidated building in the west south corner of the square and Ish Hane building are architecturally designed in a complex way which provides different sub spaces like archways or balconies which provides accesses to the spaces behind them. Additionally, they can provide bird views from upper floors to the surroundings for visitors if some floor of them could be allocated to cafes or restaurants (Figure 41).

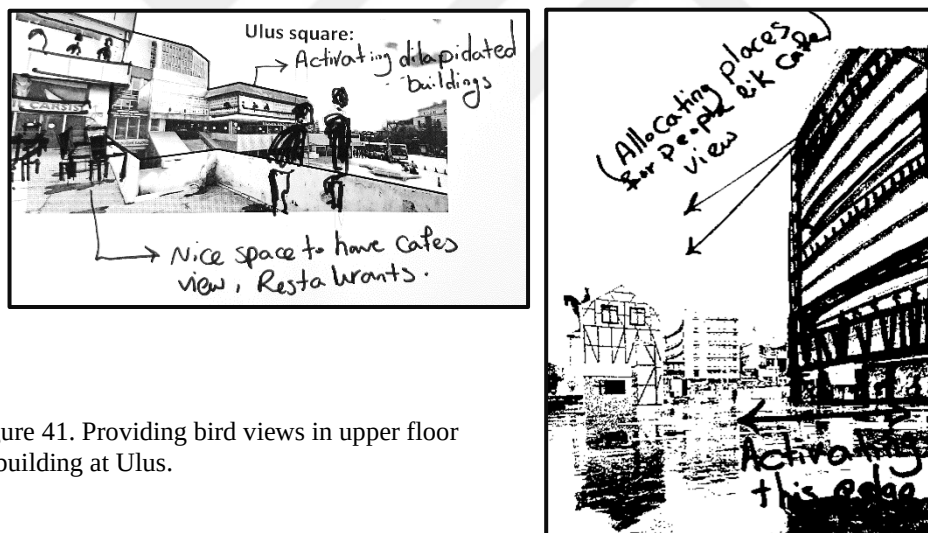


Figure 41. Providing bird views in upper floor of building at Ulus.

Archways generally could be a strong factor in increasing the curiosity in human being to attract him to the spaces. Because these buildings just give a clue not (a whole vision) of the space you will reach if you pass through these archways. This can make the visitor discover the places. In another word could be said that the place does not demonstrate itself in a second but, step by step as the user make effort and go further. Gordon Cullen (1961) called this Serial Vision:

“As the pedestrian walks through the town at a uniform speed, the scenery of towns is often revealed in series of jerks or revelations”.

This is one of the strong features of Ulus square which is experienced barely in Kizilay square. It is interesting that in Ulus square actually after passing through the first layer of building's facades through the provided archways, you encounter with the spaces behind. What was noticeable during observations that this space located behind the southern edge of plaza have the capacity to be more alive by offering restaurants or cafes or green areas. Additionally, edge of these arch ways can interact with passers (Figure 42 and 43).

Additionally seeing and being seen by people is an important part of human communication; therefore, any location where there is any type of human activity will naturally attract people watchers. However, there is a limit to the number of views



Figure 42. Serial visions in an archway of Ulus square



Figure 43. Serial visions in an archway of Ulus square

available. In terms of trees, water, flowers, space, and art works, the viewing experiences vary greatly (Mattsson 2019). In this sense two square offers different views from each other. In Kizilay square sitters have various choices for view. They can sit towards the streets and watch people and the liveness of square. Guven Park in one corner of square with a fountain in the middle of the space and green trees give the people the chance of enjoying more relaxing views. Further viewing objects are the subtle level differences, creating a space that feels more intricate (Jacobs, 1961), the birds in front of the statue and the statue as a back-ground for their flight shows. Guven Park Statue itself in the middle of Guven park gives a special identity to square and its design offers stairs and platforms

in different height levels where you can sit and get a variety of views to the different sides of square. The cafes and restaurants around the other sides of square in upper floors have a comprehensive bird view of the area far from the urban chaos. The fundamental aspect to consider in order to achieve favorable views for sitters is the location of seating. Kizilay square with offering different alternatives for sitting provides various views towards square, park or shopping mall (Figure 44).



Figure 44. Variety of offered views in Kizilay square

The variety of views to choose from is limited in Ulus square. Sitting in cafes offer the view of statute or street. Nevertheless, making higher floors of surrounding buildings accessible to people can offer them to have bird views to the city (Figure 45).



Figure 45. Variety of offered views in Ulus square

5.4. Human Interaction

Different types of human interaction were observable in Kizilay square. In Guven Park, the grouped chairs under the trees give people the chance to sit in a nearly close distance and start to talk. In the taxi station while taxi drivers are waiting to have passengers, they communicate with people or polices who sit near them and offer them tea. The bread sellers located in each corners try to make friendship with random people who buy bread from them. Lottery ticket dealers were trying to convince passers to buy from the tickets. And, peddlers who sell tea wander around the square and ask people if they need to drink tea. Police activity is another type of human interaction that would have been interesting during the observations. In Kizilay square because of its critically political situation it has in city, a noticeable number of police officers are present in all over the square for no apparent reason. They go around and ask random people for their ID card and converse

with them. The police presence is a symptom of the problem, not the cause. Because of the coup of Turkey in 15th of July in 2016 happened, the square became a critical location in Ankara and government takes care of it carefully to avoid any sudden movement (figure 46).



Figure 46. Police interaction in Kizilay square

However, in Ulus square the degree of human interaction reduces compared to Kizilay square. First Ulus area is not politically under control as much as Kizilay square. There are police who are taking care of environment but they rarely ask from people for their IDs or nationalities. Secondly a provided place that encourages people to sit and converse with each other is not as diverse as Kizilay. Only the stone barriers around the open plaza make it possible to have a chat with random people.

5.4.1. Multiplier Effect

The benches in Guven park under the trees offer a prioritized location for sitting, but having a look on total sitting density map of Kizilay square demonstrates that in front of

shopping mall is the most preferable sitting place. The point is among the choices people have for sitting, they do not always prefer the place with good physical condition. A hypothetical factor offered by Matsson (2019) Can be one of the impactful factors.

The multiplier effect could also explain why Kizilay square are more human crowded than Ulus. If a public space can attract any human activity, it can also encourage social activity that is generated by people looking at, talking to, and listening to other people.

Squares with excellent designs naturally invite and attract large numbers of stationary activity who go to the square for non-social purposes, experience considerably more activity than squares with poor physical designs. Every person who comes to a square for the benefits of its outstanding design will also contribute to the square's social component.

5.4.2. Male & Female Users

The activity proportion of different genders differs between two squares (Figure, 47).

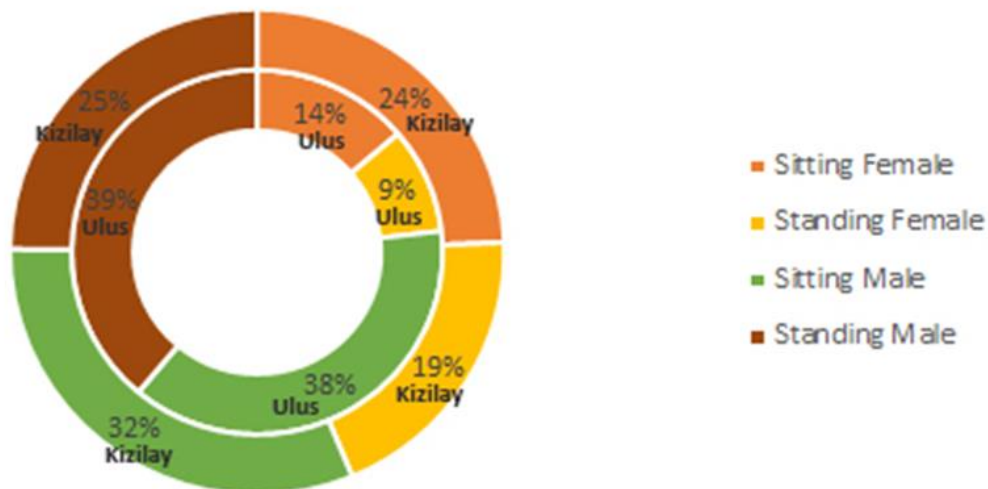


Figure 47. Proportions of sitting females, standing females, sitting male, standing females in Kizilay.

Activities of female and male in Kizilay square are nearly the same, but in Ulus square the stationary activities of men is 3 folded the women stationary activities. However, this does not mean women are not interested in are, the reasons that make them spend their time is less than Kizilay. For example, from commercial point of view the shops and shopping mall in Kizilay attracts women. And socially speaking women prefer more to be in places with having some degree of female activity. During the interview with Turkish people to ask why there are few numbers of women in ulus square; The answered was due to the lack of safety and being known as having criminal potential and invasion of privacy among citizens.

Having a glance on this diagram (Figure 47), Ulus square can be described as a place more dominated by men compare to Kizilay. In contrast Kizilay square is characterized by both genders. While 43% public life of Kizilay is female activity, only 23% of total stationary activity is constitute by women in Ulus square. Why the two spaces attract such disparate demographics is intriguing, and it sheds light on why men and women gravitate to different public spaces. Throughout all study days, the overall percentages of gender division remain consistent. In this way, the public life of the squares is quite predictable, as one day closely resembles the next. People are aware that Kizilay will be dominated by both men and women activity, whereas Ulus will be dominated by men activity. There is a reputation gap between the two squares (Nolin, 2019; Franzén, 2002). Female-dominated areas are thought to be more appealing than male-dominated spaces in terms of public appeal. Or possibly the link is reversed, with more females attracted to attractive environments than guys, implying that women are pickier (Mattsson, 2019). This is for example what Whyte (1980, p.18) believed: *Women are more discriminating than men*

as to where they will sit, more sensitive to annoyances, and women spend more time casting the various possibilities. If a plaza has markedly lower than average proportion of women, something is wrong

Cooper Marcus & Francis (1990) found that as a square's use grows, the gender diversity of its users equalizes. This is true to the activities that take place on Kizilay and Ulus. Kizilay with more activity, host nearly a same proportion of both genders. The distribution of female and male activity uncovers how the two genders interact in public. The total similarities between the two user groups are most obvious when looking at the activity in both squares (Figure 48 and 49). A good environment for women is often also a good environment for men, and vice versa. Spaces can be designed to satisfy both, as evidenced at Kizilay, which receives more female and male activity than Ulus. Looking at density map of stationary activities of women and men in Kizilay reveals that there is not any difference in the concentration of specific gender except in northern eastern corner of square. Same as Kizilay, Ulus square's density map of males' stationary activity shows that there are not any specialized location for men at square except the northern eastern stairs of open plaza (Figure 50 and 51).

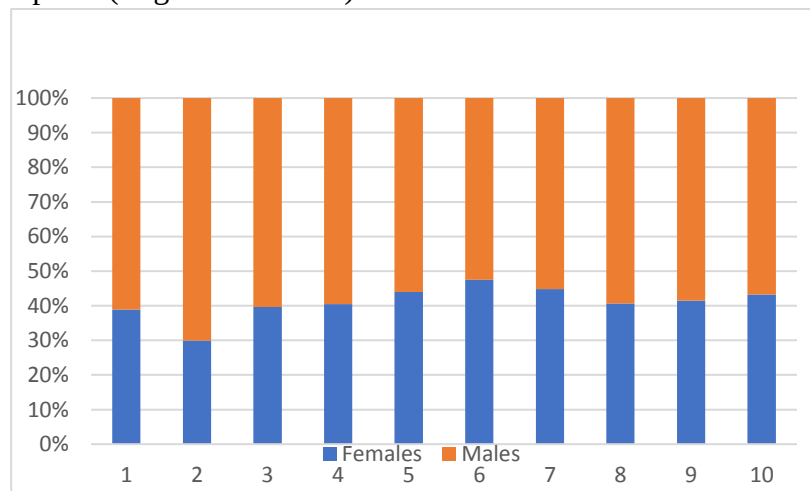


Figure 48. Hourly proportions of female and male users at Kizilay

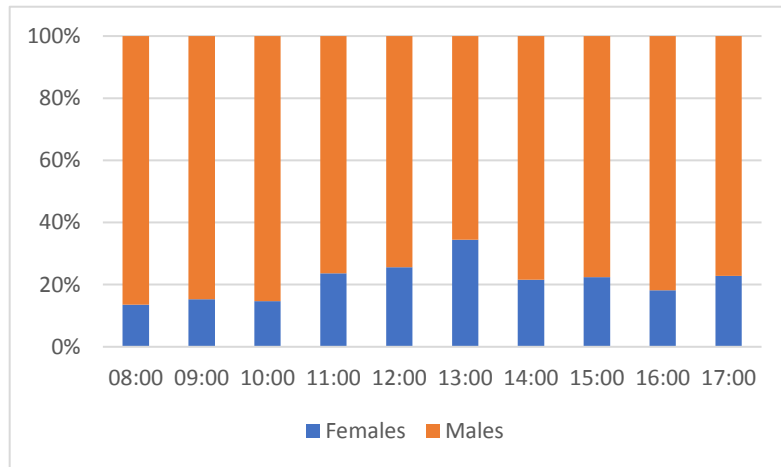


Figure 49. Hourly proportions of female and male users at Ulus.

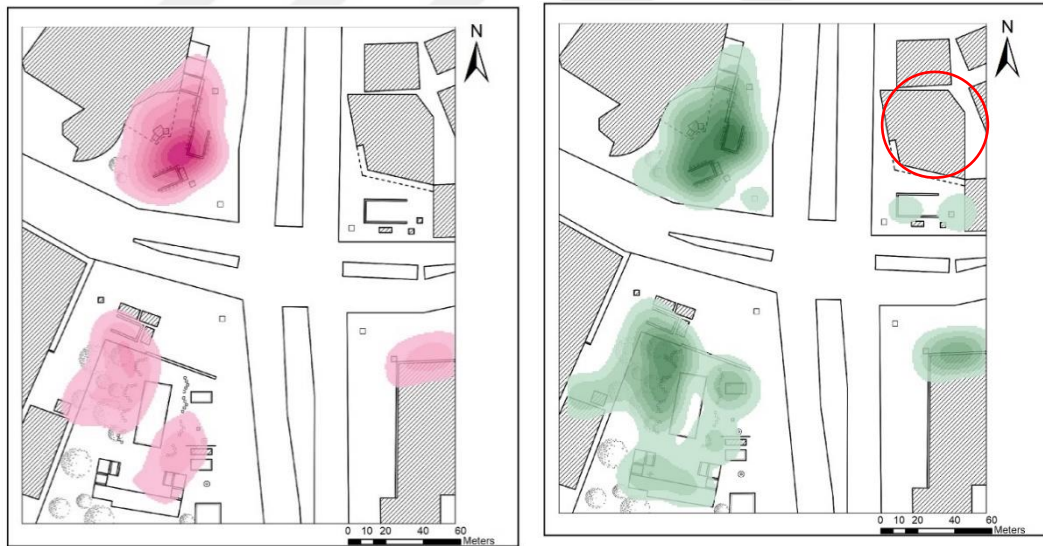


Figure 50 - Left: Density map for total female stationary activities at Kizilay.

Right: Density map for total male stationary activities at Kizilay.

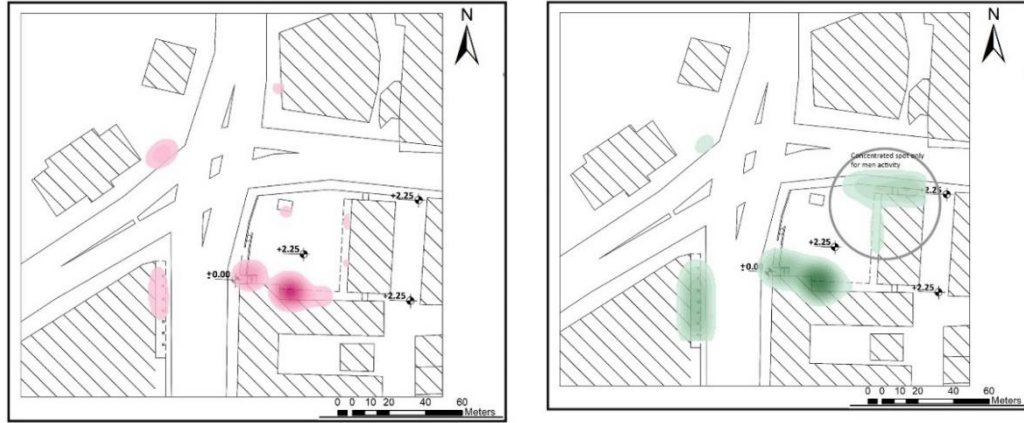


Figure 51 - Left: Density map for total female stationary activities at Ulus.

Right: Density map for total male stationary activities at Ulus.

5.4.3. Triangulation Effect

External stimuli that encourage strangers to come together and share a common experience are wonderful elements that are full of spontaneity and surprise. It is, without a doubt, what makes cities so appealing. The ability to experience something unexpected in the company of people who appear to have no connection to you other than the fact that you both find this unique occurrence interesting enough to take a break from your busy schedule and simply enjoy the present moment is a unique quality of city spaces (Matsson, 2019).

Kizilay square demonstrated noticeable examples of triangulation. The element that is interesting to gather people at Kizilay, is the Guven park with its pond and historical statue. People were visiting the square to take photos in front of statue. Also playing with birds and seeding are activities that make visitors to have a conversation. Photographing and seeding birds were not activities that was recorded systematically but it was a common

activity that was observed in the 3 days of study (Figure 52). Involving in an unplanned conversation with strangers and photographers was not unusual.



Figure 52. Triangulation effect at Kizilay square

Same as Kizilay, in Ulus square triangulation effect of Ataturk statue was obvious. People were taking photo in front of it and talking about its important rich historical background. However, this was not only reason to assemble here. A “Human- produced” (Mattsson, 2019) event was another triangulation effect in Ulus square. Not exactly in the time of the study but some days before that there was a protest held in open plaza of square for animal’s right which brought people together.

Some people were directly involved in the protest, arriving to give speeches, take photos, or listen to speakers (Figure 53). Another group of people came to the square for reasons



Figure 53. Triangulation effect in Ulus

unrelated to the protest, but they still took a moment to look at or listen to it. The impact of this event would be seen in the total amount of people standing in the square.

5.5. Comfort of use

Comfort of use in this section, means that how much public square fits to public need in terms of their accessibility to square, the facilities and functions they offer based on three parameters: Intricacy, Accessibility and optimal sitting attributes.

5.5.1. Accessibility

Kizilay square has a direct accessibility to metro station in four corners of it and different buses are provided nearly to every route in city.

This makes people have access to the public transportation easily and be able to go anywhere from here. In this sense Kizilay became a central node of accessibility in city of Ankara. In contrast, in Ulus square, metro station is not directly in square itself. There is a 360m distance to nearest metro station. This distance does not sound so far however; it is inconvenient in the unsuitable weather conditions (Figure54).

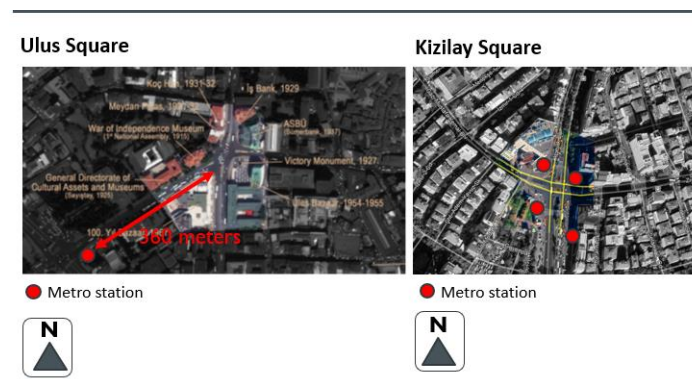


Figure 54. Accessibility to metro station in Kizilay and Ulus

The quantity and diversity of elements to satisfy people's requirements are easily reachable in Kizilay but not in Uluş. Kizilay square is nearly a huge public space which is cut by the Atatürk boulevard and Gazi Mustafa Kemal street, and movements of cars are prioritized to pedestrian to avoid traffic. Pedestrians have to wait for more than 1 minute behind the traffic lights to cross the road and reach each corner of square. This makes the accessibility to every part of the square worth to wait a bit. However, variety of facilities like shops, cafes, banks are available in each corner of the square. you don't need to wait minutes to grab a quick coffee. In Uluş square also reaching to each side is time taking. Not only because of the main roads and their car traffic but also because of the fences that are separating pedestrian area from street. It takes seconds to figure out how to reach pedestrian zone. Additionally, there is no variety of services available in each side to reduce the need of crossing the road. Thus, the using of space is not convenient for public

Another factor is the communication of disable people and their activities among normal people is because the opportunity of using the space is given to them as well. You cannot find large number of stairs to any space in Kizilay and if there is any, ramps are provided near them. but in Uluş square although you need to go up through 15 stairs to reach the plaza, no ramps are provided for people with wheelchairs.

5.5.2. Intricacy

The on-the-ground methods used to register activity at the squares contain a revelation about the varying degrees of intricacy between the two squares. All stationary activities

in Kizilay and Ulus squares were mapped from various angles. This allowed for surveillance of the entire square, including all four corners.

It was difficult to register from a single location, so there was a need to take a standardized route through the square to capture the entirety of the event. In line with Jacobs (1961) analyses, the intricacy of the space is uncovered with rapidly increasing activity. Different clusters of utilization are evoked by the various sections of the square, such as the photographers of statue, the cafe sitters, shoppers or people who just visiting the square. The variety of reasons that a square can provide for people to spend time in it is directly related to its intricacy. Different people's reasons for visiting the same square can be very different, but the same person's reasons can also be very different. This can happen when the whole area is mixed-used, the variety of functions are provided for different groups of people and physical elements of space offer variety of activities like sitting, playing, talking, taking photos or just relaxing. Maybe one of the main reasons that Kizilay square attracts more visitors is because of the different ranges of services such as park, plaza, greens, public buildings offer to fulfill the public requirements.

A person in Kizilay square can rest in park and enjoy the relaxing view of trees and fountain or he can take photograph in park in front of statue while seeding the birds and communicating with other people. He can buy whatever he needs from the surrounding shops or sit in a café. He can reach where ever he wants from the accessible transportation provided in square. A disable person can easily go around the square without being worried about going up from stair because ramps are provided everywhere needed. Children can be entertained in park; young people can spend time in bars and clubs near the square and old people can enjoy from sitting under the tree and watching the liveness

of square. People can go inside the shopping mall if the weather gets windy, cold or rainy and spent time inside a public space.

This variation is not easily provided in Ulus square. A range of different functionalities are spread widely in the whole area and around the square you cannot find that much combination of activities. When you reach to square, it is not convenient to have accessibility to a variety of functions. And the area is mostly used by middle age and elder people.

Another issue is about gentrification among two area of Ulus and Kizilay. In Kizilay square you can see group of people from different levels of income. Because the different activities in different range of activities, cafes and restaurants, brands for shopping are available in different range of prices which encourage and bring groups of people together to this space. In contrast you cannot see this diversity of people in Ulus square. The area is known as a location for people with low income. It does not provide high quality products to bring rich people to make them spend their money there.

Intricacy can also be related to vision and the amounts of visual stimuli that a space can provide. Surprisingly, limiting what can be seen increases complexity. Enclosing, bounding, or defining components of sight might be a better way to describe observational limitations. One of the problems that is valid in both square is lack of visual intricacy and complexity. With standing in each corner of both squares you can observe hug buildings, signs, texts, objects and people in a moment which does not make any curiosity and mystery to be discovered.

5.5.3. Optimal sitting attributes:

Height

Seating height appears to be important in putting priority on location of seating. Physical comfort seems to factor into the selection of seating, at least through seating height, in what is referred to as "primary seating" in the literature (Cooper Marcus & Francis, 1990; Gehl, 2010). "Primary seating" – chairs and benches – usually offer superior physical comfort to "secondary seating" – ledges and steps.

Because the seating steps at the two squares do not allow for an optimal seating height of at least 30 cm, the sitter must extend his or her feet two or three steps down, forcing a specific position. Sitters must squat if they want to sit with their feet on the step below them, which is uncomfortable for many and impossible for the elderly (Figure 55). The primary seating alternatives that offer desirable seating height, are the benches at Kizilay square in front of shopping mall and the benches in Guven Parki. It should be noted that these alternatives have other advantages, such as a location for the benches under a tree and the ability to purchase a drink at the café.



Figure 55. Importance of sitting height in Kizilay square

In Ulus square because the place is not designed for sitting and spending time properly the only option for the primary seating are the chairs in front of cafes which are not public and they are the property of the cafes.

Mobility

There is only one mobile seating option at Ulus junction, and even that option is limited in some ways. The outdoor café chairs at Ulus Square are movable, allowing café patrons to face each other, the sun, or any interesting event taking place on the square. However, the fee that must be paid in order to use the moveable chairs also limits their accessibility. In order to use the seating alternative, you must purchase something from the café (although some use the chairs without buying anything). The seating option has two limitations in terms of mobility. It is mobile if you can afford the admission price, and it is mobile if you only want to sit in the designated seating area.

Grouping

In terms of enforcing loneliness through isolated seating, neither of the squares have poor seating distribution practice. At both squares, the majority of the seating is on stone benches and chairs in front of cafes. Additionally, it seems steps allow groups of people to position themselves in offering a wide variety of possible groupings ways with various levels. Steps accomplish this without obstructing single urbanites' ability to choose a location away from other people. It's neither forced socialization nor forced isolation.

Social comfortability

Social comfortability can include the provision of a socially comfortable total number of available seats. However, in this study the used graphs compare total sitting activity rather than the percentage of effective capacity used. It could be argued that Kizilay has more total sitting activity simply because there is more seating available, but the question is how many of the available seats is used. The percent of effective capacity is a fascinating inquiry since it indicates how much accessible seating is really used (Mattsson, 2019). But the argument that seats in Kizilay are used more than the ones in Ulus falls apart when the two actual percentages are displayed. Effective capacity for Kizilay square is 75% and Ulus Square 100% on average every hour. This means generally every hour 75 percent of total sitting are used by people at Kizilay square. Compared to this, in ulus square all the provided areas for seaters are occupied every hour. However, this does not mean that the quality of seats and number of them are in a better condition in Ulus than Kizilay. This is one of the reasons for considering totally sitting activity aspect rather than effective capacity in this study. Additionally, another reason is both squares can theoretically seat the same number of people due to their same amount of area, but Kizilay provides more opportunities to sit. Thus, the total sitting activity is a valid point of criticism.

Another interpretation for social comfortability is the degree of variety and diversity in an environment (Whyte, 1980). This means as much as a space can provides variety and diversity of options for different preferences of users in different ages, sexes or physical conditions, it is more socially comfortable. For instance, Kizilay with a large number of similar types of seating on the steps around the statue and having a large number of overall seats create variety and diversity of seating options. With offering seats around the pond,

stairs of statue in park and stone benches in front of shopping mall, different positions will give varying degrees of sunlight or shade, varied closeness to the open pond area, and different levels of surrounding activity. The sheer amounts of seats available to pick from in this scenario increases the opportunity to choose. In ulus square there are some alternatives to choose from for sitting activity such as cafes and some stairs, however; the variety is not in the same level as Kizilay.

Both squares' steps allow for 'straight sitting,' which means that people can sit next to each other, all facing the same direction (Cooper Marcus & Francis, 1990). This allows a large group of people to sit close together without having to look each other in the eyes. However, it also enables people to sit in pairs or groups and angle themselves towards each other (Mattsson, 2019). The age of plaza users was not recorded in this study but it seems elderly people mostly prefer to sit on the physically comfortable chairs with a relaxing view to the fountain in park. The stairs around the statue and the stone benches in front of shopping mall are used mostly by middle age and young people which needs a little bit physical ability to go up through them or sit without a need to lean on.

Both squares with the cafes, chairs and stairs in different areas provides the possibility for single users – allowing people to sit near other people without enforcing eye-contact – for groups — open up the possibility for two or more people to engage in a conversation. Additionally, steps give the alternatives of sitting at different levels.

Chapter 6

Discussion and Conclusion:

This thesis examined inherent relationship between human behavior and physical built environment through human-centered approach. In this regard three main questions aimed to be answered. First, are the choices and behavior of human being dependent on the physical built environment? What was found in this study is physical elements of space have a direct impact on people's behavior. Human interaction with surrounding bounded closely to the features of it and the quality of total social behavior in an urban space.

Second question was: what are the attributes of physical built environment that influence and make difference in squares' quality of public behavior? There are a wide range of parameters that can impact on public behavior in public spaces. Variety of tangible and intangible features are influential in different social, commercial, psychological, cultural, physical and political areas. However; it was not possible to cover all of them in the limited time of this study. Because the tangible elements are more accessible and easier to record, the focus of this was on physical factors. Five main parameters were tested in both squares of Kizilay and Ulus: Thermal comfort, psychological comfort, aesthetic, human interaction and comfort of use. Each of them has sub-categories based on which each parameter can be evaluated. The relationship between these parameters and their effect on the humans' activity in both squares were the third question which was answered in fifth

chapter. Here a general concluded evaluation of the results for the relationship between these parameters and each corner of square were provided in this section (Table 2). Of the more pertinent in Kizilay square were thermal comfort, edge effect in psychological comfort category, male and female users from human interaction category and access plus social comfortability from the last category which is comfort of use. Enclosure, subspaces, multiplier effect were second rated in terms of their connectivity to square. Optimal elevation, positive-negative space, piano effect, optimal square dimension, planting, water effect, visual quality and triangulation effect were the ones that were hardly noticeable in the square.

In Ulus square, the number of related parameters is limited compared to Ulus square. Thermal comfort, enclosure and positive-negative space are the most observable ones, however; they were connected to only two of the four corners. Lack of other parameters were observed in Ulus square (Table 3).

Table 2. General evaluation of physical parameters' relatability to Kizilay Square.

Categories	Parameters	1.Entrance plaza of shopping mall	2. Boutique (KOTON)	3. Bank (COLLINS)	4. Guvenlik park
Thermal Comfort		*	*	*	*
Psychological Comfort	Optimal Elevation				*
	Enclosure	*		*	*
	Positive and Negative Space				*
	Sub Spaces	*		*	*
	Edge Effect	*	*	*	*
	Piano Effect	*		*	
	Optimal Square Dimensions				
Aesthetics	Planting				*
	Water Effect				*
	Visual Quality				*
Human Interaction	Multiplier Effect	*	*		*
	Triangulation Effect				*
	Male & Female Users	*	*	*	*
Comfort of use:	Access	*	*	*	*
	Intricacy	*	*		*
	Social Comfortability	*	*	*	*

Table 3. General evaluation of physical parameters' relatability to Ulus Square.

	Parameters	1. Open plaza	2.Social faculty of Ankara university	3. Museum	4. Boutique (COLLINS shop)
Thermal comfort		*			*
Psychological Comfort	Optimal Elevation	*			
	Enclosure	*			*
	Positive and Negative Space	*			*
	Sub Spaces				*
	Edge Effect	*			
	Piano Effect				*
	Optimal Square Dimensions				
Aesthetics	Planting				
	Water Effect				
	Visual Quality	*			
Human Interaction	Multiplier Effect				
	Triangulation Effect	*			
	Male & Female Users	*			
Comfort of use:	Access				*
	Intricacy	*			
	Social Comfortability	*			

Stationary activities focusing on standing and sitting activity were different for Ulus and Kizilay square based on the experiment had been done for 6 days in summer 2021. Kizilay square had nearly three times more stationary activity than Ulus (Kizilay: 1392.66 and Ulus: 446.21) considering that thermal condition for both squares were nearly the same. Average temperature of the days that both experiments conducted in Kizilay was 26.33 centigrade degree whereas it was 26.76 centigrade degree in Ulus. Physical location and surrounding functions look like each other at both. This similarity between external circumstances laid a comparable base between two squares with focus on their physical design attributes in micro scale. Physical design conditions were evaluated based on the five parameters mentioned. The overall conditions of these seven parameters are better in Kizilay square than Ulus (Figure 56).

There is high rate of provided shaded places, variety of view options to choose from, having alternatives to sit in group or individually, green area and tree effect, triangulation effect because of seeding birds and photography, more defined subspaces, mixed used and variety of opportunities for different age and sex groups, water effect with the pond located in Guven park, Presence of people, provided space for women activities and easily accessible condition for normal and disable users made Kizilay square more people-friendly than Ulus. Some other elements such as enclosure, optimal square dimension, negative and positive space were not well defined in both squares based on the definition

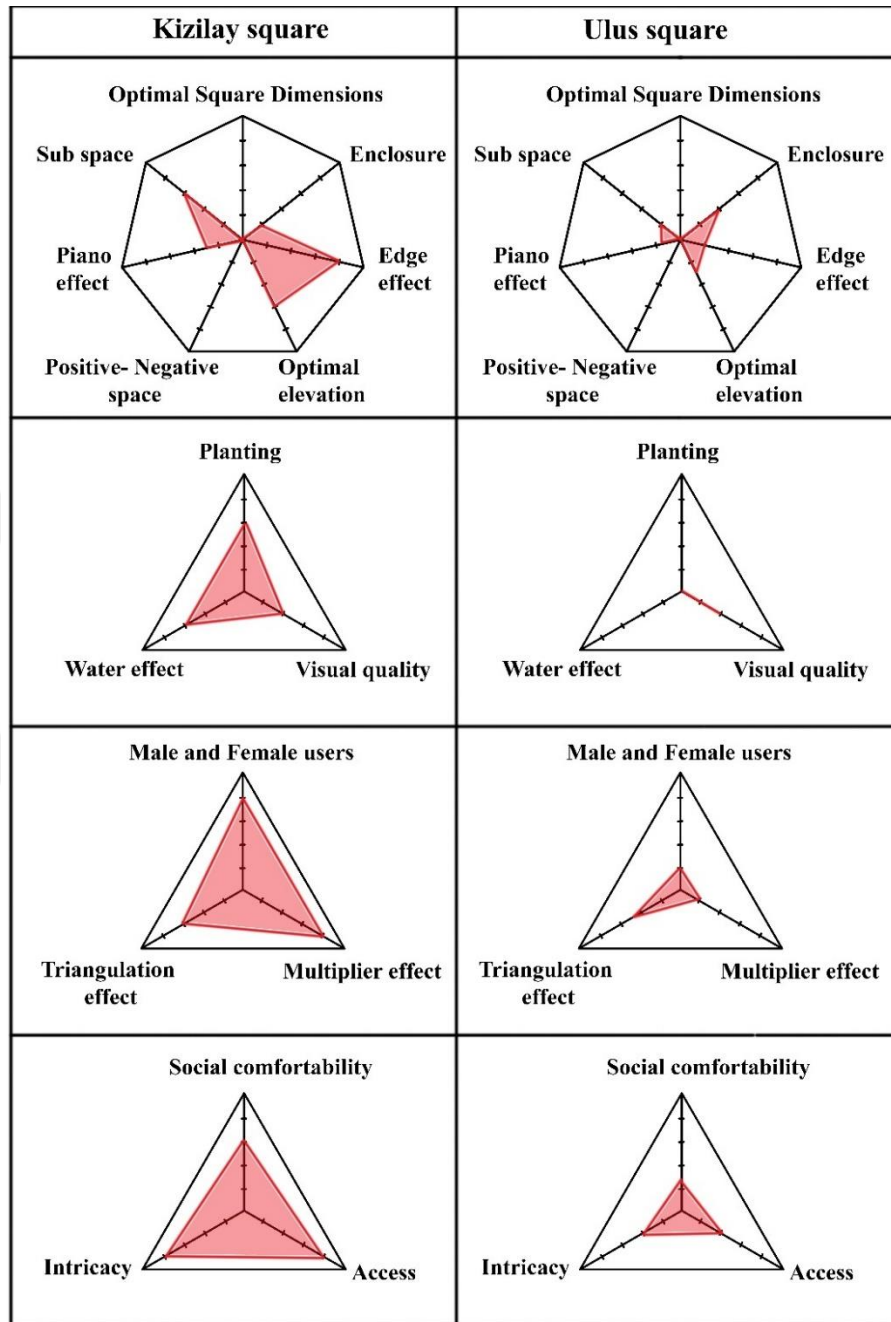


Figure 56. General comparison between Ulus and Kizilay based on five categories

provided in literature. It should also be mentioned that Ulus has more rich historical identity compared to Kizilay square, although it is not influential in its popularity among people to spend time there. People still prioritize Kizilay square for recreational and stationary activities.

How to evaluate these seven items was the fourth concern in this study. I framed my methodology based on suggested new method by Gehl and Svarre (2013) and Matsson (2019). What they offer is a systematic direct observation to track, record human activities by tools like counting, mapping, daily notes and photographing. Three days were spent for each square (from 8 AM to 5 PM) and stationary activity of people were observed 10 minutes every hour. Density maps of stationary activity for each square were created. The outcomes from these maps were supported by diagrams. Some of the conclusions are: Why some public spaces are functional and being used can partially be related to how much physical design of public square can respond to categorized factors (thermal comfort, psychological factor, human interaction, aesthetics and comfort of use) and how much satisfy societies need. However, an ideal condition cannot be expected to provide the condition for bringing people to a space. Comparing the spaces that gets good impression from public interaction with the ones that fails can guide to a catalogue of attributes effective in successful design qualities of spaces.

Second conclusion is the effect of satisfying autonomy need is undeniable in people's preference of spaces. As much as people are given this freedom of choice by having different offered options, they get more satisfied by designed place. It makes them happier if they know they can have the option of sitting and choosing between benches or stairs if they want to. Kizilay square with the variety of activities offers, gets more priority in people's choices because of its autonomous physical design via offering variety of alternatives for social and outdoor activities.

The executed experiment faced some limitations. This study was executed during the pandemic because of covid-19. There was time restricted time in doing outdoor activity. Therefore, studying stationary activity in the night hours was not possible. Additionally, the focus of this study was on the pick hours during the day which was day time.

Also, virtually any occurrence in public life such as how many are sitting, how many are standing, how many are talking, how many are walking, what gender are the users, how old are they, did people come in a group, how many are looking at their phones and so on can be registered (Gehl & Svarre, 2013). The choice of gender (female or male), posture (seated or standing), and position of these interrelated categories or time of the study are influenced by the constraints of the method's implementation as well as the research's focal area. Only the data that is required to answer the study questions will be collected.

Adding to this, in studying human behavior and its relationship with the environment, various elements in different social, physical, political, environmental, commercial, economic, cultural areas, and so on are influential. However, it is not possible to cover all

of them in the scope of master thesis. Hence, this study brought the focus on physical aspect of selected case studies. Because the aim of the study was comparing the two squares in terms of their public behavior difference. What is noticeably different between them in contrast to their nearly same cultural, functional, locational, political situation was their physical feature of urban design in micro scale.

However, these limitations open spaces for future studies. There could be many other possibilities like experimenting both squares on weekends and weekdays, in day and night hours or different seasons, to compare their differences. Additionally considering or combining other dimensions like cultural, social. Psychological factors.

Bringing focus on the designing aspects of square can be another possibility for future studies. Uncovering about the reasons behind the differentiation of public life between two squares in more detailed way would open opportunities to offer applicable design suggestion to improve public life of both squares.

Appendix

Table 4. Stationary mapping data for Kizilay square

Date : 25/06/20	Sitting Female	Standing Female	Sitting Male	Standing Male	Sitting	Standing	Females	Males	Stationary Ad	Weather	Temperature
8:00	6	1	8	3	14	4	7	11	18	3	20
9:00	12	6	40	17	52	23	18	57	75	4	22
10:00	11	11	20	8	31	19	22	28	50	4	23
11:00	28	24	35	33	63	57	52	68	120	5	23
12:00	31	21	45	27	76	48	52	72	124	5	24
13:00	57	33	57	42	114	75	90	99	189	5	24
14:00	66	39	75	53	141	92	105	128	233	4	24
15:00	0	48	0	54	0	102	48	54	102	1	24
16:00	0	50	0	54	0	104	50	54	104	1	24
17:00	0	51	0	52	0	103	51	52	103	2	24
Whole Day	211	284	280	343	491	627	495	623	1118		

Date : 26/06/20	Sitting Female	Standing Female	Sitting Male	Standing Male	Sitting	Standing	Females	Males	Stationary Ad	Weather	Temperature
8:00	4	3	7	5	11	8	7	12	19	3	26
9:00	8	10	16	8	24	18	18	24	42	3	26
10:00	15	11	32	10	47	21	26	42	68	3	27
11:00	20	10	36	15	56	25	30	51	81	4	28
12:00	28	20	48	10	76	30	48	58	106	5	28
13:00	53	41	60	47	113	88	94	107	201	5	28
14:00	40	53	74	56	119	109	93	135	228	5	28
15:00	32	54	64	56	96	110	86	120	206	5	28
16:00	62	41	83	71	145	112	103	154	257	4	28
17:00	71	28	121	44	192	72	99	165	264	4	27
Whole Day	333	271	546	322	879	593	604	868	1472		

Date : 27/06/20	Sitting Female	Standing Female	Sitting Male	Standing Male	Sitting	Standing	Females	Males	Stationary Ad	Weather	Temperature
8:00	5	2	6	4	11	6	7	10	17	4	26
9:00	12	7	26	22	38	29	19	48	67	4	27
10:00	8	15	25	13	33	28	23	38	61	4	28
11:00	21	16	42	14	63	30	37	56	93	5	29
12:00	30	15	42	13	72	28	45	55	100	5	29
13:00	75	30	68	45	143	75	105	113	218	5	29
14:00	63	39	45	62	108	101	102	107	209	5	29
15:00	62	23	77	69	139	92	85	146	231	3	29
16:00	89	34	124	58	213	92	123	182	305	3	28
17:00	82	51	11	43	193	94	133	154	287	3	27
Whole Day	447	232	455	343	1013	575	679	909	1588		

Average	Sitting Female	Standing Female	Sitting Male	Standing Male	Sitting	Standing	Females	Males	Stationary Ad	Weather	Temperature
8:00	5	2	7	4	12	6	7	11	18	3.33	24
9:00	10.66	7.66	27.33	15.66	38	23.33	18.33	43	61.33	3.66	25
10:00	11.33	12.33	25.66	10.33	37	22.66	23.66	36	59.66	3.66	26
11:00	23	16.66	37.66	20.66	60.66	112	39.66	58.33	98	4.66	26.66
12:00	29.66	18.66	45	16.66	74.66	35.33	48.33	61.66	110	5	27
13:00	61.66	34.66	61.66	44.66	123.33	79.33	96.33	106.33	202.66	5	27
14:00	56.33	43.66	64.66	57	113.66	106.66	100	123.33	223.33	4.66	27
15:00	31.3	41.66	47	59.66	112.33	101.33	73	106.66	179.66	3	27
16:00	50.33	41.66	69	61	119.33	84.66	92	130	222	2.66	26.66
17:00	51	43.33	77.33	46.33	128.33	89.66	94.33	123.66	218	3	27
Whole Day	330.33	262.33	427	336	794.33	598.33	592.66	800	1392.66	3.86	26.33

Table 5. Stationary mapping data for Ulus square

Site : 26/07/20	Sitting Female	Standing Female	Sitting Male	Standing Male	Sitting	Standing	Females	Males	Stationary Ad	Weather	Temperature
8:00	0	1	6	5	6	6	1	11	12	4	26
9:00	0	2	10	7	10	9	2	17	19	4	26
10:00	3	1	17	15	20	16	4	32	36	4	28
11:00	6	4	21	21	27	25	10	42	52	4	28
12:00	8	6	24	26	32	32	14	50	64	4	28
13:00	15	7	20	16	35	23	22	36	58	5	29
14:00	4	1	22	18	26	19	5	40	45	5	29
15:00	5	8	18	25	23	33	13	43	56	5	29
16:00	6	5	20	24	26	29	11	44	55	3	28
17:00	6	8	17	19	23	27	14	36	50	3	28
Whole Day	53	43	175	176	228	219	96	351	447		

Site : 06/07/20	Sitting Female	Standing Female	Sitting Male	Standing Male	Sitting	Standing	Females	Males	Stationary Ad	Weather	Temperature
8:00	0	3	4	10	4	13	3	14	17	4	26
9:00	1	2	7	10	8	12	3	17	20	4	27
10:00	3	2	15	18	18	20	5	33	38	4	28
11:00	9	5	21	19	30	24	14	40	54	4	28
12:00	8	8	23	25	31	33	16	48	64	4	29
13:00	17	6	22	21	39	27	23	43	66	5	29
14:00	10	4	25	16	35	20	14	41	55	5	32
15:00	5	4	17	27	22	31	9	44	53	5	32
16:00	4	6	22	23	26	29	10	45	55	4	31
17:00	2	4	15	19	17	23	6	34	40	4	29
Whole Day	59	44	171	188	230	232	103	359	462		

Site : 07/07/20	Sitting Female	Standing Female	Sitting Male	Standing Male	Sitting	Standing	Females	Males	Stationary Ad	Weather	Temperature
8:00	1	1	4	9	5	10	2	13	15	3	21
9:00	2	2	8	8	10	10	4	16	20	4	22
10:00	4	3	13	15	16	18	6	28	34	4	23
11:00	10	6	25	22	35	28	16	47	63	4	23
12:00	12	9	25	25	37	34	21	50	71	4	25
13:00	16	7	30	20	46	27	23	50	73	5	26
14:00	15	3	28	25	43	28	18	53	71	5	26
15:00	8	5	17	17	25	22	13	34	47	3	24
16:00	1	0	4	10	5	10	1	14	15	1	24
17:00	3	3	8	10	11	13	6	18	24	2	24
Whole Day	72	39	162	161	233	200	110	323	433		

Average	Sitting Female	Standing Female	Sitting Male	Standing Male	Sitting	Standing	Females	Males	Stationary Ad	Weather	Temperature
8:00	0.33	1.66	4.66	8	4.99	9.66	1.99	12.66	14.65	3.66	24.33
9:00	1	2	8.33	8.33	9.33	10.33	3	16.66	19.66	4	25
10:00	3.33	2	15	16	18.33	18	5.33	31	36.33	4	26.33
11:00	8.33	5	22.33	20.66	30.66	25.66	13.33	42.99	56.32	4	26.33
12:00	9.33	7.66	24	25.33	33.33	32.99	16.99	49.33	66.32	4	27.33
13:00	16	6.66	24	19	40	25.66	22.66	43	65.66	5	27.33
14:00	9.66	2.66	25	19.66	34.66	22.32	12.32	44.66	56.98	5	28
15:00	6	5.66	17.33	23	23.33	28.66	11.66	40.33	51.99	4.33	28.33
16:00	3.66	3.66	15.33	17.66	18.99	21.32	7.32	32.99	40.31	2.66	27.66
17:00	3.66	5	13.33	16	16.99	21	8.66	29.33	37.99	3	27
Whole Day	61.27	41.96	169.31	173.64	230.62	215.6	103.26	342.95	446.21	3.965	26.76

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Yayınları



