

**FOOTBALL STADIUMS' INTEGRATION INTO URBAN FABRIC
IN CONTEXT OF SPATIAL DISCOURSE**

A Thesis

By

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ABSTRACT

Football and society have always been connected and stadium has become one of venues for social interaction. Because of the zoning policies, economic constraints and urban transformation, stadiums have been constructed within central locations and/or any other location away from the center. The locations have a clear impact on stadium usage. People react differently to this type of venue and its neighborhood they use for socialization and interaction. How does the integration of stadiums within their environment affects the city?

Evaluating the integration of stadiums within the existing urban fabric, this thesis examines 3 different representative examples and interprets the outputs of integration values and visibility graph analysis to make a comparison, considering urban patterns, human behavior, certain routes that users follow when approaching the stadium. Axial lines which used to indicate the integration values of each route around the selected stadiums, were juxtaposed with the behavioral analysis.

KEYWORDS

Space Syntax, Stadiums, Behavior, Environment, Urban Fabric

ÖZETÇE

Futbol ve toplum her zaman birbiriyle ilişkili olmuştur bu nedenle stadyumlar aynı zamanda birer sosyalleşme mekanı halindedir. Stadyumların devlet politikaları, ekonomik şartlar yada kentsel dönüşüm gibi nedenlerle tarihsel süreç olarak kentlerin farklı noktalarına, kent merkezi yada kent çeperlerine yakın bölgelerde yer alırlar. Stadyum kullanımında lokasyonun büyük önemi bulunduğu gözlenmiştir. Kentliler sosyalleşme ve futbolla etkileşim gösterdikleri bu spor yapısına ve yakın çevresine davranış ve kullanım açısından, aidiyet duygusu, grup davranışları, alışkanlıklar ve futbol klübüyle kurdukları bağ gibi çeşitli nedenlere bağlı olarak, farklı tepkiler verirler. İnsanların pek çok açıdan kullanırken etkileşim halinde oldukları bu yapılar buldukları çevre ve kentle ne ölçüde bütünleşmiştir ve bütünleşik olup olmadıkları kenti nasıl etkiler? Stadyum çevresinde kentsel mekanlar bu spor aktivitesinden maç günlerinde oldukça etkilenmektedir, bu sebeple sentaks değişir mi yoksa maç günleri beliren sosyal mekanlar üretilerek geçici olarak manipüle mi olur?

Her kullanıcının maç günü stada yaklaşımlarında geçtikleri kentsel mekanlarda ayak izleri ve rotalar dolayısı ile kente görünmez dokular artiküle ederler. Bu tezde, İstanbul'dan 3 farklı stadyum seçilerek kentsel dokular, insan davranışları, kullanıcıların stada yaklaşırken kurduğu rotalar, entegrasyon değerleri ve görünürlülük değerleri araştırılarak karşılaştırma yapılmıştır. Çalışma, yıllar boyunca tartışılan stadyumlar kent içinde mi kent çeperlerinde mi olmalı sorusuna alan/vaka çalışmaları ve karşılaştırmalarla bilimsel bir bakış açısı getirme girişimidir. Aksiyel haritalar stada yaklaşımlarda kurulan rotalar üzerinde entegrasyon değerlerini ölçmekte kullanılmış, görünürlülük ve davranış analizleri ile belirlenen stadyumlarda karşılaştırmalar yapılmıştır. Ortalama 1 veya 2 gün süren, her stadyumu 1 km çapında, takip etme, sabit ve hareketli görüntüler ve farklı noktalarda kişi sayımları, sentaktik, morfolojik ve davranışsal olarak stadyum gibi kalabalık kamu yapılarının kentsel bağlamla kurdukları ilişkinin incelenmesi ve bu konuda bilimsel çıkarımlarda bulunabilmek, stadyumların kullanıcılar ve yakın çevreleriyle olan ilişkiyi yorumlamaktır. Aynı zamanda çevre davranış ilişkileri ve “space syntax” mekan dizim metotları ile stadyum ve çevrelerinde kullanıcı-stadyum ilişkisinin incelenmesi amaçlanmıştır.

Anahtar kelimeler: Space Syntax, Stadyumlar, Çevre, Davranış, Kentsel Morfoloji

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CHAPTER I

INTRODUCTION

Stadiums are theatres for sport events on regular basis. The stadium as a building type also has a strong attachment with its user because of its nature. Football and society has always been connected to each other and stadium has become a venue for social interaction.

Because of the zoning policies such as economic constraints or urban transformation, stadiums constructed in center of the cities or any other location with different distances from city center. The locations have a clear impact on stadium usage because many reasons. Different physical environment creates different cognitive maps on users' mind.

The research question is,

People react different to this sport venue and its neighborhood they use for socialization and interaction with football and club's divine meaning for them. How integrated are stadiums with their environment and how they affect the city.

Every stadium has diversified environment thus multiple patterns occur when a user starts his route on a match day. The impact of urban space on user behavior brings out different data from each stadium and its location.

The aim is to analyze different stadiums nearby, with 3 methods, then interpret the outputs of urban pattern, human behavior and integration values to make a comparison. The reason for this research is to conceive scientific knowledge from syntactical, morphological and behavioral analysis for interpretation of specific stadiums environment and how the urban pattern is developed.

CHAPTER II

URBAN SPACE AND STADIUMS

2.1 Definition of urban space

City dwellers, foreigners and first time visitors, share urban spaces. Every interaction between user and space leaves a print on architecture of the city. The past experiences and attributions may lead different reactions of people. Football and stadiums witness people's reactions according to the architecture and social components. Therefore, these experiences have quite important impact on stadium attendance.

Urban space enlightens the dwellers or visitors to accumulate their cultural development, social interaction and their cognition about the city. The built and unbuilt environment that every activity "takes place" have significant role on the users. Kuban, implies that architectural space needs to include public life components as much as its morphology. (Kuban, 1992) The main reasons, that people come to stadiums to watch football live rather than watching it from tv or online, are social interaction, shared memories of happiness as a group and attributions to the team. The architecture of the stadium helps the user to develop his cognitive map with a landmark, the atmosphere of the match, social interactions and group behavior.

Accordingly, we cannot separate the public life from space. Every action that urban space witnessed, the impressions, attributions, experiences on that place become integrated with the environment by public life. The sport activity in a crowded public building, affects the neighborhood because of its architectural volume and crowded human activity. The human flow on matchdays through the neighborhood changes the public life nearby a lot. Therefore, when defining a street in our cognitive map, the public life and its dependents set in our mind. The space experienced gets integrated with the public life and human behavior.

Schultz defines "architectural space may be understood as a concretization of environmental schema or images, which form a necessary part of man's general orientation or 'being in the world'. And distinguish five space concepts: Pragmatic space of physical action, perceptual space of immediate orientation, existential space which forms man's stable image of his

environment, the cognitive space of the physical world and the abstract space of pure logical relations.” (Schultz, 1971)

Also Lynch’s ‘image’ definition suits with Schultz ‘schema’ as; “Man’s orientation presupposes an ‘environmental image, a generalized mental picture of the exterior physical world. This image is the product both of immediate sensation and of the memory of past experience, and it is used to interpret information and to guide action.”

If we consider the sport activity and human relationship, even though the match starts at 8.00 pm, people generally start the game day at 12.00-13.00 pm. The stops they make during approaching the stadium develop their cognitive map of their city. When Lynch defines image of the city, he implies the components of this image; Paths, Edges, Nodes, Districts and Landmarks. Each of them has specific characteristics but the main thing is, every component has a role on the dwellers shape their cognitive map when they experience the environment.

Paths; stadiums location depends on the municipal regulations and planning laws, but the main tendencies are city center stadiums and outside of city center stadiums. In addition, the paths of the city shape the user’s travel to the stadium from a starting point. The public transportation, road infrastructure, morphology of the city has also an impact on the user behavior. The paths of the cognitive map of a stadium user can be a neighborhood’s street or a whole distance with subway underground.

Edges; the edges of the city do not change but the edges of the stadium nearby changes with the user’s cognitive map. The safe zone of a fan can be long distance from the stadium at a bar that fans hang out.

Nodes; the nodes of the paths during a stadium travel can be an intersection point on a highway, a public square near the stadium, an entire park that fans hang out. These intersection spaces depend on the stadium location and the morphology of the environment.

Districts; football supporters usually create the habits of match day and fan groups create their districts of safe zones. These districts of the city are supported and welcomed by the local neighborhood of the team where the fans usually hang out.

Landmarks; the stadium is also a landmark of a city because of its form and volume. There are also the smaller scale landmarks of the stadium nearby. Such as a statue of a well known phenomenon of a team, a specific bar around the corner where the fans usually drink, a well known street food space at a public square, etc. Because a group of people in a crowd on match

day should develop meeting points according to important spots where they can meet each other.

This goes parallel with Schultz definition of environmental schema, therefore the urban space takes its form, from the users' experience of environment, their cognition and their reaction to get oriented with the environment.

Therefore, urban space, has a relevant impact on public life and dwellers cognition. It is connection with the users' psychologically, visually also helps him to generate a reaction to the environment.

Jan Gehl describes as, "Public life changes constantly in the course of a day, week, or month and over the years. In addition, design, gender, age, financial resources, culture and many other factors determine how we use or do not use public space. Life between buildings had been forgotten, pushed aside by cars, large scale thinking, and overly rationalized, spatialized processes. (Gehl, 2011)

A square that we spent most of our childhood can be replaced with a car park of a gated community years after, or a spot that we were enthusiastic about spending time may not get our attraction after growing up, the whole neighborhood may become the construction site of an urban transformation process, even the concrete step in front of our office we used to have our lunch may be forgotten because of busy work life. It changes and gets integrated with the current characteristics at that time as a living organism.

This statement also can be interpreted with stadium nearby neighborhoods. Some stadiums are reconstructed at a different location or renovated which affects directly the public life around. In addition, when a crowd group of people completely change their stadium route to a different neighborhood, the new public life of the new neighborhood would react and get used to the new conditions in a while.

Thus, "Urban spaces are living organisms that answers, changing socio-economic conditions and cultural fabric of places" as Alexander describes. (Alexander, 1987)

2.2 Urban open spaces

Components of urban open spaces related with stadiums' environment:

Streets

People experience streets everyday but the quality of the experience depends on the street. Therefore, the experience is quite different according to the traffic around. People like to use really fast and only use the street to pass if the street is busy and have long hours of traffic and don't tend to spend time on the street. But they use the street as a space to spend time while passing through if the street has no traffic or not busy as much as the main arteria and tend to connect with the environment during their travel. If the whole stadium's human crowd considered, some stadiums change the public transportation and car traffic in a negative way. Therefore, the local people who does not use the stadium, would like to change their route to home only for that day.

Streets are the most affected open space from a stadium. The whole match day crowd have to pass through streets to reach the stadium. Also the post game crowd, traffic, trash of the people drinking near effects the streets linked to the stadium. From the match day starts to the post game hours, the people keep experiencing the streets.

Although transportation of people, animals and goods were the original reasons for the development of streets, over the years they have also been used for many other activities. In ancient days the street played the scene for social activities and civic and religious gatherings (Mumford, 1966). Public parades, coronations, religious events, cultural event sand political demonstrations have all taken place in streets around the world over the years and continue to do so like The Mardi Gras, Pride Walks, Rio Carnavale and St Patricks Day. Similar with this usage of streets, every football team has a street where they celebrate championships. This street generally starts from a long distance from the stadium, where they pass with the tour bus, and meet with fans, and show the cup to the fans on a linear geometry of a street.

Streets were, though, still considered to be primarily for commercial use, but by 1920 sixty streets in New York were closed for children's play during certain hours (Gaster, 1992). Now nearly %80 percent of public spaces are streets.



Figure 1: The street in front of Santiago Bernabeu (Real Madrid)

Streets are generally used by people and roads are primarily used by vehicles. (Lennard, 1992). Therefore, streets are used by children in the city while they grow up, meet other people, get used to the physical environment and learn from it. Thus, the streets witness every step of human life associated with social interaction and spatial cognition through years.

Highbury Stadium was Arsenal's home until 2006. After Emirates Stadium have constructed, even a few streets have changed, the public life around and fan behavior have been affected and adapted to the new environment. On the other hand, Ali Sami Yen Stadyum, was located in Şişli, in 2011 Türk Telekom Stadyumu has opened at Sarıyer, kilometers away at another urban transformation district. Accordingly, the role of the streets in a city is a lot because of its main purpose of connecting the lands but also a spatial component that have an impact on the dwellers social and spatial cognition.

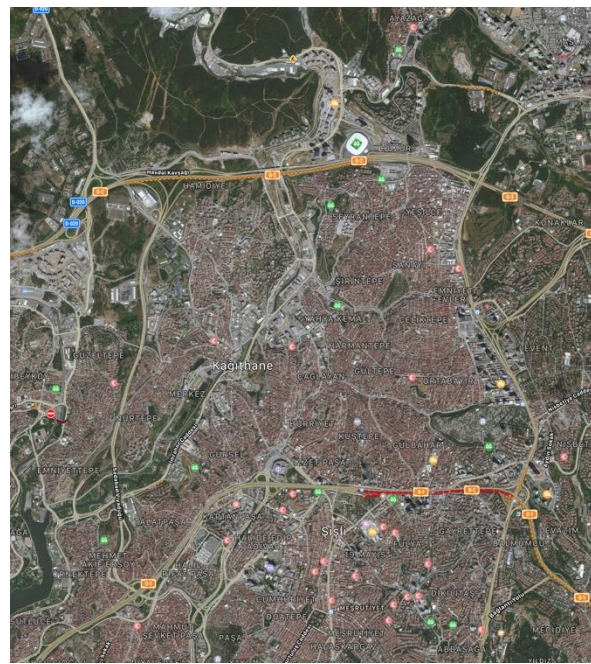
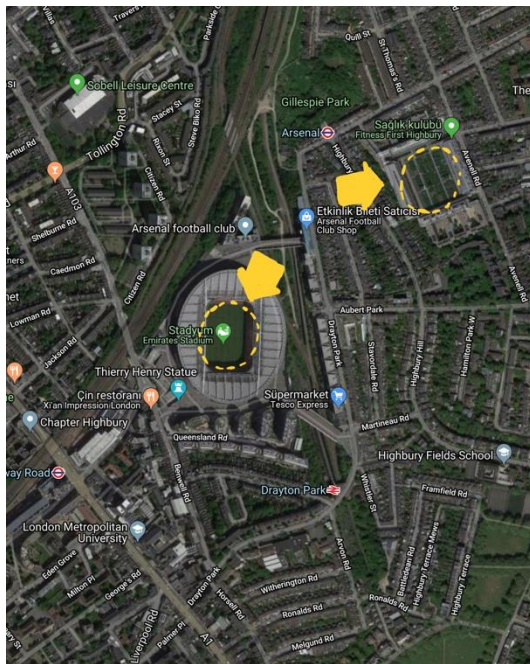


Figure 2: Arsenal's Stadiums, Figure 3: Galatasaray's Stadiums

Kevin Lynch; Each road could be given a coherent form, and the intersections with other paths made clear. Terms such as coherence, clarity and legibility permeate planning literature and recur frequently in works of design aspiration and guidance. They are often used liberally to describe the desired qualities of urban structural features such as street patterns and networks of spaces. (Marshall, 1967)

Squares

In the public sphere, the square has undergone the same development. Market places, parade grounds, ceremonial squares, squares in front of churches and town-halls etc, all relics of the Middle Ages, have been robbed of their original functions and their symbolic content and in many places are only kept up through the activities of conservationists.

Fan zones;

One of the main usages of squares related with football, is fan zone. Fan Zone is a temporary public space where the fans can get socialized, share interests about football, spend time with sports during mega events like Champions League Final, World Cup, or European Cup Final. This kind of events attract too many people around the world, therefore the Fan Zones generally include fans with different nationalities. In addition, the people gather around the fan zone generally communicate with social actions, such as, playing mini football, playstation games

inside the fan zone. Also, the information desks, temporary street food and beverage facilities creates a neighborhood atmosphere to the visitors coming from another country.



Figure 4: 2016 Champions League Fan Zone, Duomo di Milano (irishmirror.ie)



Figure 5: Fan Zone at Georgesquare Glasgow (pinterest.com)

Celebration squares;

Football clubs usually celebrate Championship at the largest square or street of the district, or the city. The historical usage of the squares are celebrations and human gatherings, therefore football clubs bring the Cup and the footballers with a high bus, into a square to create higher visibility and gather the fan to celebrate. For example, Cibeles, one of the greatest squares in Madrid, becomes a fantastic place of gathering during the celebration. After too many championships, fan directly tend to gather around Cibeles, even though the team bus would not come that night. This place attachment and behavior is similar to the term habitus, is referred in following pages.



Figure 6: Real Madrid and Juventus Celebration Squares (gettyimages.com)

Parks

Green areas in a city always attracts the fans. Many stadiums around the world does not allow alcohol consuming interiors, therefore the fans generally like to hangout at the nearest pub or park before the match starts.

Şairler parkı, is a park in Beşiktaş with walking distance to the stadium where the fans hang out, march, drink and socialize before the match starts.

Also, there Fan Parks, specifically for temporary organizations like Fan Zones, but located inside a huge park o a city. There are live broadcast of the match, food and beverage and toilets inside a Fan Park. On the other hand fan parks are generally funded by sponsors, but other local parks, that fans hang out spontaneously before the match, aren't funded by anyone but fans.



Figure 7: Yoğurtçu Parkı, Kadıköy, Şairler Parkı, Beşiktaş (24saatfutbol.com)

In addition to the formally designed open spaces available to the public it is important to acknowledge that incidental spaces can be used as they provide a range of opportunities for people in the city, including play for children. This has clearly been the case with community gardens, where such facilities have often sprung up on plots of land following the demolition of other buildings.

In addition to these natural green spaces, there are incidental spaces that are designed and/or managed. Such spaces might include small areas by a road junction or some local shops or even a bus stop. The smallest of these may include only one seat and a tree.

2.3 Stadium definition and their impact on cities

A sports stadium is essentially a huge theatre for the presentation of heroic feats. (Sheard, 1994) This function and its monumental scale makes the stadium a powerful architectural product. The first sport event established is found in Greek athletics at the first Olympic Games in 776 B.C. (Miller, 2004) In principle the ancient Olympia was functioning as one big venue for the most magnificent architecture and art erected for both spiritual as well as physical rituals. Many other sport venues have developed during years like Hippodromes, Circus Maximus, Colosseum, and U shaped Olympic stadia, the common point of all sport venues is, people need a space to watch sport but also need to come together and share common interest to get social. This event can be a heroic feat, bullfight, a baseball game, a concert or a football match.

The stadium as a building type saw a revival after the industrial revolution. There was a growing demand for mass spectator events from the public, there were entrepreneurs who wished to cater for this demand and there were new structural technologies to facilitate the construction of stadia or enclosed halls. (Vickery, 1994)

Now, football stadia predominate in Europe and much of South America, owing to the popularity of the game in these countries. But different traditions in these different regions have led to a variety of architectural types. (Vickery, 1994) In United Kingdom, which has great interest on football, the spectators' seats are closer to the pitch, than other European stadiums. This detail of construction keeps spectator really close to the game but on the other hand it limits the space to make a running parkour. In addition, South America is also enthusiastic about football and have excited fan groups, therefore some parts of the spectator area do not

have a seat. This implementation allows all of the fans to stand and intervene the game quickly to support their team.

These examples show that the relationship between the stadium, players and spectators is quite important dependent on stadium architecture. If a regular European Cup match is considered 80,000 spectators approach to the stadium 3-4 hours before the game (for pre-game activities) and enter the stadium 1 hour-15 mins before the game, and leave the building 10 minutes after the game at the same time. (except the visitor team spectators) These number of people spend time before the game around the stadium and public spaces on neighborhood nearby and contact with the environment. The merchandise shops, bars, restaurants, small cafes, parks, squares are strongly affected by this people, therefore the urban tissue. The quality time they pass until match and leave the neighborhood safely will affect the stadium attendance, and keep the relationship alive between the user and the stadium nearby.

The global financial power of sport in general is increasing and the twenty-first century is gradually establishing sport as the world's first true global culture. Stadia, the buildings that accommodate sport, are becoming among the most important buildings any city of the future can build, partly because of their power as an urban planning tool.

2.4 Stadium zoning policies and relationship with urban space

Early stadiums were having problems with parking space, transportation and the interest of fans because they were located outside the core of a city. In recent stadiums this problem is solved with public transport and located in the core of the city. In contrast it has its own problems about hundreds of fans coming to this building with public transport and the effect on the housing around the stadium. The researches about these developments are suffering because of poor methodology, small sample size and issues of causation. When considering about the urban outcomes of this kind of construction has different variables such as external and internal factors.

The stadium needs to be located in the core of the city and include more mix usage rather than only a football activity. stadiums with museums, offices and other functions will attract more people and keep the place alive. (Aksu, 2012)

A stadium should be situated in a location which is sufficiently large to provide spacious and safe external public circulation/activity areas and marshalling space for service vehicles and functions. While it is normal for the arrival of spectators at the stadium to be spread over a sufficiently lengthy period to prevent undue congestion near the turnstiles, the majority of spectators will seek to leave the stadium at the same time, resulting in significant space requirements.

The availability of sufficient external space will also allow for future extension or redevelopment. Many famous stadiums around the world are in heavily developed locations with roads, buildings and canals immediately adjacent on all sides. The renovation and redevelopment possibilities are restricted by their limited site size and this is not a desirable situation. (FIFA)

The example of Wembley Stadium and TT Arena improves the idea of planning. The London metro transportation network and İstanbul's network shows a huge difference. In London, the stadiums are close to each other and the metro network is well planned. In Istanbul there's long distances between stadiums and there are only a few options to reach the stadiums; Wembley Arena is designed in the context of urban transformation, so it has a planning with, urban spaces, a residential area, the stadium, offices, park, a public space, and these live together with the stadium. TT Arena has this background of urban transformation, too. But the planning is below these standards and there's only the different owned residential blocks around and a few public transportation options.

Football is a huge marketing area in this century. Therefore, big events of football have impact on the city. With such events like European Football Championship and UEFA Champions League, the host cities have the chance to introduce their city to the world.

During these kind of organizations, the cities have a lot of changes in urban spaces. These differences are searched with observations, cartographic documentation and qualitative interviews in the article in Euro 2008, Zurich. Mainly, the transformation of Zurich into a fan city. This transformation includes the football's impact on public spaces, fans and residents'

behavior. Because the event is not only a sport competition, it is also an occasion that effects the whole urban neighborhood.

The stadium becomes a landmark which witnesses temporary and long-term changes in urban spaces. There's also the patterns that created by the fans during these kind of events explained in "fan miles, fan zones, fan boulevards, public viewing" keywords. Also the patterns are generalized in urbanization of the event and the eventization of the city and these two needs to support each other because with huge events like Euro 2008 will describe the city afterwards. The host cities in such event like Euro 2008, create specific routes for spectators to give them a comfortable fan area. These roads generally lead to the stadium from specific zones and end up with a public square. These roads are defined as "Fan Miles" and the huge area they meet as "Fan Zones". Because it's a marketing chance, the organizations put some temporary statues, banners, or huge figures of footballers to create this Fan Zone. Therefore, they make a cognitive map on the fans with these temporary landmarks which is also a marketing strategy. The fan zones have a great impact on fans because they spend the whole day in this urban space and change its patterns. (Hagemann, 2010)

2.5 User – Stadium relationship in context of environment-behavior studies

Society and architecture are integrated terms for the reason that society is the key fact that experiences the environment. The forms around dwellers have significant impact because the architecture around is accumulative by meanings and attributions of the people who contact them.

Norberg Schultz implies that; "Architecture should serve the public world. This does not mean we hypothesize one collective system of values and let everything determined by that, rather we should use the role structure of society as our basis. Creating architectural space, means integrating an intended form of life in the environment."

He also describes symbolic forms, signifying that measurable physical forms mediate a higher meaning. The symbol-function is basic to all human behavior. Without symbols which concretize his value oriented being in the world, man would be inexpressive. Therefore, forms are expressive because they engage, they mean something to us.

Every architectural space we have been to, has great influence on us even the space is unpleasant. The individual's experience in a space is more than the geometry around, the intangible phenomena of feelings and effect of the environment, keeps developing in dwellers cognitive data.

Buildings have a peculiar property that sets them apart from other artefacts and complicates the relation between usefulness and social meaning. Buildings are not just objects, but transformations of space through objects.

In other words, Bill Hillier describes as; “Human societies are spatial phenomena: They occupy regions of the earth's surface, and within and between these regions material resources move, people encounter each other and information is transmitted. It is through its realization in space that we can recognize that a society exists in the first place. But a society does more than simply exist in space. It also takes on a definite spatial form and it does so in two senses. First, it arranges people in space in that it locates them in relation to each other, with a greater or lesser degree of aggregation and separation, engendering patterns of movement and encounter that may be dense or sparse within or between different groupings. Second, it arranges space itself by means of buildings, boundaries, paths, markers, zones, and so on, so that the physical milieu of that society also takes on a definite pattern. In both senses a society acquires a definite and recognizable spatial order.

It is the fact of space that creates the special relation between function and social meaning in buildings. The ordering of space in buildings is really about the ordering of relations between people.

When the user exists in an urban space, contacting every component of physical environment he arranges the built and unbuilt environment in spatial order in his cognitive map according to his route until approaching the building. Therefore, we assume that every user in city is experiencing urban space because of his activities.

Experiences have always been at the heart of the entertainment business (Holbrook & Hirschman, 1982), and sporting events are no exception. Fans create bonds with the stadium because of football, however the repetition of stadium attendance depends on the user's satisfaction on match day. Recent studies show that stimulated five senses during the match according to the architecture of the stadium, also the environment around.

Although the long-term health of any sport facility is directly affected by the quality of the sporting event, it is also dependent on the quality of the spectator experience (Sheard, 2001). Going to the stadium for the sport event must be different than watching the match from the

television. First, the stadium allows the users to be in the heart of the experience, second, the pre-game experience around the stadium. Especially in big and crowded cities like İstanbul or other European cities, people become fragmented and isolated from the city because of their jobs and other problems. Lack of social life push people to search for an event that is a consuming material but also a socialization activity. Sports, have also been a gathering component of social life in history. The same interest of watching sports live, fan ship and team loyalty create a special knot between the user and the stadium. In this regard, a stadium becomes an important outlet for social interaction in a society and gathers spectators to celebrate a unique experience (Westerbeek and Shilbury, 1999). Also the stadium cannot be identified as only a building, because of the effect on the city image and fans approach to the stadium takes a long time period in a day, the stadium and nearby neighborhood cannot be separated.

According to Bale (2000), as fans become attached to their home team, they also develop a “love of place” relationship with its venue. Therefore, the sports team and the stadium creates the sense of home for the individuals related with it. The connection between the fans and the sports venue depends on the attributions deeply rooted with the feel of belonging to a place, memories through football and stadium and other meanings to the fans. Accordingly, the attributions to a stadium reinforces the sense of home, socialization and stadium attendance.

In addition, stadiums take significant space on urban tissue, from zoning to infrastructure they have significant impact on the city, therefore the users. If the relationship between the stadium and the city is strong and positive, the users tend to use the open and closed areas related with the stadium more often, therefore this huge mass plays a positive role on urban transformation, otherwise stadiums will only be concrete structures that is used only 2 hours in 2 weeks.

The term “habitus” that P.Bourdieu implies the social practices that characterizes a particular social group, is derived from Latin word *habere* meaning “to have” or to hold”. (Bourdieu,1983) This term refers to the construction and reproduction of social practices that characterizes a particular social group. This particular habitus is primarily manifested in the most basic ties between football and supporters and the complex and diversified sports culture. (Elias and Dunning, 1992).

The idea of the term habitus implied by Bourdieu, is generally stated with economics and politics, but at social level, people tend to repeat the actions of specific individuals like a group, friend, or elderly for socialization in a group to get along. If a child goes to a stadium for 2 or

3 times, he will shortly try to repeat the activities of his older brothers do before, after and during the match. Accordingly, after years, a group of people influenced by their friends or family will repeat the actions create a habit. These habits can be activities but also the environment will have an impact on individuals when they start to create their route from their home to the stadium. The transportation, stops for food and drink, the spot they hang out before the match starts, and the general behavior would be generated according to their habits and except the emergent behaviors.

This social practices, embodied tendencies and habits done generation to generation to identify their social world, react and structure it. The group behavior before, during and after football events and the special bond between supporters, players and club point out the football habitus that engendered by the social practices that held on every generation by the supporters.

Social and spatial attachment of user's attribute leads to the significant image of the stadiums, that has remarkable status on the inhabitants nearby and users' cognition. These behavior manifests the social action according to Weber, especially the affective action under the influence of customs and habits, indicated with human attachments to their actions and interactions within the specific social contexts. Their habits came along through a sport event usually every two weeks conceives the regular actions that reinforced by emotional and social attributions.

Stadium user is generally having more relation with the context that the activity takes place more and most of other public buildings. The structure binds the relationship between stadium and user can be depicted with Weber's social action terms. First, the supporters generally influenced by their elderly or other supporters' habits, which means they learn how to reach the stadium, how to spend the day until first kick, when to arrive, where to eat, etc. It's nearly impossible to see a single man just hanging until the game alone doing nothing. The social practiced educated him to act traditionally what he learned from society that goes parallel with Weber's *traditional social* action. Also affective action indicates the actions influenced by emotional stats. This behavior embodied with during match behaviors like hugging the nearest person after a goal, cursing after a misjudged position or singing the same march when the team enters the pitch.

Football habitus that underlies in every local team can be measured differently because of the socio cultural norms of the context but also with the urban fabric of nearby. The behavior may emerge variously in consonance with the urban pattern of the city or local area. Therefore, the

behaviors come up as reactions to the environment simultaneously with the action, also the built and unbuilt environment have a significant impact on human behavior when approaching the stadium.

Advantages and disadvantages of stadiums locating at city center and out of city

Social activities have various different characters depending on the situation in which they occur. Ranging from comprehensive greetings, conversations and discussions to less intense public occasions, where superficial passive contacts (see and hearing contacts) act independently as a significant form of contact. These initial social contacts may in all cases be further developed, if a common foundation is created, where people have background, interests or problems alike. (Gehl,2010) These aspects of initial social contacts are highly evident in a minor local community, stressing the distinct social potential of local assembly around various activities.

The physical environment has a great impact on human behavioral patterns. The dimensions of the space, functions, materials, textures effect the behavior. In the aspects of social interaction, individuals are influenced by this components according to their sensory.

The reason people need and choose to go to a sport facility especially a football stadium is socialization and watching a sport event. When the socialization is one of the most important factors that people watch sports at a stadium, the physical environment is quite substantial. Unlike many public events, football and society is deeply rooted and the fans tend to spend whole day at stadium nearby. Therefore, the match day generally starts at 13.00-14.00 to a fan and some special days like a local derby or European leagues people tend to come to stadium nearby at early hours of the day.

The physical planning itself has no influence on the quality, content and intensity of social relationships and activities. However, the surroundings still provide the essential possibility for people to meet and interact and are especially important for creating passive contacts. (Gehl, 2010) Especially on match days, people start to contact the physical environment since they approach to the stadium's region. The main districts of the stadiums will be filled with fans in hours and people start to catch a comfortable space to hang out and drink alcohol before the match starts. Not every individual goes through this process, sometimes the official fan groups gather and hang out and march together at public spaces like parks nearby, in some cases like

champions league with larger crowd's fan groups tend to hang out at fan zones or the squares. The route they follow during the stadium approach depends on the quality of the environment, public spaces, outdoor facilities, and social interactions they encounter. Therefore, with no need of map a football fan could easily find his way through the stadium with maximum physical quality and social interaction. The human flow depends on the integration of the street network and intelligibility of the environment. Yet, the stadiums that locates outside of city does not correspond the satisfactory of physical environment. The stadiums which stays at the outer corner of a city would not have a sufficient transportation network and probably no enough walkable space around and the social interaction before the match accordingly would be less than a stadium in the core of a city.

In urban areas this is exemplified in districts with high-rise buildings, underground parking and lots of traffic, where only few people are walking or staying outside. Contrary to this, we see many people outside in those districts dominated by smaller buildings in human scale, where the indoor spaces are complimented by usable and active outdoor public spaces. (Gehl, 2010) The stadiums which locate outside of city and at a center of high rise buildings and highways encounter this kind of problems like lack of infrastructure and public space, therefore we cannot argue a human flow starts from a zone through the stadium. People generally choose to attend the match on time or an hour before and wait on the security line to enter the stadium quickly with minimum social contact and physical environment interaction.

The problems that stadiums locate outside of city face with;

Planning of stadiums or large scale sport facilities is a comprehensive matter. The planning and design statements needs to be suitable for future solutions and possible problems. Also the main issues about planning a stadium are; accessibility, stadium attendance, environmental impact, location and infrastructure therefore the importance of the location of the stadium is quite important at early planning process. (Gürer, 2013)

The lack of infrastructure brings many problems with itself, when the number of people attending the stadium considered. The transportation possibilities and diverse public transport choices are needed for the crowd. Because the match starts at a specific time, and all the users should reach the stadium from city center without too much interchange.

Atatürk Olympic Stadium in İstanbul, is a stadium which is located outside of city center. On a match day it takes too much time to approach the stadium, and the cognitive knowledge of the environment is nearly nothing because the stadium is not integrated with the surrounding environment and does not bypass any crowded/well known public space. Therefore, the people attending this stadium doesn't feel any attachment with neither the stadium nor the neighborhood around.

However, the general idea about stadiums are better to be located at city center, in some examples if the urban infrastructure is well considered during the urban design process, the stadium can be integrated with the public transport and attract the users and increase the stadium attendance.

The stadiums located at city center, generally surrounded with outdoor facilities like merchandise stores, bars, cafe and restaurants for pre match time period, squares and parks. But it is impossible to serve this much of outdoor facility outside of the city if the stadium zone is not planned enough at design process. The urban transformation generally promises for better infrastructure and revitalized urban tissue but stadiums at urban transformation zone needs extra elaboration because after the design process the stadium may become an empty and uncomfortable public building that does not serve any facility therefore the stadium attendance will decrease immediately. Especially outside of the city, many stadiums are only planned with only one store, and a cafe and the public transportation network. The user-environment connection is critical at an event like football match which aims to connect the people around a sport activity. Therefore, people should get in touch with the environment around and spend time at public spaces and green areas to feel they are related with the atmosphere.

2.6 Stadium and urban growth relationship

Traditionally the sports stadium was a modest facility with a capacity of perhaps a few hundred, serving a small local community and forming part of the social fabric along with the church, town hall and drinking house.

As communities grew larger and more mobile, with ordinary people able and willing to travel great distances to sport events, stadiums became larger and much of the new capacity was needed specifically for visiting spectators.

A major trend of the 1960s and 1970s was the building of large stadia on out-of-town locations where crowds, whether well or badly behaved, would create less disturbance to the everyday lives of people not attending events. (Sheard, 2005) Such locations would also reduce land costs and increase ease of access by private car. The largest developments of this kind are to be seen in Germany, where advantage was taken of post-war reconstruction opportunities, and in the USA, where high personal mobility and the availability of open land made it easier to locate stadia away from the communities they were meant to serve and provide the amount of car parking required. Leading examples of a cross-section of types include: These stadiums tended to cater for a variety of activities to make them financially viable, had huge spectator capacities, and were surrounded by acres of car parking. They were built in a period when spectator sports were attracting markedly increased followings, probably owing to the influence of television; but even so they found it difficult to show a profit.

First, television coverage had improved to the point where people could stay at home and follow the action very satisfactorily in their living rooms; and second, the stadia of the late 1970s and early 1980s were all too often barren places with little by way of spectator comforts. There was also a growing number of violent incidents in various parts of the world (resulting from crowd misbehavior, fire or structural collapse) which probably reinforced people's growing preference to watch from the comfort and safety of their living rooms.

Stadium location has always been a critical issue according to the zoning policies. The main argument about the stadium location is, if it is better to locate the stadiums at city center or outside of city center. The distance criteria between the city center and stadium depends on the urban characteristics of the city. (Aksu, 2012)

Between 1980s and early beginnings of 1990s, governments tend to construct the stadiums outside of the city. This notion also implies that stadiums should have much more seat capacity and become comparably large scale buildings would bring extra profit and also functional. Stadiums outside of the city, brought problems like lack of infrastructure and socialization, also a large scale building staying empty most of the days gave negative impact on city image. Therefore, at the end of 1990s this notion gave place to the stadiums located at city center. The researches about the location of stadiums, mostly the multipurpose stadiums, in the city shows that it's more beneficial and to locate the stadiums at city center. It has also a positive impact

on daily users of the city to have the chance to experience the stadium atmosphere even though they do not attend the match.

The next significant step in the development of the stadium occurred in 1989 with the opening of the Toronto Skydome in Ontario, Canada. The public authorities in Toronto had recognized the problems of out-of-town sites and decided to take a brave step by building their new stadium in the very center of their lakeside city.

The stadium is within walking distance of most of the city center and uses much of the transport and social infrastructure of Toronto. They had also learned, poorly serviced facilities and incorporated many spectator services designed to enhance comfort and security.

In Britain, following an inquiry by Lord Justice Taylor into the disaster at the Hillsborough Stadium in Sheffield (where 95 people died in a crowd surge) there has been a formal report recommending major changes to sports stadia to improve their safety. This document has caused many British clubs to question whether it would be best to redevelop their existing, mostly in-town grounds or to relocate to new sites out of town with all the transport and planning problems entailed. Existing in-town sites have the advantages of being steeped in tradition and being situated in the communities on whose support they depend, but the disadvantage of being so physically hemmed in is that it may be difficult or impossible to provide the safety, comfort and variety of facilities which are necessary. There are proving to be numerous town-planning difficulties in finding new sites.

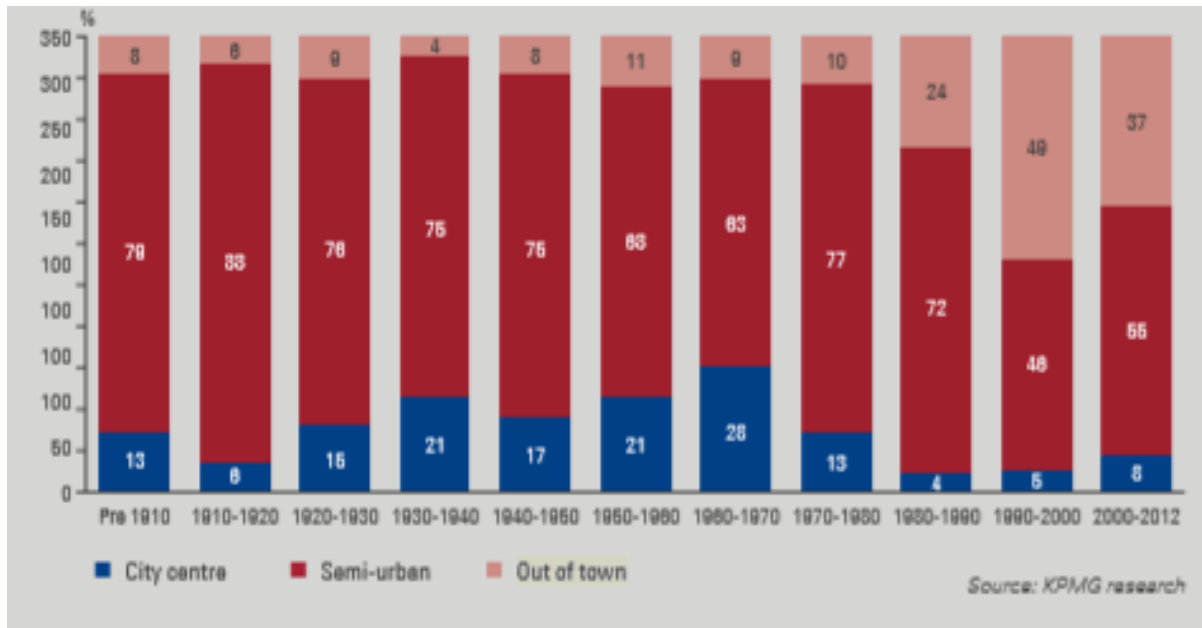


Figure 8. Stadium constructions according to their location (KPMG research)

The figure shows the stadium constructions between 1910-2012 according to their location. The graph shows that until 1960-1970s the stadiums were tend to build on semi urban areas mostly and city center. Semi urban areas are generally close to city center and encourages the fans to use public transportation but as long as out of town stadiums. Therefore, the spatial knowledge does not seem to have a negative impact with a little distance solved by 30 minutes' transportation also does not lose its integrity with city center. However, the technical requirements of current capacity do not seem suitable with city center land costs, the out of town stadiums with well-planned outdoor facilities are not advantageous as city center and semi urban located stadiums.

The stadium attendance on out of town stadiums generally depends on the team's success, accessibility and outdoor facilities and quality of urban open spaces. The unfamiliar physical environment, the isolation feeling from the city, no spatial interaction with environment during the transportation have a negative impact on users' spatial cognition and the users tend to watch the sport event on tv. Yet, one of the important things about football is, how it is related with the society and stadium neighborhood. The neighborhood is effected by the sport event through the instrument of social interaction, people don't want to attend the stadiums which have no excitement of social interaction on public spaces.

Semi urban areas which need urban transformation, or abandoned factory areas with suitable planning solutions seems to offer the users a better stadium and physical environment experience. Some examples of semi urban areas revitalized with mix use projects which include significant amount of open public spaces which are integrated with the neighborhood and stadium. The outdoor facilities are used by both dwellers and match day users and the connection of stadium and the urban area makes the planning successful such as Wembley Arena. Even though this process promises a good stadium experience, if the planning does not match the stadium and users' needs, the whole urban area becomes a huge area with no integration. The Camp Nou of Barcelona is getting ready for a revitalization project, which aims to enlarge the public space that is more open to the neighborhood. The premises will blend into the districts of La Maternitat and Sant Ramon and will be permeable, with new private spaces made available for public use without enclosures, thus adjoining them to other public, road and green spaces in the environment of the Camp Nou and the current Miniestadi.

One of the most popular stadiums in the world, Allianz Arena stands as a landmark seen from afar on the approach to the city. The material, architecture and lighting of the stadium is iconic and significant but on the other hand, the stadium site is isolated from surroundings, and surrounded by only main arterial roads and the infrastructure of waste disposal are quite important problems that the stadium deals with which needs to be considered.

2.7 Analysis of urban space and environment

Stadiums are highly integrated with their surroundings. Therefore, for analysing stadiums, people and their behavior are quite significant. These behaviors are depending on different environmental data, such as, stadium location, infrastructure, outdoor facilities, public transportation, green areas, public spaces nearby, etc

There are aspects analysing environment and urban morphology with different methods so far, from beginning of the urban planning and geography, the morphology of the environment should have been analysed before approaching on the human behavior.

Different aspects produce different data and interpretation of these together will help to demonstrate a statement about stadiums and human behavior according to their morphological differences. Therefore, the aspects of urban space and environment and their analysis is reviewed and interpreted for the methodology.

Urban morphology and its history

Urban morphology in simple terms, is the study of city forms. If we look at the research of urban morphology, generally “urban form” signifies the form of the urban fabric. (Levy, 2000) However, the contributions to urban morphology made by researchers analyze the same elements of urban form, different theories have been achieved because of the variety of the disciplines that study urban form in history. The street, constructed space and open space, the key facts of urban morphology, have enlighten the researchers on different aspects because of their cultural background, language and discipline, such as geography, architecture, urban planning, archaeology and history. In addition, the material written in different language in more than past 20 years was not able to be translated in several languages as today thus the slight different interpretations occurred in urban morphology.

In a number of documents urban form is defined as ‘the pattern of land use within a town’ (Helm and Robinson, 2002). Also in the Dictionary of the Social Sciences, the definition states that urban morphology refers to a shape of a city, including its architecture, layout of streets, and different densities of habitation. It is distinguished in urban studies from functional zonation, the pattern of land use in a city. (Calhoun, 2002).

Goethe tried (1952) to understand the internal structure, and the parts that create the structure and how they are related to each other according to their position, with works of art and living organisms as morphology. He also implied that the internal structure is developed from formation and transformation.

The older texts in history had a critical impact on the urban form studies, may not be useful today’s technology but, the findings of history, geography and town planning from past have significant impact on urban morphology researches. Many researchers that have influence on urban morphology studies, have diverse backgrounds such as geography, town planning, history, anthropology, therefore there are many aspects on urban morphology according to the method they use to analyze it.

However, the earliest plans of Egypt have disappeared, topographical maps and plans from eighteenth century enlighten the urban morphology studies. Therefore, these maps have impact on urban form of today’s towns. (Gauthiez, B)

Antoine Quatremère de Quincy in 1832 states that study of town plans is quite important to understand history and interpret it. “The plan of the group of buildings, the squares and the streets allows us to appreciate town’s spatial structure, they give rise to an ordering and layout of the town to be seen as the outcome of a multitude of isolated, individual arrangements”.

Analysis of town plans has led to diverse researches about urban environment, such as aesthetics, building typologies, transportation networks, territorial expansions to understand the urban space better for future interpretations.

Fritz, who was a historian at the Lycee of Strassburg in 1894, had a significant impact on historical researches about town plans in Germany. He states that towns create so much layers of history, form and characteristics. He used military maps for research and studied more than 300 plans for a classification about town plans and layouts.

For Strahm, “in the absence of written sources, the plan of the town itself is a monument to law, a document in stone.” He did in depth researches about the aspects of town plan analysis; the homogeneous components and seams of contact points. According to Strahm, the analysis of town plans is a significant achievement but the divisions made on town plans and precise research would be more remarkable.

The interpretation of town plans in Germany has led different disciplines, like geography and anthropology, to constitute researches in urban morphology. Schlüter, examined buildings according to their form and material, also the form of the town. The research was dividing the town into zones and investigated according to Schlüter’s new proposal called anthropogeography. (Schlüter, 1899)

Marcel Poete and Pierre Lavedan have studied about urban planning and morphology. Fritz have made a comparison between created and founded towns, also Lavedan worked on this issue and researched about spontaneous urban evaluation with functional concerns. Therefore, their studies have made an achievement in town planning in France. (Darin, 1988) The studies of the spontaneous urban evaluation also enlighten the studies of morphological process of towns through years and interpretations for future planning criteria.

Marcel Poete also studied about Paris, and wanted to determine the physiognomy of the city. He has made many researches and 600 illustrations of it to understand the city. He implies that; that “Faced with a town plan, it is vital not to look at it with the eyes of a surgeon, ready to dissect the corpse as if the earth and mankind did not exist”. (Lavedan, 1974) Thus, the layers of a city create its own history and future and these layers shouldn’t be forgotten during the planning process of cities, otherwise it would be similar to destructing a living organism to create another one which is not related in any ways.

The post war years were the years of new developments on theories of urban morphology by the new schools in Europe. Italy had historical towns which needed rehabilitation therefore the ideas about architecture and town planning has emerged. Italy had the first school by Muratori,

which rejected Modern Movement, and was found using architectural types as a tool for historical analysis of urban fabrics. He implies that understanding the laws of history through urban design and interpreting the cultural fundamentals of it would break progressive impoverishment of the urban planning and design.

Muratori states that, for an established future for humans depends on the relationship with their settlements, therefore, for well-developed communities, people needs to have a healthy relationship with their territories. (Cataldi., Maffei, Vaccaro, 2002)

According to Conzen, who worked about town planning and also a geographer, mapping the town was the starting point. The land, plot and the buildings need to be located correctly on the map and then the interpretations should be done accordingly with the collaboration of geography. Also while working on the plots, lands and buildings the functions of the streets were classified during the process. (Conzen,1968) The theoretical system he generated has led a new approach about urban studies with a different discipline.

Aspects according to the approach

Just as settlements are diverse and complex, so there are many ways to describe and understand them. (Kropf, 2009) Researchers from different disciplines through years had focused on the same thing, understanding settlements and urban form, has led various approaches on understanding urban form such as geographical, historical, spatial, psychological and aesthetic contexts.

Kevin Lynch likens this various approaches about urban form to the branches of a tree. “Unlike the branches of trees we know, they should not diverge. They should interconnect and support each other at many points. A comprehensive theory of cities would be a mat of vegetation, and someday the branches will no longer exist in separate form.” (Lynch, 1981)

Lynch defines settlement form as “The spatial arrangement of persons doing things, the resulting spatial flows of persons, goods and information, and the physical features which modify space in some way significant to those actions, including enclosures, surfaces, channels, ambiances and objects”. He also implies that “while standard descriptions agree on emphasizing human activity in its relation to physical form, they are prone to confound the two in a single ambiguous description, such as single family house or church. Is it a type of building that is being denoted or the activities of worshipping or residing?”

His definition of settlement form encompasses the whole subject of urban morphology. The fluidity between form and use in common names and descriptions even within specialist spheres can be a barrier to understanding.

Lynch's definition of urban form are these distinct aspects: Physical form, Use/activities/movement, Control, Perception, Continuity/Change, Movement or flow of materials and information.

For the purpose of determining more explicitly which aspects are included four broad approaches to urban morphology can be identified; spatial analytical, configurational, process typological, historico-geographical. (Kropf, 2009)

The spatial analytical approach; spatial analytical approach studies are interested in the locational characteristics and spatial interrelations thus analyze them. (spatial analytical methods and geography)

The spatial analytical approach is elaborated by the work of Michael Batty and the Centre for Advanced Spatial Analysis at University College London. The spatial structure of the cities and the dynamics of it is the main interest of Michael Batty by using the computer aided tools such as GIS, agent based models and fractals. More generally the approach seeks to understand the complexity of cities and extend the emergent models from local analysis to global outputs.

When representing urban morphology, at some point all of the approaches use the geometry of the town or city. Because shape, density and voids can be articulated with geometric notions according to the form of the urban space, the land use and the density of building blocks. But in big cities or larger urban areas the density and human movement may not seem easily with manual methods therefore spatial techniques of space syntax or fractals can develop the geometry of the urban morphology more effectively. Thus the transportation network, social structure and urban economics can be illustrated with spatial interrelations.

The development of fractal geometry, however, which is in essence a geometry of the irregular, has clear relevance to spatial systems such as cities. The rudiments of a fractal theory of cities now exists which has the potential to synthesize many ideas from location theory with spatial form (Batty and Longley, 1994; Frankhauser,1994). The notion that cities are self-"similar in their functions has been writ large in urban theory for over a century, and is manifest in terms of relations such as the rank - size rule, hierarchical differentiation of service centers as in central place theory, transportation hierarchies and modes, and in the area and importance of different orders of hinterland (Arlinghaus,1993). All these relations which form the cornerstones of urban geography can be described and modeled by using power laws which are fractal.

What this new geometry is beginning to do is to tie all these' notions explicitly together in a geometry of the irregular, a geometry of the real world (Mandelbrot, 1983). We take this fractal theory as our starting point and, in this paper, we use its simplest elements, which involve the measurement of shape and density. Our purpose here, however, is not to extend this theory very far but to concentrate on the equally important problem of detecting the appropriate shape and density of urban areas and the land uses which occupy them. (Batty,1995).

The configurational approach; the approach that uses Space Syntax to understand urban morphology is the configurational approach. The fundamental component of Space Syntax is, the configured space of inhabitants, at this point settlements, which is transformed into set of discrete units for analytical methods of it.

Movement is in the center of spatial configuration, in the movement largely dictates the configuring of space in the city, and in terms of the effects of spatial form, in that movement is largely determined by spatial configuration (Hillier, 1996)

Bill Hillier also implies that the configuration is emergent which is developed from local to global process.

For Hillier, spatial form is the arrangement of spaces, with explicit reference to the position of any given space within the structure of the configuration as a whole. The configurational approach basically includes the relationship between physical form and individuals. Thus the axial maps, visibility and convex maps generates the data of human perspective within the space, therefore the human is on the focal point as represented by the movement. The figure ground relationship shows the solid and void relationship on a map, the similar distinction is made within the space syntax but in a different representation. The axial maps and convex maps generally based on pedestrian movement and building blocks relationship, therefore human movement and physical environment at the center in configurational approach.

The process typological approach; the process typological approach to urban morphology is rooted principally in the work of the Italian architect Saverio Muratori but is best represented by the work of the architect and urbanist Gianfranco Caniggia, who studied under Muratori. The approach they developed seeks to inform their architectural and urban proposals with an understanding of the built environment by examining its detailed structure and the historical process of its formation. They begin with the general distinction between spatial and temporal relations, which they refer to, respectively, as compresence and derivation (Caniggia and Maffei) The analysis of compresence proceeds from an abstract set or schema of component

subdivisions that forms a hierarchy: elements, structures of elements, systems of structures and organisms of systems. This schema first applied to individual buildings, with building materials such as bricks, timbers, tiles etc. Taken as the elements. The structure of elements: walls interior floors, roof etc. Systems of structures: rooms, stairs, corridors etc. The organism being the building.

The historico-geographical approach; to urban morphology is rooted in and well summarized by the work of M.R.G. Conzen. The aim of Conzen's town plan analysis is to explain the geographical structure and character of towns through a systematic analysis of their constituent elements and development through time.

His study of Alnwick in 1969, Northumberland he begins by distinguishing five general aspects; site, function, townscape, social and economic context, development. (Conzen, 1969) He studies the townscape according to a division that he made in 3 distinct topics; town plan, land use pattern, and building pattern. The town plan includes 3 topics in itself which is building pattern, plot pattern and street pattern. The components of the building pattern, plot pattern and street pattern are; street, plot and block plan. His research the land use and function is based on the human-built environment relationship, and people's activities and use according to the social and economic context. But the functional analysis is limited with residential, commercial etc., not an in depth functional research.

The social and economic context is the combination and interaction of different activities and functions over a wider area. In this respect any given "function" is a part of the social and economic context. The townscape includes the form complex and land utilization pattern with the plot identified as a unit of land use. The plot is thus defined in terms of both land use and physical form. This raises the issue flagged up by Lynch of conflating form and use and therefore blurring or obscuring the dynamic associations between the two.

Conzen also implies that "The land use pattern responds more easily to changing functional impulses". (Conzen,1981) Therefore, function, land use, social and cultural context, and economics should be considered together rather than separate aspects.

Of all the aspects identified, physical form and use are common to all the different approaches. If defined strictly physical form is the spatial relations of physical objects. Function, use and activity are interrelations between humans and some physical form. (Kropf,2009)

Aspects according to heuristic purpose they serve and epistemic status conferred to urban form

A classification for urban form studies was stated by Pierre Gauthier and Jason Gilliland; cognitive contributions and normative contributions. The studies that provides explanations for current context of cities are stated as cognitive contributions and the studies that aims how the city should be planned in future are normative contributions.

Moudon (1994) has developed a similar epistemological distinction about urban morphology studies as normative-prescriptive and substantive-descriptive. The main idea about this disjunction relies on the epistemology of the studies. Normative-prescriptive researches generates a prescription for future about planning and *how cities should be*, and substantive-descriptive researches emphasize a description for *what* cities and urban morphology look like today, and why the urban morphology is developed as it is, for a distinct knowledge about urban form.

Levy (2005) also states the same difference and distinction about the approaches according to their epistemology as normative and cognitive approaches. He implies that cognitive approaches establish theoretical knowledge, and methods which develop knowledge, normative approaches aim to create a perspective how the future morphology should be and look like according to set of prescriptions.

To distinguish between cognitive and normative approaches does much to clarify the nature of the intellectual contribution of the school of process typology, as exemplified by the ideas of Italian architect Muratori. Various commentators have posited that the Muratorian tradition has developed a normative approach to the built environment. Moudon (1994) states for instance that the so called Italian school offers a renewed theoretical foundation for urban planning and design, which engages long standing city building traditions. She contrasts this contribution with the scholarly approach of Conzenians, that is British researchers working on th tradition of geographer M. R. G. Conzen. Levy (2005) expressed a similar idea, when making a distinction between what he termed the normative approach of Gianfranco Caniggia and the cognitive approach exemplified by the work of Conzen. Such an interpretation echoes that put forward by Whitehand and Larkham (1992), who, in their genealogy of research traditions in urban morphology, characterize the Italian school as being preoccupied with urban design.

According to Gauthier and Gilliland, the term cognitive is used for contributions that aim to produce knowledge or develop theoretical and analytical tools (Caniggia,Maffei), the term normative is used for contributions explicitly aimed at articulating a vision of the future.(Maretto).

Also they imply that the approaches that are primarily concerned with understanding the internal logic of the urban fabric, are the internalist approaches to urban morphology. On the other hand, the approaches that primarily see the urban form as the end product of processes driven by political, anthropological (Rappoport, 1977), geographical and economic (Vance, 1977), historical (Benevolo, 1980), and perceptual (Lynch 1960). The importance of the internalist approach allows to produce ingenious interpretation of urban material culture.

As conclusion, urban morphology and built environment should be interpreted as a system of relations and each system effects the city, therefore diverse scientific disciplines that approach to urban studies can contribute the relations otherwise only history or geography etc. cannot answer all of our questions for urban morphology, the whole city should be studied as a system as a living organism to understand the complexity of urban environment.

CHAPTER III

METHODOLOGY

The methodology of this thesis is to combine environment behavior relations with space syntax in context of stadiums' nearby because of the strong relation between the user and the building. However, the game is played in the stadium, the environment is effected by this sport event, the stadium nearby becomes quite important on users and dwellers cognitive map, also has huge impact on urban fabric.

-Space Syntax

-Environment behavior studies

-Spatial attributions and attachments of the user

-Habitus and group behavior in public spaces

-Match day activities/routes of the user and footprints on urban tissue

3.1 Data collecting

Space Syntax

Syntactical analysis (axial maps and visibility graphs)

Space syntax methods were first developed to compare the similarities and differences between built environments at both building interior and urban neighborhood scale. (Penn, 1999)

Space syntax is best described as a research program that investigates the relationship between human societies and space from the perspective of a general theory of the structure of inhabited space in all its diverse forms: buildings, settlements, cities, or even landscapes. (Bafna, 2003)

Human societies use space as a key for organizing themselves. The space that people inhabit is configured and configured space is the main point of space syntax. Configured space is turned into continuous space into a connected set of discrete units. Space converted into a discrete configuration is helpful for studies that investigates different parts of the space and helpful for in depth research for each individual part of it. Working with space at a syntactical level provides to focus on each part individually and interpret the relation between behavior, human activities and space.

Therefore, space syntax is a method that provides us the information about the logic of spatial configuration in all scales such as a building or a large urban tissue. The spatial organization in built environment investigated with space syntax provides to understand the space as a topological aspect, and provides the information needed for interpretation of environment-behavior studies because of its discrete units.

Also, the graphs produced by space syntax allows to understand the geometry of the environment and determine the problems of current built environment, and which part of it creates the negative effect on spatial cognition. The methods of space syntax help us to see the environment with axial lines, and visibility graphs which provides the information of the integration values of the streets, the maximum visibility from a specific location. Therefore, this collected data and human behavior data from observations enlightens the interpretation of urban space-human behavior relationship.

3.2 Morphological process through years (figure ground) and land use analysis

Illustrating the city with solids and voids, was seen in Giambattista Nolli's Rome map in 1748. Representing the urban environment as carving out the buildings out of the landscape gives the benefit to state the solid and void relationship. Therefore, the figure ground analysis shows the integration of the buildings with their surroundings.

As Space is conceived as a positive entity in an integrated relationship with the surrounding solids, using a tool like figure ground analysis provides to identify the urban fabric according to the open space and buildings. Thus, creates a two dimensional illustration of the pattern of the urban space.

Alvar Aalto, often described "the problem of spatial design as one of connecting the form of the building to the structure of the site, or of twisting and turning the building's facades to create positive exterior space." However, the two dimensional figure ground map does not allow us to interpret how the users encounter them, with the other configurational and behavioral analysis, it clarifies how is the life of the users between the buildings, and how they behave around different forms of urban spaces.

Public spaces give symbolic content and meaning to the city by providing gathering places, paths, transitions between public and private domains, and arenas for discourse and interactions. (Trancik, 1986)

In addition to Alvar Aalto's description, the figure ground analysis, stadiums take a huge space and the open spaces around it have impact on user behavior, shapes the paths and routes

between two open space that strengthens Lynch's ideas about city image, therefore gives material to understand the urban fabric.

3.3 Observations (gate counts, static snapshots, tracing)

Observations are used for the data to generate a pattern for use according to the collective activity of the users. Spatial relations assembled from the maps does not provide the individuals' intentions, therefore an observational data is needed for in depth interpretation.

Each individual creates a behavioral abundance when approaching to a stadium. Various activities before entering the stadium may occur pursuant to the purpose of the individual's journey until the stadium such as eating, hanging out with a group, using the public toilets, getting team merchandise. As the match day environment is well populated, different observations are generated for the suitable variable.

The gate method, is suitable for observations of moving people or vehicles. (Vaughan,2001) At this thesis context, 500m to 1000m circular edge is defined to make analysis. For each street location a number of gates are selected for counting how many people pass in 2-3 minutes. The variable of the analysis is the range of the spaces accordingly to the use frequency. (well used, moderately used, poorly used) This observation provides the data of specific zones that is used mostly used on match days and regular days and comparison between them. Tables for gate counts are used with gate numbers, time periods, and numbers of individual according to their gender and age. (child or grown)

Static snapshots, are for creating the pattern of activities in public squares and spaces around the stadium. On match days, until the start of the sport event, the individuals stay out of the stadium especially around the 3rd security barrier. Therefore, the activities until they approach is quite important on the pattern of the public space use. This method is a representation of stationary and moving activities in public spaces around the stadium. For example, at crucial times of the match day like 10.00-12.00-14.00-16.00 and 18.00 generally one hour before the first whistle, nearest public spaces will be analyzed. The activities are generally drinking alcohol, approaching to the club's merchandise shop, eating outside, singing marches in groups, sitting in parks or other activities, and static snapshots are giving the activity map each single round of observations on the regular day and match day. The different activities and genders are represented with colors/illustrations of the activity on the maps of the public space.

People following, directional splitting and tracking, each stadium have many transportation choices for users coming from diverse locations. Metrobus, metro, main bus stops or pier are

the starting points of people following. Nearly 15-20 people are followed on specific hours of the match days and weekdays. This analysis provides a specific 2d pattern of movement that has a starting point until entering the stadium. The movements that exceed the analysis area are discarded because we cannot know each people's purpose of journey. This method is used to consider;

1. Pattern of movement from a specific location
2. Relationship of a route to other routes in the area
3. Average distance people walk from the specific location (Vaughan, 2001)

The collected data of the followings contribute a route, and brings the data of group approach and singular approach around the stadium. The researches about football spectators create routes that is developed from past habits and group behavior mentioned in previous chapters. At some main paths of the outdoor spaces of stadium nearby' investigated with directional splits to understand how individuals react to build environment differently from the same location, at a well populated time.

3.4 Methodology aim

Football and stadiums have huge impact on fans and dwellers in past years, however it has become a social phenomenon recently because of the mega events such as UEFA Champions League, FIFA World Cup, also the domestic leagues like Premier League, La Liga etc. These events play significant role on gathering fans but also they are effecting the built and unbuilt environment in their context.

According to the regulations of FIFA, stadiums should serve minimum amount of people who come to watch the sport event, for example; Camp Nou has 96.000 capacity, Wembley Stadium has 90.000 capacity, Santiago Bernabeu has 81.044 capacity, Allianz Arena has 70.000. These examples belong to the clubs like Barcelona, which is open for a sport event in the busiest week, generally 1 league match, 1 European league match, 1 Copa del Rey. If we calculate the amount of people who approach to the stadium on a busiest week or a general domestic league match day, the numbers are magnificent.

Buildings like stadiums which gathers significant numbers of people, spatial organization and spatial relations cannot be determined with only observations. Therefore, a mathematical approach is useful to understand these relations for future researches and current problem

solving methods. Nearly 80.000 people, or 30.000 people for other domestic leagues, get contact with stadiums at the same time, and their behavior according to the environment is quite important. The built environment, the dwellers who don't attend to the sport event, daily users of the streets and squares around the stadium are effected by the behavior of this group event. A syntactical approach, which is mentioned in aspects of urban space as configurational approach, is advantageous to determine the problems of the urban space around the stadiums, also creates future solutions for the spatial problems that users face with. The methodology aim is to identify the different stadium immediate environment, and designate how the users react the urban space and how they develop routes and routines according to the environment on match day and regular day. Visualizing the relationship between environment and behavior with a mathematical system and observations will bring the data to interpret the different located stadiums and behaviors differentiating accordingly.

This difference between varied stadiums' nearby gives the chance to a comparison with their system of spatial relations. Thus, the methodology is a combination of a spatial-configurational aspect of urban morphology, and observations and morphological analysis through years with case studies of different located stadiums

CHAPTER 4

CASE STUDIES

4.1 Fenerbahçe Şükrü Saraçoğlu Stadium

4.1.1 Location and Stadium nearby

Fenerbahçe Stadium, locates at center of Kadiköy, one of the most crowded areas of İstanbul with 50.000 prs capacity. The paths of the area bring the different districts together. At this point different districts such as Kadiköy pier, Fenerbahce, Moda, Salı pazarı, Sogutluceme comes together by the paths that separates them. Main one is Bagdat Caddesi, also in front of the stadium Recep Peker Caddesi is one of the main paths which has bus and minibus lines on it.



Figure 9. Street network of stadium area

The edges of the area are created by Bagdat caddesi and Kurbagalidere / Yogurtcu Park lines. This edges are not strict as a city wall but generally separates the spaces around the Fenerbahçe stadium. People tend to spend the whole day at facilities near Kurbagalidere, Yogurtcu Park, Kadiköy pier and restaurants there and streets.

Stadium/neighborhood relationship

As a city center stadium, Fenerbahçe Stadium has many benefits because of its location. The location is near to public transportation, many facilities with walkable distances etc. The fan mile of Fenerbahçe locates on the upper street of the stadium, and on championship days the street (Bagdat Cd.) gets filled with people and joyful environment. On the other hand, the neighborhood is not always feel positive about the stadium.

The advantages of the stadium nearby; The stadium and sport activities create an active district, the whole structure stands as a landmark, large green area and open public spaces at the center of the city, many outdoor facilities, bicycle ways at Yogurtcu Parkı, adjacency to the Bosphorus therefore the users and neighborhood dwellers are so close to city center and also to the sea and green areas.

The main districts of Istanbul are; Kadıköy, Beşiktaş and Taksim are quite crowded and the land costs are extremely high, therefore a stadium located at a main district of Istanbul is a great chance for the fans. The transportation network gives the users many options when approaching the stadium from different districts of Istanbul such as, boats from Eminönü, Kabataş, Beşiktaş, Prince's Islands, Sirkeci etc. , Ayrılık Çeşmesi Marmaray station which takes 15-20 minutes walking distance, Metrobus transfer station Söğütlüçeşme which also had a train station recent past, minibuses coming from Pendik, Kartal, Bostancı and Göztepe, many buses coming from European part of Istanbul and also from Kartal, Pendik, Göztepe, Bostancı, Ümraniye, Tuzla.. nearly every person from every point of Istanbul can reach stadium nearby easily.

In a metropole like Istanbul, it is nearly impossible to find a green public space at city center, therefore Yoğurtçu Parkı is quite important for Kadıköy dwellers and match day users. It is 2 minutes away from the stadium by walking, and the daily users of the neighborhood and fans use the park very often. The park includes sports equipment in the park, bicycle roads, green spaces, sitting equipment's and a small cafe. On match days the fans fill this park and spend most of their time drinking and marching in this park. Also on critical matches like Champions League the club provides a large screen for broadcast of the match for the fans who could not enter the stadium.

The outdoor facilities are not like the most popular stadiums in Europe like Santiago Bernabeu's interior luxury bar, but most of the restaurants and bars support Fenerbahçe therefore spending time at these places seems fun and cheaper than luxury restaurants in Kadıköy. Restaurants with tv broadcast, bars, street food, coffee shops locate at nearby, but users also like to spend time on Yogurtçu Parkı and drink outside. The neighborhood dwellers also use the park for daily walks with their family, friends, and pets, use the sport area and spend time on the park.

Therefore, the social interaction and connection with physical environment is quite high at stadium nearby.

The disadvantages of the stadium nearby; The bad smell coming from Kurbağalidere and lack of infrastructure accordingly, the beverage and food waste in front of dwellers' houses on match days and stadium noise, the crowd leaving the stadium after the match, the traffic jam on match days because of the quality of the street network.

Kurbağalidere connects the Bahariye, Fikirtepe, Kızıltoprak and Feneryolu zones of Kadiköy, the poor revitalisation services given to Kurbağalidere stream did not work and the stream spreads disturbing smell and negative visualization to the neighborhood. Even though having a water component in the city center is a good advantage the poor infrastructure and unplanned revitalization projects didn't develop a solution for Kurbağalidere and people started to get disturbed by the stream.

The 50,000 people capacity of the stadium brings too much crowd and noise to the neighborhood on match days. Sometimes it seems good to have an active neighborhood like this, but at the time that people coming from work want to use the main arterial of the Kadiköy to reach the other districts, the crowd of the street generally blocks the cars to move fast and the traffic jam occurs. Many people get annoyed by the traffic related with the stadium and it takes too much time to reach their houses with small distances.

The amount of people who drink beer on open areas are quite high, accordingly the street food waste and beer cans create significant size of trash after the game and the people living in the neighborhood have to use the streets filled with trash and smell because of the people's manners.

stadium / neighborhood relationship

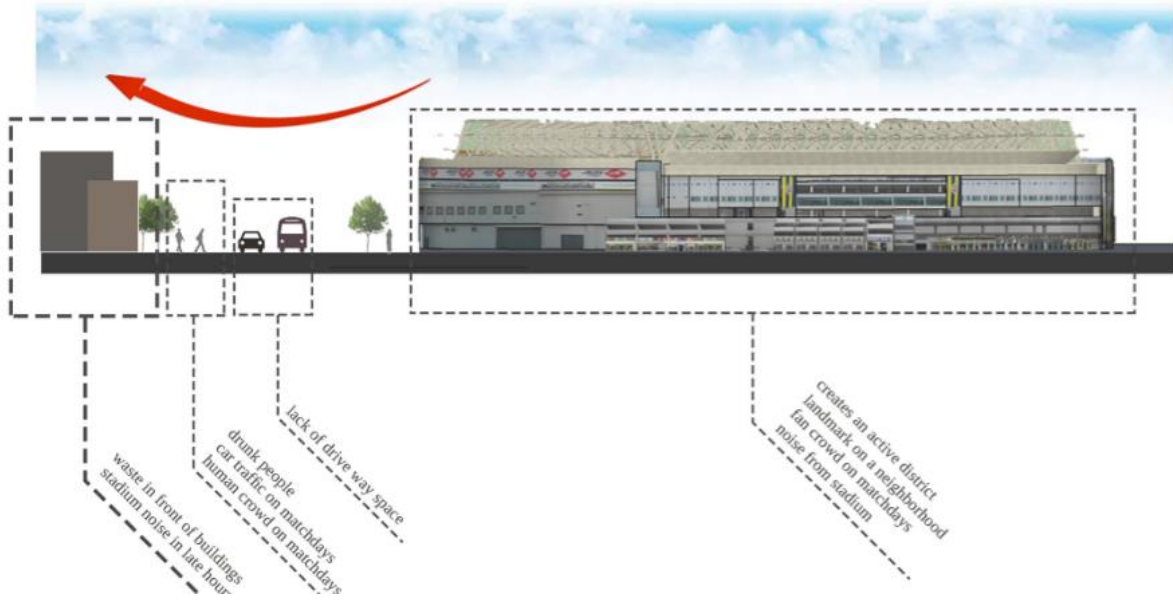


Figure 10. Fenerbahçe Stadium diagram

park/Kurbagalıdere/neighborhood relationship

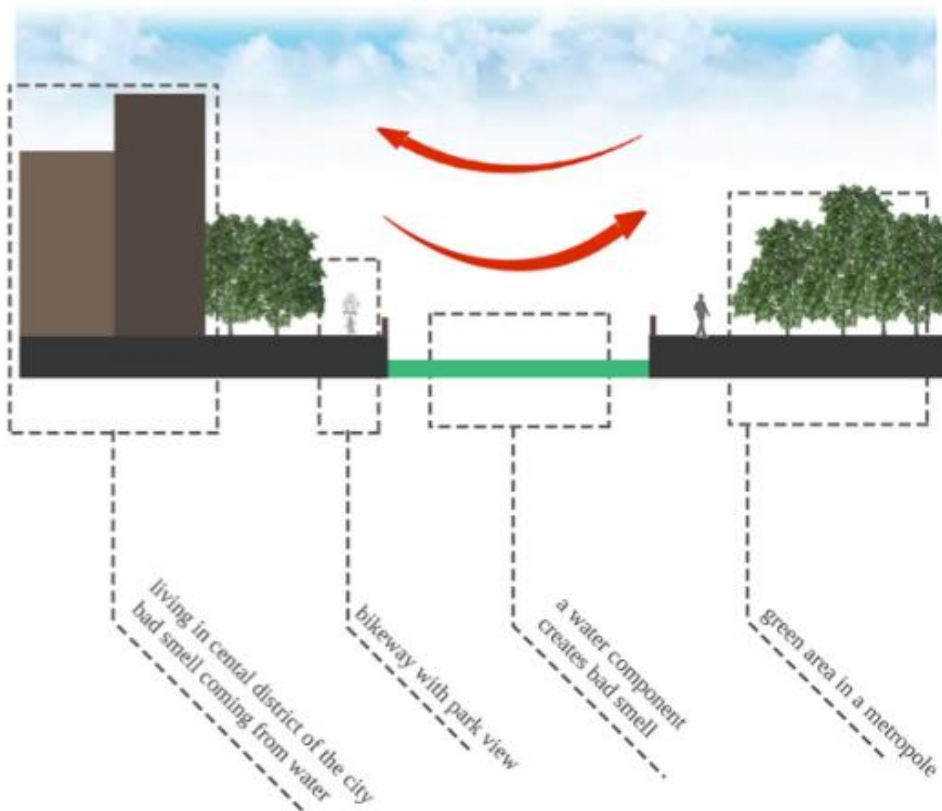


Figure 11. Fenerbahçe Stadium diagram 2

Main nodes are the intersection point in front of the Alex statue and the metrobus line / Fenerbahce-Koprulu intersection point. Especially on matchdays in front of the statue it becomes socially an intersection point.

Land Use of the Area

Most of the residential buildings' ground floors are used as retail. Kadikoy is a district by itself but there are also small districts by the usage of the stadium nearby neighborhood. Some streets are mainly old residential buildings. But when we get close to the stadium the ground floors become food service places. The Yogurtcu Park creates a green line with Kurbagalidere also, which creates another small district by nature.

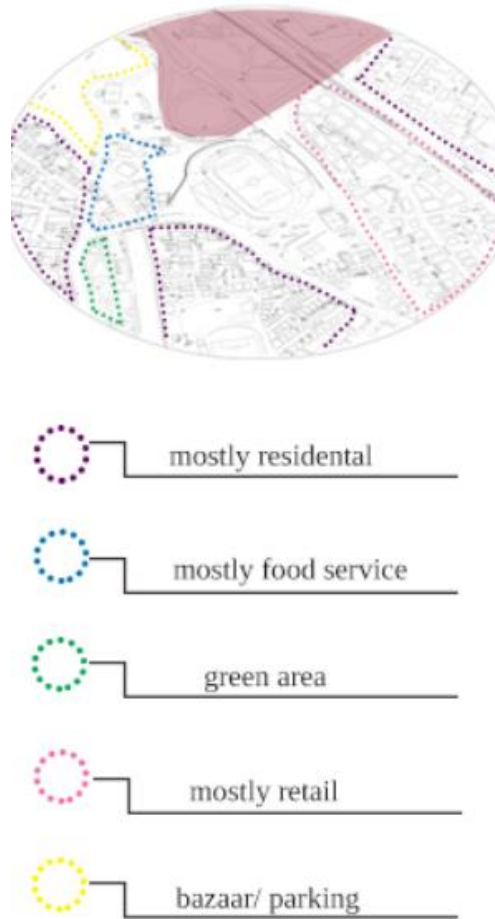


Figure 12. Land usage Fenerbahçe Stadium nearby

Main landmark of the area is Fenerbahçe Stadium. Then, a football player of Fenerbahçe, Alex de Souza statue at the beginning of Yoğurtçu Park. Another landmark is on Bagdat Caddesi, Zühtüpaşa Mosque. The old suburban railroad may be a landmark or an old edge, too.

Morphological Analysis of Kadıköy Fenerbahçe Stadium nearby

The main difference in the area morphology in years, is the construction of Fenerbahçe-Köprülü viaduct, and Söğütlüçeşme metrobus station. Because the main roads lead to construction connected to Bağdat Caddesi (street) and many residential buildings become residential buildings with retail ground floors.

1966



Figure 13. Fenerbahçe Stadium nearby 1966 figure ground analysis

1970



Figure 14. Fenerbahçe Stadium nearby 1970 figure ground analysis

2014

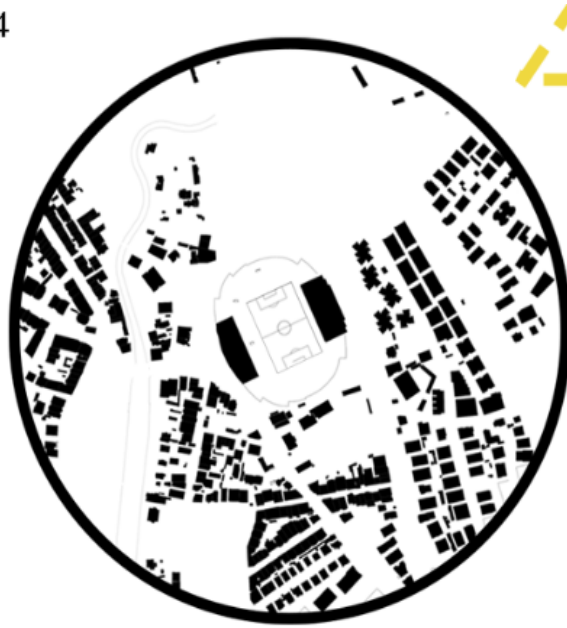


Figure 15. Fenerbahçe Stadium nearby 2014 figure ground analysis

The main blank spaces in the figure ground relationship (Figure 8), are the green areas and agricultural spaces in 1966. But after Boğaziçi Bridge has constructed, we know that huge population came to Asian side of Istanbul and started dwelling in these areas which used to be agricultural spaces used by its own dwellers. People learned that large paths like Bagdat Caddesi, give people the opportunity to drive on a proper way, so people used this opportunity that thousands of people drive by every day and turned it into a benefit. So retail ground floors started to rise around this street.

Another fact that Fenerbahçe Stadium, which has a huge fan potential, again with the same aim, around the stadium there are too many fast food restaurants, bars and match day fan attraction ‘‘aimed’’ retail buildings. Gradually, the residential buildings increased at this popular area of Kadiköy which is so close to many districts like center of Kadiköy/ pier, Moda, Fenerbahçe and Göztepe. Also the benefit of the stadium located and a busy road like Bagdat Caddesi, commercial and retail buildings increased, too. We can see this information in Figure 9 that there are many residential buildings but near Bagdat Caddesi their ground floors become retail and near Fenerbahçe Stadium some of the buildings are retail in whole.



Figure 16. Ground floor and land use analysis of Fenerbahçe Stadium

The analysis of study area was made with Depthmap at this step of the study process. Mainly two analyses were made;

- Axial Map
- Visibility Graph Analysis

Axial Map

The axial lines of the 2D map of the study area created with AutoCAD. First according to the street network the axial lines created and imported to Depthmap. The other layers turned off to make a legible graph. The program gives the axial map according to some commands given and shows us the integration of the street network.

The color intensity in program changes from red to blue. This tells us that red lines have the maximum integration and blue ones have minimum integration in axial map. To visualize this, the Figure 1 shows the Fenerbahçe Stadium nearby, Kadıköy and Figure 2 shows the axial map of this area.

The red lines are the main roads/paths of the area. The main dominant item on this map is the stadium. Even though, we are studying with pedestrian roads, this area has one of the main arterials in İstanbul as Bagdat Caddesi (high density street) and Fenerbahçe-Köprülü Kavşağı (intersection point).



Figure 17. 2D map of Fenerbahçe Stadium nearby, Kadıköy

As we can see from the Axial Map, most integrated area is the entrance of Yoğurtçu Parkı and the main road comes through Fenerbahçe Stadium. This can be related with the intersection point at near Yoğurtçu Park, comes from Moda/Kadıköy and the main entrance of the Stadium. The Table 1 shows the integration values of some specific points of the axial map.



Figure 18. Axial Map (Fenerbahçe Stadium)

No	Place	Color	Value
1	Yoğurtçu Park Enterance	Red	0.8929
2	Salı pazarı nearby	Yellow	0.7247
3	Özalp Sokak	Turquoise	0.5524
4	Bağdat Caddesi	Dark Yellow	0.7956
5	Muratpaşa Cd / Karacan sk.	Dark Blue	0.4228

Table 1. Integration Values at specific points of Stadium Nearby

Visibility Graph Analysis

When making visibility graph analysis two different outcomes occurred. First one Figure 3, shows the general outcome from Depthmap according to the whole open spaces and second one Figure 4, without the main car road (Fenerbahçe Köprülü Kavşağı) and parks with high trees which blocks the eye vision.

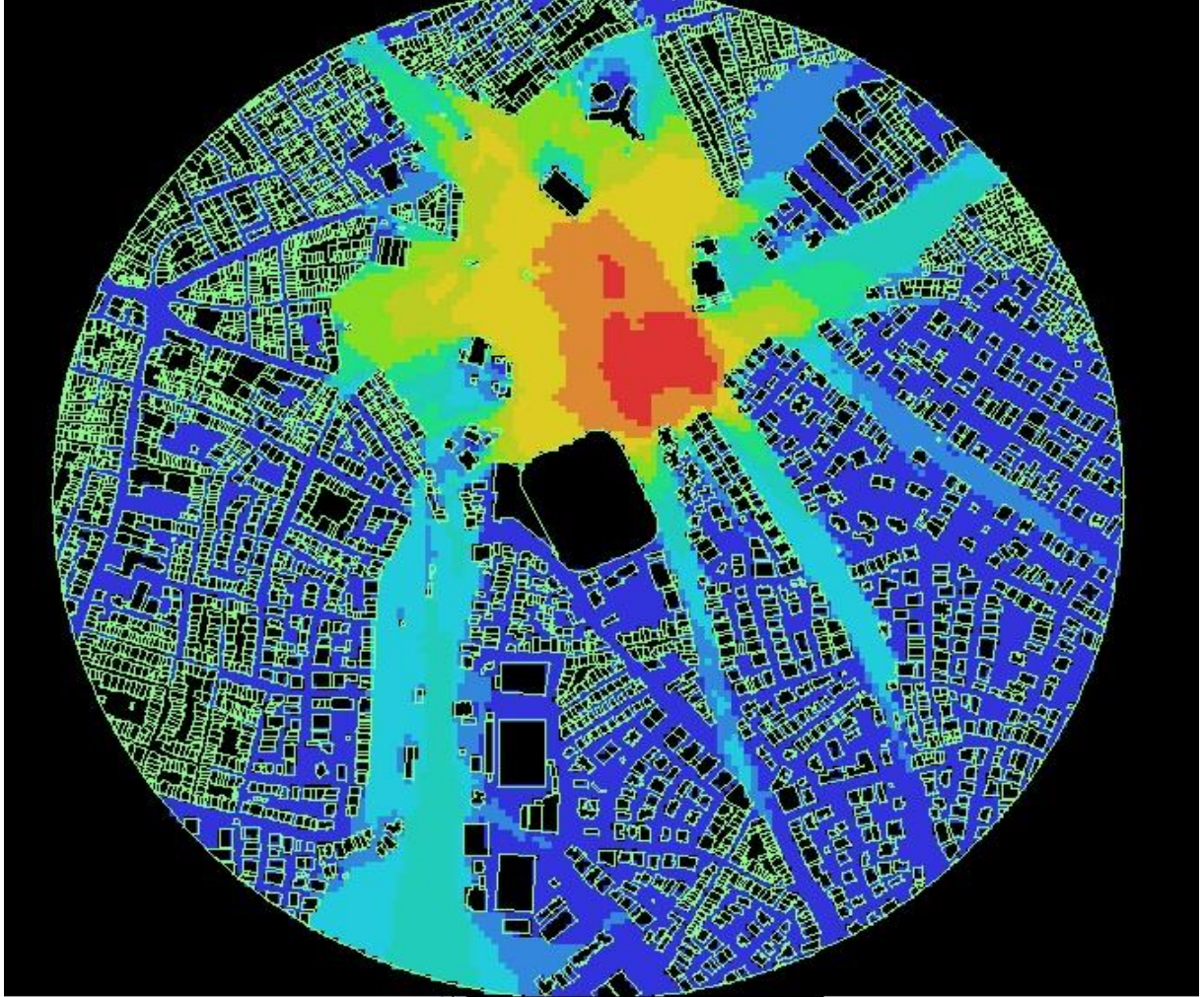


Figure 19. Visibility Graph Analysis 1

According to visibility graph analysis the most visible area is the metrobus station and the space in front of the Kadıköy Evlendirme Dairesi (Kadıköy Marriage Office), because of huge streets coming through and the main Minibus line road and also the pedestrian road.

When we look through the graph of that place we can say that the widest angle from human eye catches the environment that's true. The intense red color shows the maximum level of visibility which is in the exit of Söğütlüçeşme Metrobus Station.

The intensity of the color shows the difference in levels of visibility in the graph. As it is, red shows the highest level of visibility and the darkest color of blue shows the lowest level of visibility. At this point, the graph tells that the interior streets of the street network have the lowest level of visibility because of the houses blocks our vision to see through.

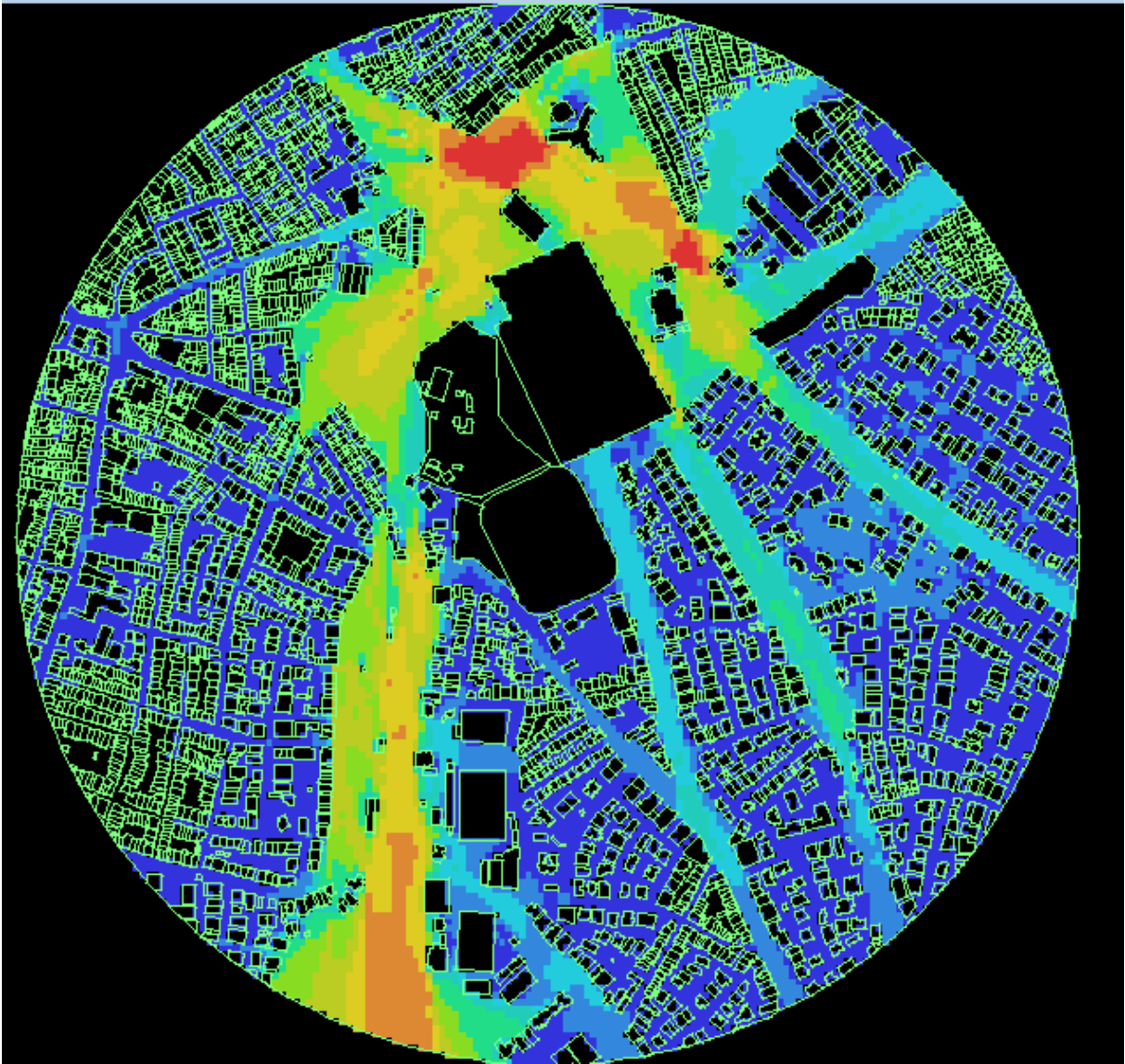


Figure 20. Visibility Graph Analysis 2

When we discard the parks with huge trees that blocks the vision and the main arterial car road we have the second visibility graph analysis (graph 2).

According to this analysis the graph shows that maximum level of visibility is near Kadiköy city hall and the square in front of it also the Kadiköy Marriage Office. Also at the end of

Yoğurtçu Park and Kurbağalıdere has maximum level of visibility where the Dereağzı Sports Facility locates.

	Place	Color	Value
1	Kadiköy City Hall Square	Intense Red	1186
2	Dereğzı Sports Facility	Red/Orange	987
3	Salı Pazarı	Yellow/Green	680-770
4	Kadiköy Marriage Office	Red	1124-987
5	Fenerbahçe Stadium Enterance	Blue	137-117
6	Yoğurtçu Park Enterance	Green	617

Table 2. Visibility values of Fenerbahçe Stadium nearby

Integration and spatial behavior

According to the axial map analysis, the most integrated roads are (red), are the street coming from Moda to Yoğurtçu Parki entrance and the same road going to the stadium. This analysis supports the visual analysis of Yoğurtçu Parki nearby. People use the park mostly from Moda and Kadiköy district according to tracking analysis, but from Ziverbey and Göztepe route there are a few people coming to the park.

This is because of many reasons, people coming from Moda, generally come with a dog or a friend which means they are close to their house or work. But people coming from Stadium area are mostly in groups or just walking by.

Another situation about this, according to the axial map, the least integrated spaces are along the old railway. There is a construction these days so the roads are mainly cut at some point and pedestrians cannot go through, so because of this disconnection of the pedestrian ways, the integration becomes lower numbers there.

At on place observations, it is seen that people mostly use the park between 13.00-17.00, and on match days this number changes to 11.00-18.00 and during the match 19.00-21.00. In the

morning between 08.00-10.00 am only a few people walking with a dog were in the park, and 1 or 2 people using the sport equipment's on weekdays.

Activity	Number of people	Individual / group	Active/Passive	Time period
Walking (just passing park)	+10	7 prs .in group 3 prs. individual	Active	13-17
drinking	+30	All in groups	active	13-21
drinking	+20	All in groups	passive	13-21
cycling	3	individual	active	13-15
sitting on grass	+40	All in groups	passive	13-20
Sitting on banks	12	2 individual 9 in group	passive	13-17

Table 3. Yoğurtçu Parkı matchday

Activity	Number of people	Individual / group	Active/Passive	Time period
Walking (just passing street)	+20	Fans + non fans	Active	13-21
Drinking on way	17	All in groups	active	13-18
drinking at pub or rest.	+50	All in groups	passive	13-21
cycling	1	individual	active	13-15
sitting on floor	2	in group	passive	13-20

Sitting on banks	3 +12	Fans + non fans	passive	13-17
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Table 4. Bağdat Caddesi matchday

After 12.00 / 13.00 people with kids, and groups come into park and the playground area has more density during 13.00/17.00 by mothers and their children. In the afternoon elderly people start to walk around the park mainly alone or only with 1 person and some group of young people or adults start to come.

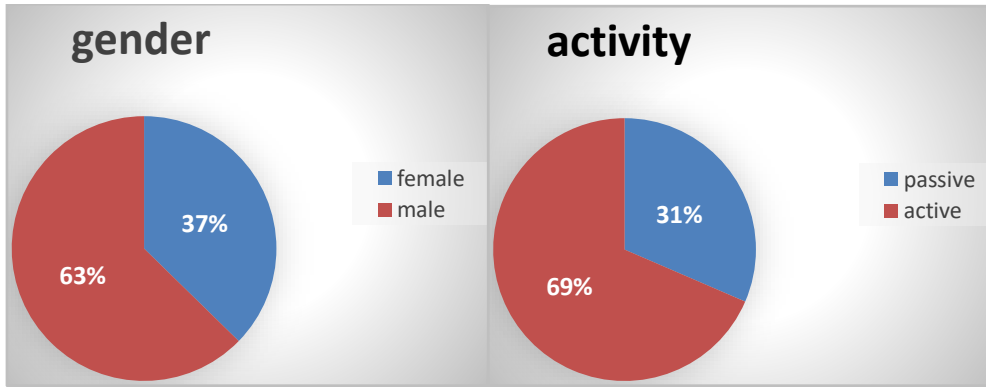


Table 5. Chart pie of the activities according to gender and passive active, activity

Visibility and Spatial Behavior

According to the visibility graph, the most visible areas are near Kadıköy city hall and Salı pazarı area also where Yoğurtçu Parkı finishes and Dereağzı starts. Because of the construction near Salı Pazarı blocks the vision when we come off from Metrobus the visibility gets low, and the intelligibility of the area goes down.

When we start from Söğütluçesme Metrobus Station, if we want to go to Yoğurtçu Parkı, we have to walk through Salı Pazarı near this undeveloped construction area and reach to the main street of Stadium and Yoğurtçu Parkı line. This decreases the intelligibility of the area because even though you know the area because of low vision you are tend to get lost around this old train station and construction area.

Table 5 shows the data of tracking 15 people starting from Söğütluçesme Metrobüs Station and ends up around stadium;

According to the table 3 people directly take the minibus of Göztepe, Kartal route to Ziverbey, 8 people, some of them are groups like 2-3, walk through Altıyol, Kadiköy pier route, 2 people walked through Salıpazarı-Yoğurtçu Parkı-Moda route and 2 people took the Kadiköy-Bostancı minibus.

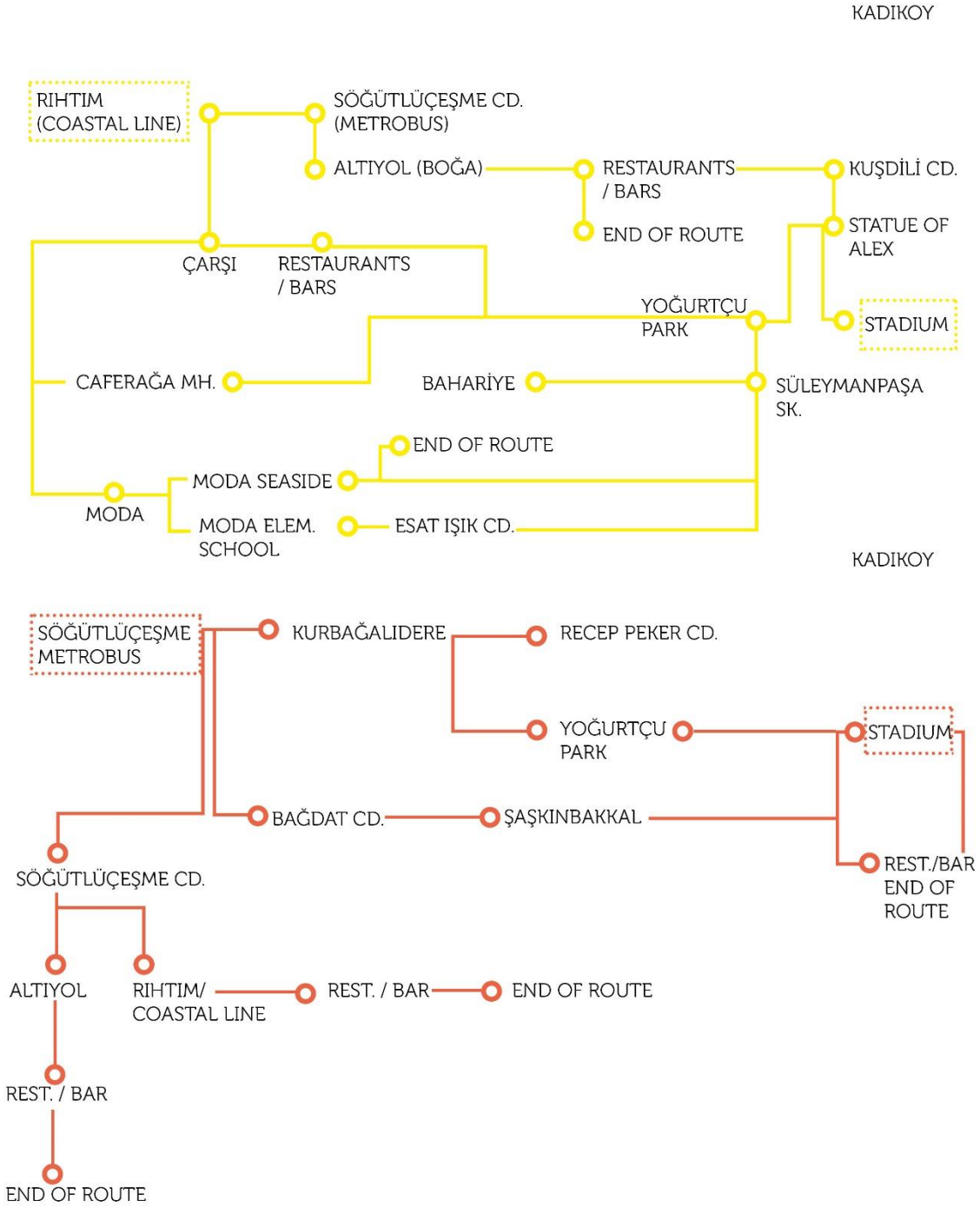


Figure 21. Routes of Fenerbahçe Fans

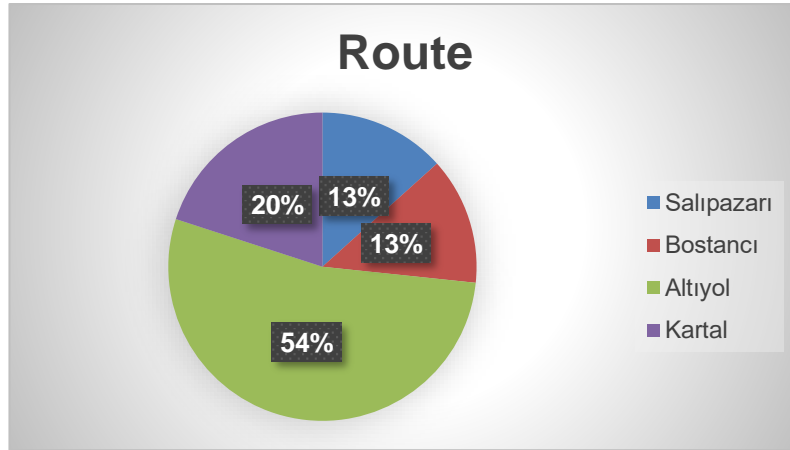


Table 6. Routes of people

The matchdays of Fenerbahçe, brings different data than normal weekend days. On weekends generally small groups of youth and some people with dogs are around the Park and Stadium but on match days, over 100+ people are in the park between 12.00-18.00. Most of them are singing and drinking and nearly a half is sitting on a bench or the grass and drinking. On many matches there is an audio of the match so some of the people stay in the park during a match also.

Because of the reason of most integrated roads are connected in Yoğurtçu Park, people usually use the park during weekends to relax or taking their dog for a walk.

4.2 Beşiktaş Vodafone Arena

Location and Stadium Nearby

Vodafone Arena locates at one of the central zones of Istanbul, also shares a multilayered space of history. Such buildings like Dolmabahçe Palace, Dolmabahçe Mosque are right in front of Vodafone Arena. Other historical buildings and functional analysis of the stadium nearby is investigated in ongoing pages.

Beşiktaş, therefore Vodafone Arena is in a critical location that connects various significant districts of Istanbul such as Taksim, Ortaköy, Nişantaşı, Maçka, Kabataş, Karaköy by walking distance or max. 15 minutes' drive away and Usküdar by ferry.

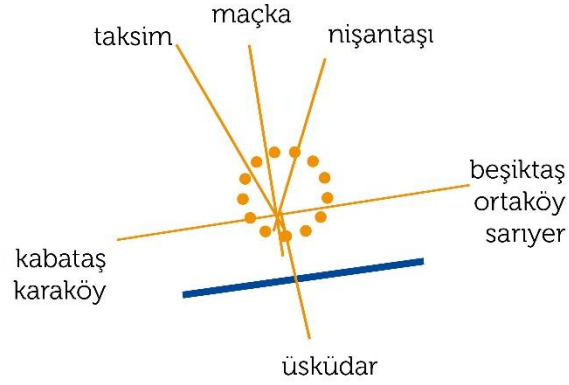


Figure 22. Location of Vodafone Arena

The previous stadium of Beşiktaş, İnönü Stadium was located at the same site and reconstructed in 2017 for 50.000 spectators. Vodafone arena is a multipurpose stadium with ballrooms, lounges, a bank, a music studio, also a restaurant is under construction. The stadium has the bosphorus view that none of the stadiums in İstanbul or Europe have, therefore the location gives the opportunity to the stadium for big events like concerts, festivals and fashion shows because of its location and view, therefore the accessibility.

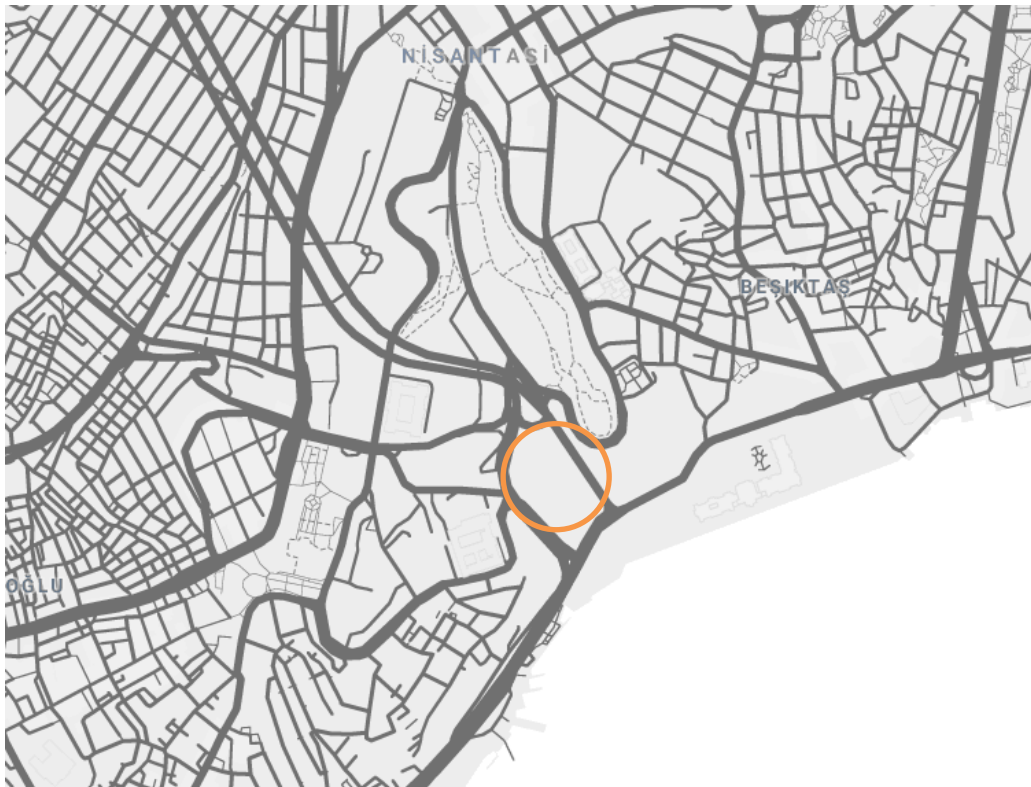


Figure 23. Street network of Vodafone Arena

Stadium/neighborhood relationship

Vodafone Arena, Beşiktaş's stadium locates at city center also and has many benefits because of its location. The stadium is surrounded with historical district, hotels, a large green area and quite close to Beşiktaş/Çarşı with walking distance. Beşiktaş neighbourhood and Çarşı (main public square of Beşiktaş) is really connected with the club and also the stadium. There is only 1km walking distance between Beşiktaş square and Vodafone Arena. Fans generally spend the match day in Beşiktaş district or park near the arena.



Figure 24. DB Architects, Vodafone Arena Photo

The advantages of the stadium nearby; The arena is really close to Beşiktaş, Taksim and Teşvikiye. People can reach these districts with walking distances or short time periods of the bus. One of the main transfer points of İstanbul, Kabataş pier is in front of Vodafone Arena, therefore, from many locations of İstanbul people can reach Arena with boats such as Kadıköy, Bostancı, Eminönü etc. In addition, Fenerbahçe fans mainly come to Beşiktaş matches with boat from Kadıköy with torchlights which creates a joyful and exciting atmosphere at the bosphorus. Another option is coming from Taksim, which will only take 10 minutes with bus, or 20 minutes by walking. Fans generally stay at Maçka Park on matchdays with their drink and approach to the stadium later. But the main spot that fans stay is Beşiktaş Çarşı.

This is an advantage but also a disadvantage of the stadium. There are only hotels and historical buildings and a concert place which have no direct connection with pedestrian access near Vodafone Arena therefore the pedestrian area is limited with stadium entrance. There are some outdoor facilities inside the stadium but not as much as outdoor bars and restaurants like Kadıköy and Fenerbahçe Stadium nearby. Therefore, the fans stay at Beşiktaş which have many bars and restaurants. There is also an eagle statue at the center of Beşiktaş Çarşı. The Beşiktaş neighborhood is really interested with Beşiktaş Sports Club and enjoy football with their whole neighborhood and tradesman at Çarşı.



Figure 25. Eagle Statue at Beşiktaş/Çarşı

(<https://www.emlaktasondakika.com/haber/kent-bolge-haberleri/besiktas-belediyesinin-carsiya-yaptirdigi-kartal-heykelinin-acilisi-yapildi/49687>)

The university campuses near stadium and Beşiktaş, create a young environment and the historical places around create touristic environment around the stadium therefore the stadium nearby is usually quite active. The main roads that connects Beşiktaş, Nişantaşı, Taksim, Karaköy and the pier helps the crowd on match days to flow easily after the match. (Donuk,2011). But the traffic jam on this district creates a negative effect on stadium environment because the stadium locates at the center of the main roads that connect these districts. People that does not support this team or wants to go their home gets really annoyed on match days because of the traffic jam.

Vodafone Arena is the only stadium that embraces the whole bosphorus view, the previous stadium at the same location of Beşiktaş JK, İnönü Stadium had some seats that had bosphorus view but with Vodafone Arena's design this opportunity has gone. Also there was a spot which

is called Beleştepe (free spot that looked directly to the game area) which is not useful because of the stadium's new roof design.

Main nodes are the green area near stadium (Şairler Parkı, Maçka Parkı) , Dolmabahçe Caddesi end point that connects with the stadium, Kabataş pier and Beşiktaş Çarşı square intersection point and Eagle Statue.

People like to drink at Çarşı, especially at Kazan (the pub which is quite related with Beşiktaş Fans) therefore people generally walk the 1km distance before the match starts.

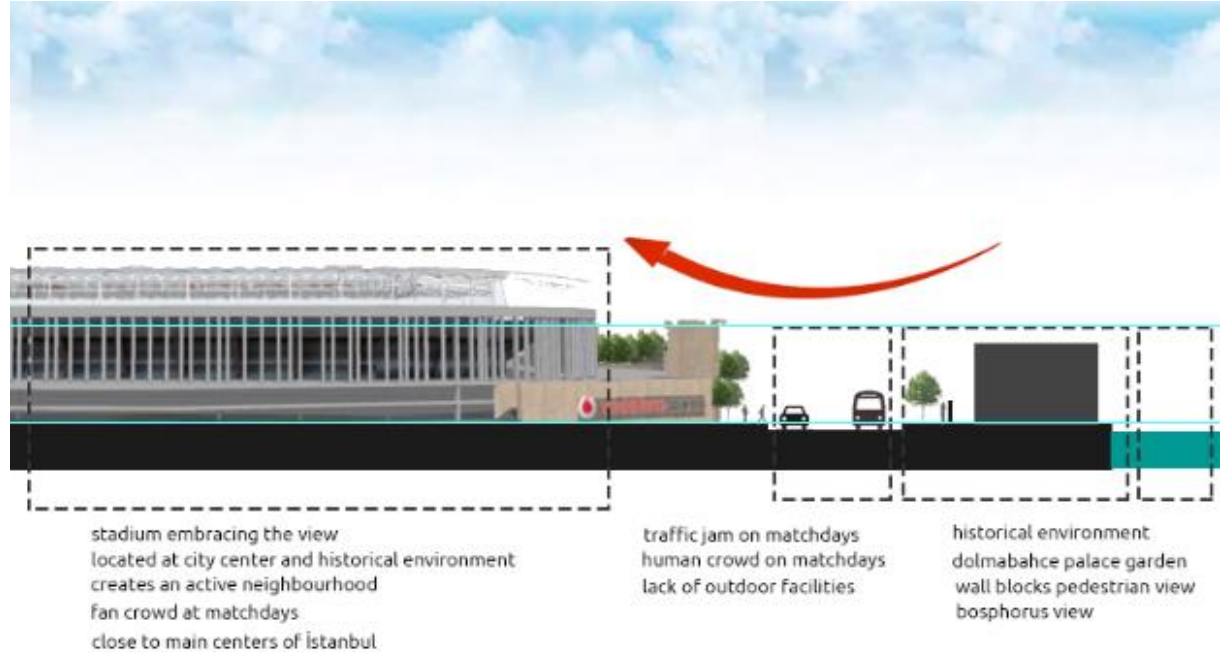


Figure 26. Diagram of Vodafone Arena

Morphological Analysis and Land use of Vodafone Arena nearby

Vodafone Arena locates at city center as mentioned, in a historical neighborhood. Dolmabahçe Palace, the administrative center from Ottoman Empire, Taşkışla which is a barrack from Ottoman Empire, İTÜ Maçka campus, the armory from 1873 etc. In addition, the green areas and bosphorus view is embracing the whole stadium nearby.

The main morphological differences in years are, the opening of Dolmabahçe-Bomonti underground way, Ritz Carlton Hotel building construction and most recent the reconstruction of İnönü Stadium of Beşiktaş.

Because of its historical environment the morphology of the nearby haven't change residentially. The old neighbourhoods were at the center of Beşiktaş/ Sinanpaşa, Akaretler and Teşvikiye therefore the stadium nearby preserved its historical pattern except Süzer Plaza and

other high rise hotel buildings from Dolmabahçe to Beşiktaş and Taksim. (Swissotel, Ritz Carlton, Conrad)

The stadium's location is one of the most critical points of İstanbul, because the public transportation opportunities are quite much such as by boats, by tramway, buses, by walking, it's easy and quick to reach the stadium. Therefore, the neighbourhoods haven't settle at stadium nearby but mostly Beşiktaş center.

The changes in years, are mostly in public transportation like Kabataş tramway, Bomonti tunnel, Maçka ropeway and the raise in hotel buildings. The old barrack building and the armory has become university buildings.



Figure 27. Vodafone Arena morphology 2017



Figure 28. Vodafone Arena morphology 1982



Figure 29. Land use of Beşiktaş Stadium nearby

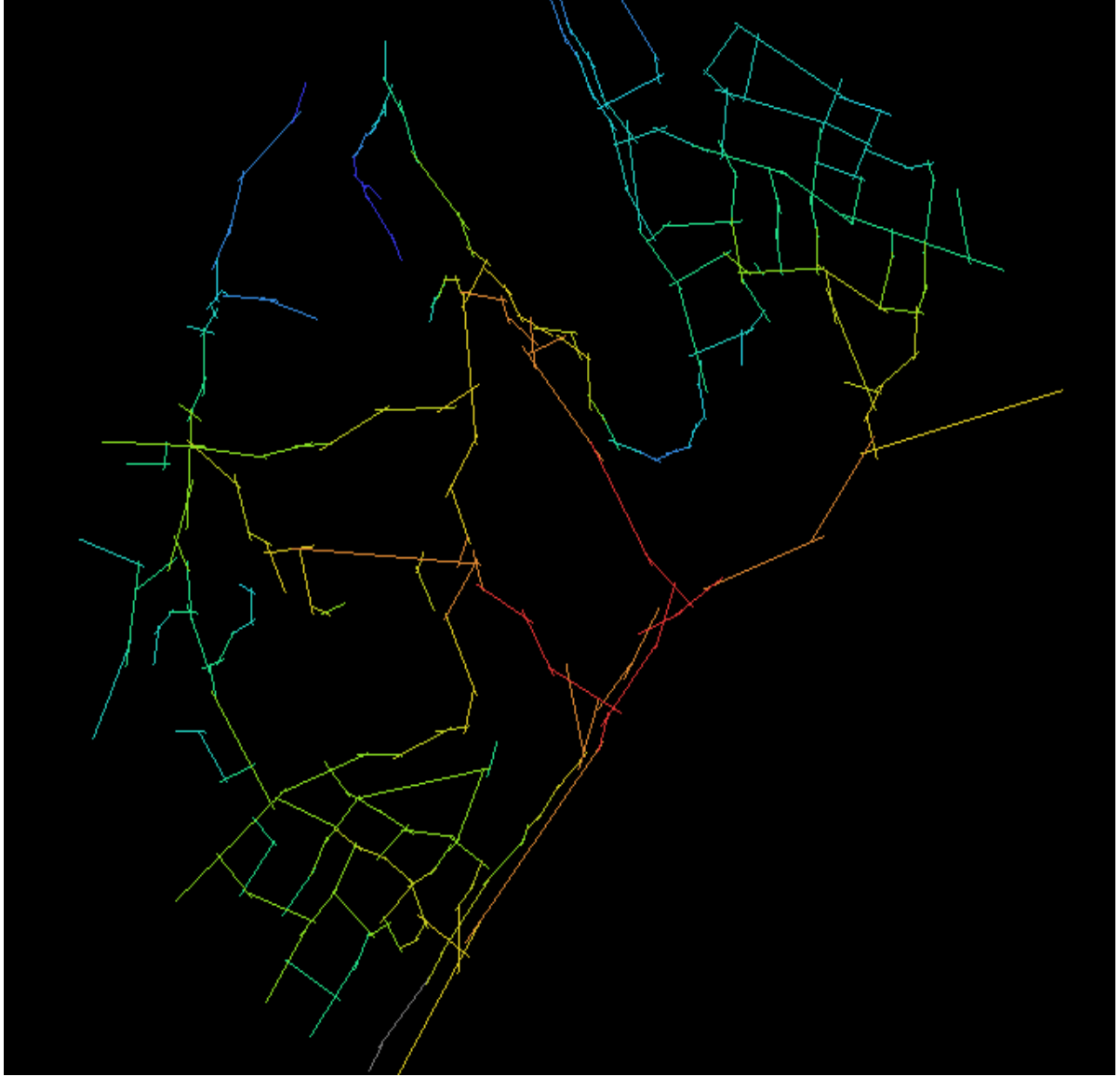


Figure 30. Axial Map Analysis, Vodafone Arena

No	Place	Color	Value
1	Dolmabahçe Cad.	Red/Orange	0.488
2	Maçka Parkı	Blue	0.36
3	Süleyman Seba Cad.	Yellow	0.32
4	Küçükçiftlik Park	Yellow/Green	0.41
5	Ritz Carlton	Orange/Yellow	0.44
6	Bezmi Alem Valide Sultan Mosque	Orange	0.43

Table 7. Integration Values at Specific Points of Stadium Nearby

Visibility Graph Analysis

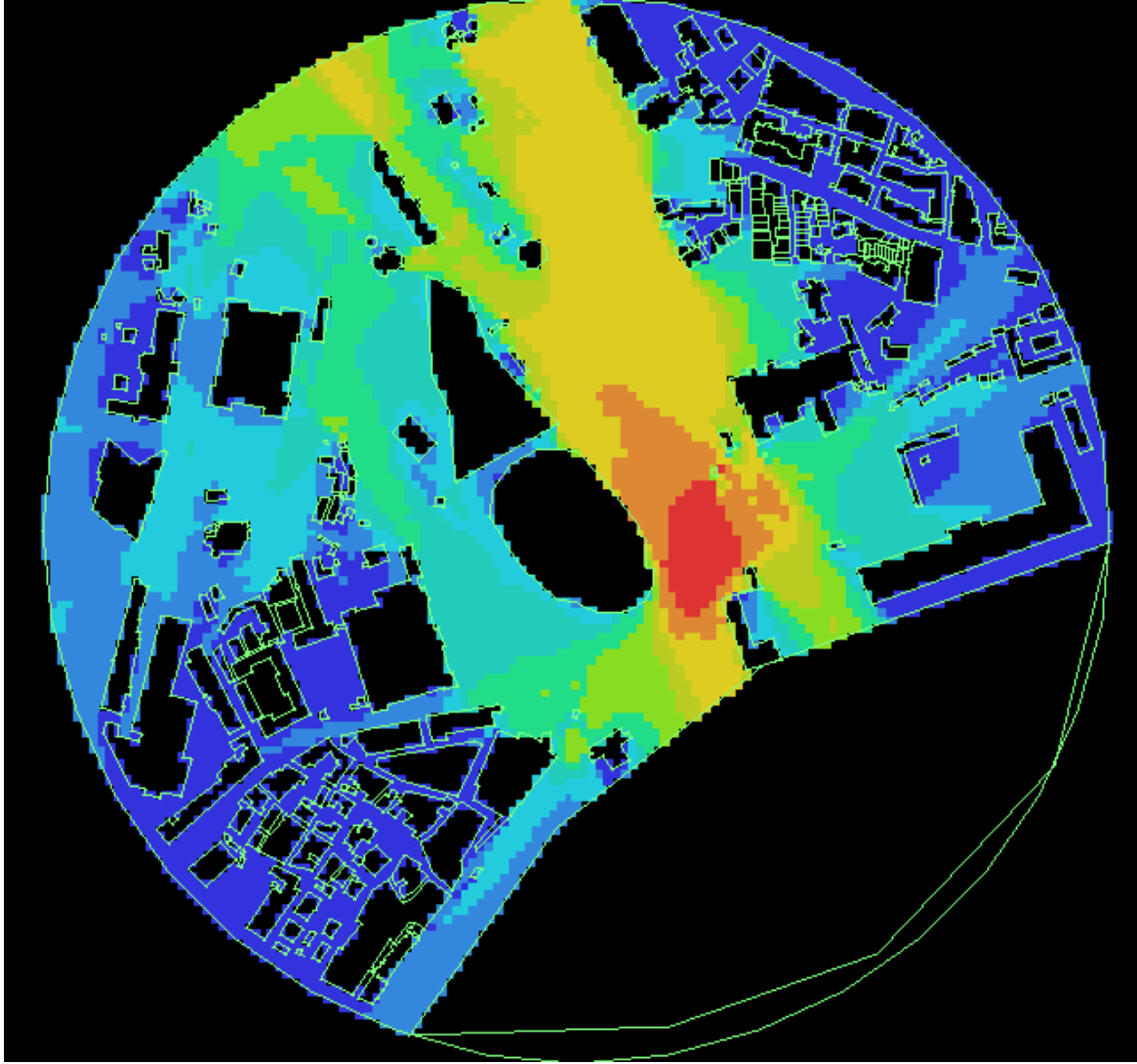


Figure 31. Visibility Graph Analysis of Vodafone Arena nearby

No	Place	Color	Value
1	Dolmabahçe Palace entrance	Orange-Yellow	2440
2	Dolmabahçe cd/Kadırgalar cd. Intersection	Red	2660
3	Süleyman Seba Cad.	Blue	171-248
4	Küçükçiftlik Park	Yellow	1980-2017
5	Ritz Carlton	Blue/Green	881-1100
6	Bezmi Alem Valide Sultan Mosque	Yellow/Green	1351
7	Bayındır Cd.	Orange	2160

Table 8. Visibility values of Vodafone Arena nearby

According to the axial map analysis, most integrated roads are (red), are Dolmabahçe Caddesi, Kadırgalar Caddesi and Dolmabahçe-Gazhane Caddesi which are the roads that surrounds the stadium. This analysis supports the behavioral analysis of the people around Eagle Statue and Şairler Parkı.

People that come to the stadium directly without hanging out generally come from Kabataş transfer point by bus or boat and from Beşiktaş. Fans generally stay at Beşiktaş at some specific spots then create their route to the stadium. The day starts at Kazan (pub) or the park (Şairler Parkı) and reaching the stadium nearly 2-3 hours before the first whistle according to the tracking analysis.

Activity	Number of people	Individual / group	Active/Passive	Time period
Walking (just passing street)	none	+100	Active	13-17
drinking	+20	All in groups	active	13-21
drinking in pubs	+30	All in groups	passive	13-21
cycling	none	individual	active	13-15
sitting on pavement	+20	All in groups	passive	13-20
Sitting on banks	none	-	passive	13-17

Table 9. Human activity table on match day at Eagle Statue (14.00)

Activity	Number of people	Individual / group	Active/Passive	Time period
Walking (just passing park)	none	24 prs .in group 10prs. individual	Active	13-17
drinking	+20	All in groups	active	13-21
drinking	+15	All in groups	passive	13-21
cycling	none	individual	active	13-15
sitting on grass	+30	All in groups	passive	13-20
Sitting on banks	4	All individual	passive	13-17

Table 10. Human activity table on match day at Şairler Parkı (14.00)

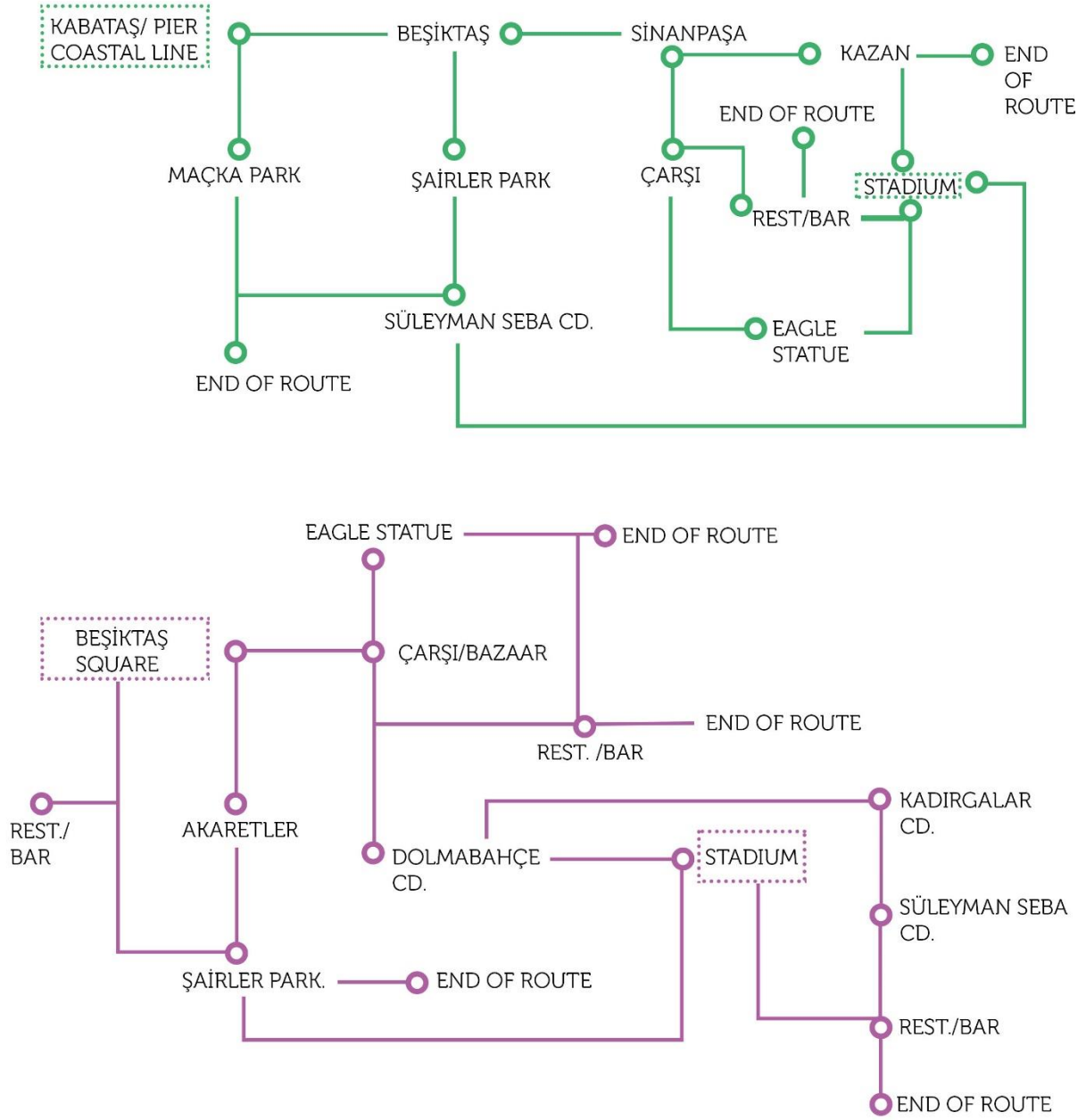


Figure 32. Routes of Beşiktaş fans

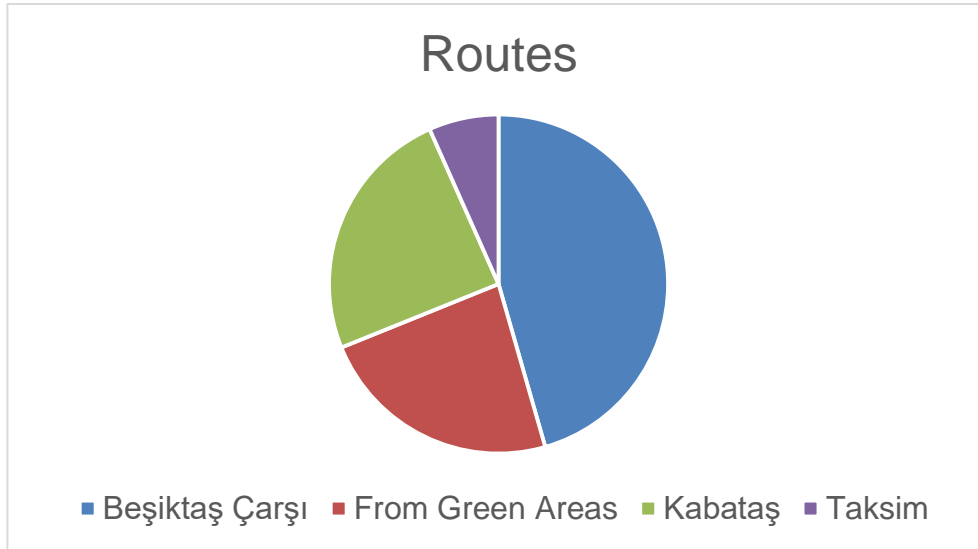


Table 11. Routes of Beşiktaş fans

4.3 Galatasaray TürkTelekom Arena

Türk Telekom Arena, locates at Seyrantepe, Kağıthane, at one of the main arterial roads of İstanbul with 52.650 prs. Capacity. The stadium is near TEM highway which is different than the other case studies. In addition, the stadium is at the intersection of Ayazağa Cendere Caddesi, TEM highway, Kağıthane stream at Seyrantepe which is one of the main urban transformation district.

The highway is a quite strong edge in front of the stadium and limits the pedestrian access. Galatasaray Sports Club used to have their stadium Ali Sami Yen Stadium in Mecidiyeköy, of the focal points of İstanbul but after urban transformation the new site was planning to include whole area with residential, commercial, and cultural facilities. However, the urban transformation has started, because of the governmental processes the site of Ayazağa-Cenderece Caddesi has divided into sites and given to different contractors.



Figure 33. TT Arena photo

(<http://galeri3.arkitera.com/var/albums/Proje2/T%C3%BCrk-Telekom-Arena/02.JPG>)

Location and Stadium Nearby

The stadium is at nearly at city center but also not. The location allows the fans to come to the stadium with only one metro line quickly from the main districts of İstanbul but locating in front of a highway is definitely not a benefit for fans while approaching the stadium.

Most of the nearby neighborhood is under construction because of the urban transformation and the new buildings are generally huge mix use projects and high rise buildings. Therefore, the neighborhood that Galatasaray fans were used to at Mecidiyeköy and Taksim (Galatasaray Square) is now limited with stadium security barrier.



Figure 34. Street network of TT Arena Nearby

Stadium/neighborhood relationship

The main districts near Türk Telekom Arena are Kağıthane, Taksim and Mecidiyeköy with metro line, Beşiktaş with bus travel which is not quite often and Kadıköy is quite far with public transportation. Therefore, the fans generally use the metro line or private cars to reach the stadium. The users from the Asian part of İstanbul mainly use their car or come to Zincirikuyu transfer center with metrobus and then use the metro line to reach the stadium which takes too much time on match days.

The outdoor facilities are limited with stadium facilities, so there are no pubs or restaurants near the stadium for the fans to hang out before the match starts. The users generally take their beverage before they came to the stadium and drink at the stadium exterior space until the game starts. The fans of Galatasaray usually hang out at Taksim/Nezade which was quite close to Ali Sami Yen Stadium, they still enjoy the atmosphere there then take the metro line while approaching the stadium therefore the metro line is extra crowded, loud and smelly on match days.

There is also a mix use building, Vadi İstanbul near Türk Telekom Arena which has so many restaurants inside but fans generally don't like building interiors like this on match days. They

only use it to eat something and leave because it's a shopping mall. Unfortunately, Galatasaray fans don't have the opportunity like Beşiktaş and Fenerbahçe fans to stay and enjoy the atmosphere at the local neighborhood.

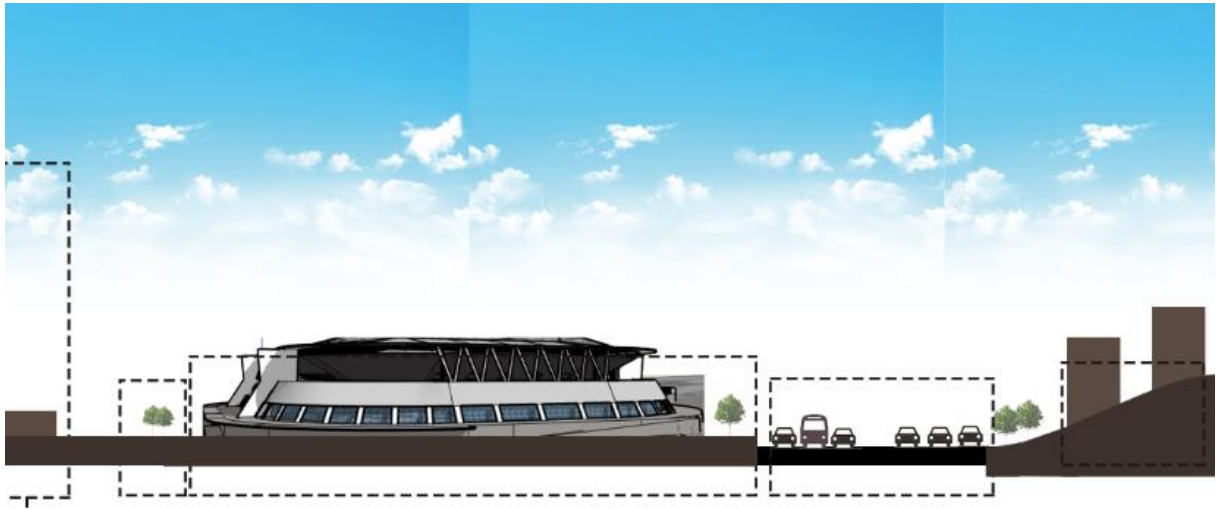


Figure 35. Diagram of TT Arena

The diagram shows the section of TT arena for interpretation of stadium nearby. The TEM highway is the main constraint of the area according to its mass. Because of the highway, the users can not directly access the neighborhood and enter the stadium from the subway turnstiles. The matchdays create also a traffic jam on the highway because there is no flow path from the stadium to the nearby neighborhood.

On the left the valley of Cendere starts therefore this is an another constraint about the stadium nearby. The surrounding environment is mainly the Vadi İstanbul Mall and Housings, Nurol Plaza and Skyland High Rise buildings thus the environment is not pedestrian friendly. The main road that connects Ayazağa/Maslak and TT Arena does not have a pedestrian way, also the road infrastructure isn't well developed. Therefore, the transportation around the stadium is large but not suitable for pedestrians.

The residential area starts after the highway and under construction of urban transformation. This construction sites and neighborhood of mostly unhealthy buildings makes the limits the public usage.



Figure 36. Land use analysis of Galatasaray Stadium nearby

Morphological Analysis and Land Use of Türk Telekom Arena nearby

Türk Telekom arena doesn't locate at city center as much as Fenerbahçe and Beşiktaş Stadiums, locates at the center of urban transformation therefore the high rise buildings. The stadium was at first planned as the whole urban transformation area as Wembley Stadium, but after the contractors change the area separated into different contractors. Thus the general morphology is not integrated as it will be seen in the integration analysis.

The TEM highway has opened in 1988 for İstanbul dwellers usage, the morphology before 1980s in Kağıthane/Seyrantepe doesn't have any building because of the valley and infrastructure constraints. After the highway and the start of the urban transformation 2015-2016 in Cendere Valley the settlements have increased rapidly. The natural settlements are not much and the current environment is mainly high rise buildings and urban transformation construction sites.

Being at the center of the urban transformation has changed the morphology but didn't solve the pedestrian problems at TT Arena, now the fans can only access the building with metro, private cars and quite rare public bus. This fact has blocked the pedestrian movement therefore the user-environment relationship. People tend to spend the hours before the match on the 1st security barrier, the base of the stadium and limited outdoor facilities.

The building morphology became denser after 1980s but still the environment is not welcoming in fact encourages the dwellers to gated communities and high rise buildings which limits the behavioral urban pattern to occur, and decreases the socialization aim of the football and stadiums.

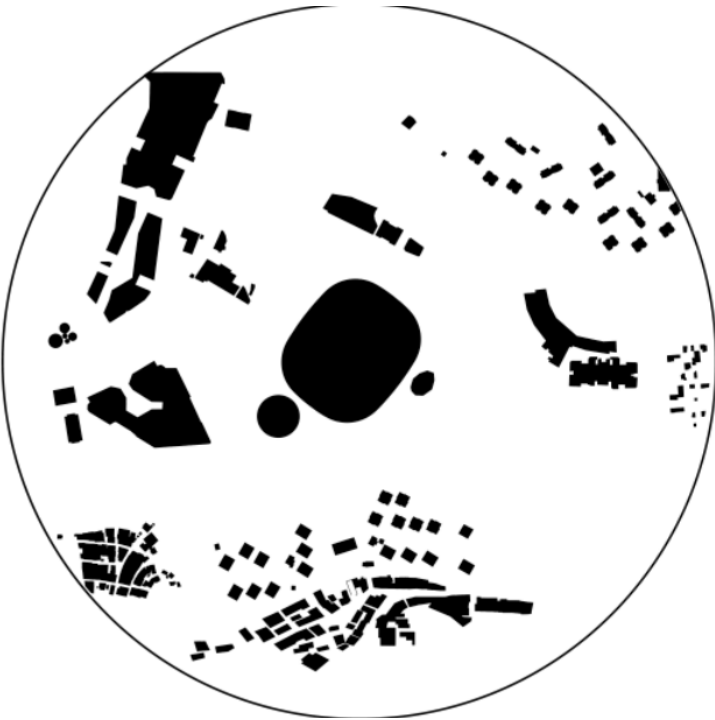


Figure 37. TT Arena morphology 2017

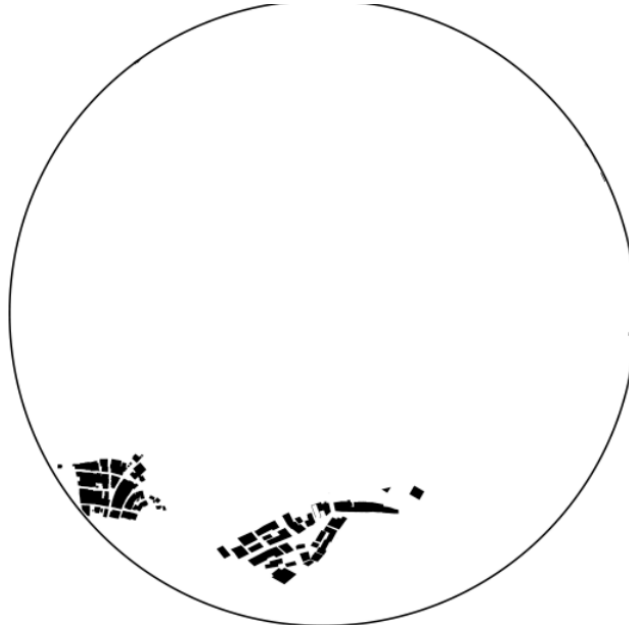


Figure 38. TT Arena Morphology 1982

Axial Map Analysis

Axial map of TT Arena nearby shows that this stadium has the least integration with its surroundings between other cases. The main reason that this map occurs is the limited pedestrian access and increase in highways and main arterial roads. The only red/maximum integration value is contributed in the neighborhood behind the TEM highway which is one of the limited older neighborhoods in Kağıthane. The maximum integration value is at the public square of the neighbourhood / Sakarya Caddesi. The other blue/less integration values come at the borders of the gated communities with pedestrian access' of Vadi İstanbul and the blocks on Cumhuriyet ve Demokrasi Caddesi.

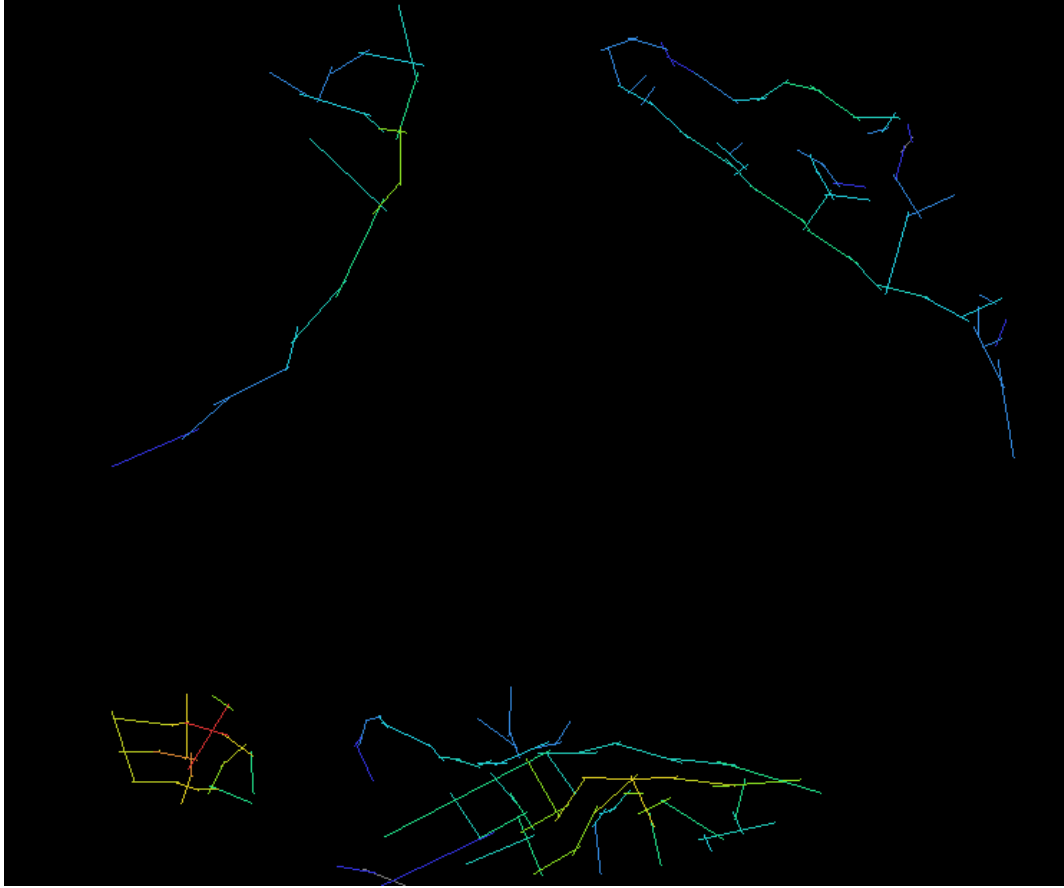


Figure 39. TT Arena Axial Map

However, Ayazağa-Cendere Caddesi is one of the main paths at stadium nearby, there is limited pedestrian road infrastructure with strict ends, creates unintegrated paths. At İbrahim Karaoğlanoğlu Caddesi, the integration values could be higher but the gated community at this street has public spaces but no access from outside therefore that decreased the integration value.

No	Place	Color	Value
1	Cendere Cad.	Blue/Green	0.48
2	Cumhuriyet ve Demokrasi Cad.	Blue	0.68
3	İbrahim Karaoğlanoğlu Cad.	Yellow	0.62
4	Sakarya Sk.	Yellow/Green	1.26
5	Civan Sk.	Orange/Yellow	1.01

Table 11. TT Arena Integration Values

Activity	Number of people	Individual / group	Active/Passive	Time period
Walking (just passing)	+10	-	Active	13-17
drinking	+20	All in groups	active	13-21
drinking in pubs	+30	All in groups	passive	13-21
cycling	none	individual	active	13-15
sitting on pavement	none	-	passive	13-20
Sitting on banks	none	-	passive	13-17

Table 12. Nevzade matchday activity

Activity	Number of people	Individual / group	Active/Passive	Time period
Walking (justpassin)	+100	-	Active	13-17
Drinking	+50	All in groups	active	13-21
drinking at pubs	-	-	passive	13-21
cycling	none	individual	active	13-15
sitting on grass	-	All in groups	passive	13-20
Sitting on banks	-	All individual	passive	13-17

Table 13. Seyrantepe metro matchday activity

Visibility Graph Analysis

Visibility graph analysis shows as the figures below; the highway is the main fact that blocks the visibility of the overall. Because of the new urban transformation sites, the visibility of the Cendere Valley can't flow into neighborhoods and stadium nearby. The first figure shows how would the visibility look like if there was no highway at all. Nurol Plaza and the urban space around have the maximum visibility with the access to Ayazağa-Maslak path. But with the appearance of the highway visibility gets blocked and try to flow into Cumhuriyet ve Demokrasi Caddesi, the nearby green area and north of the stadium.

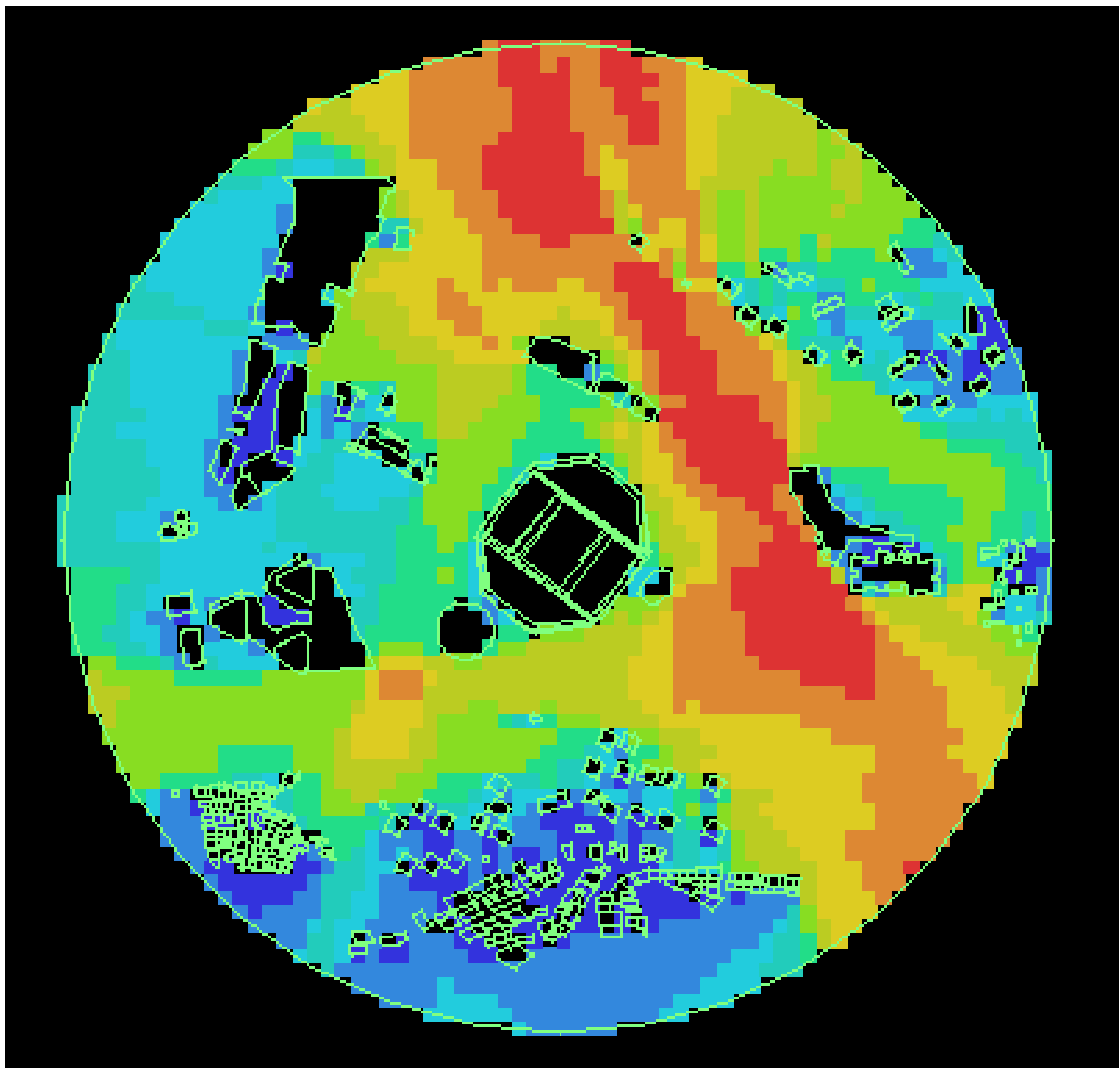


Figure 40. Visibility Graph Analysis of TT Arena 1

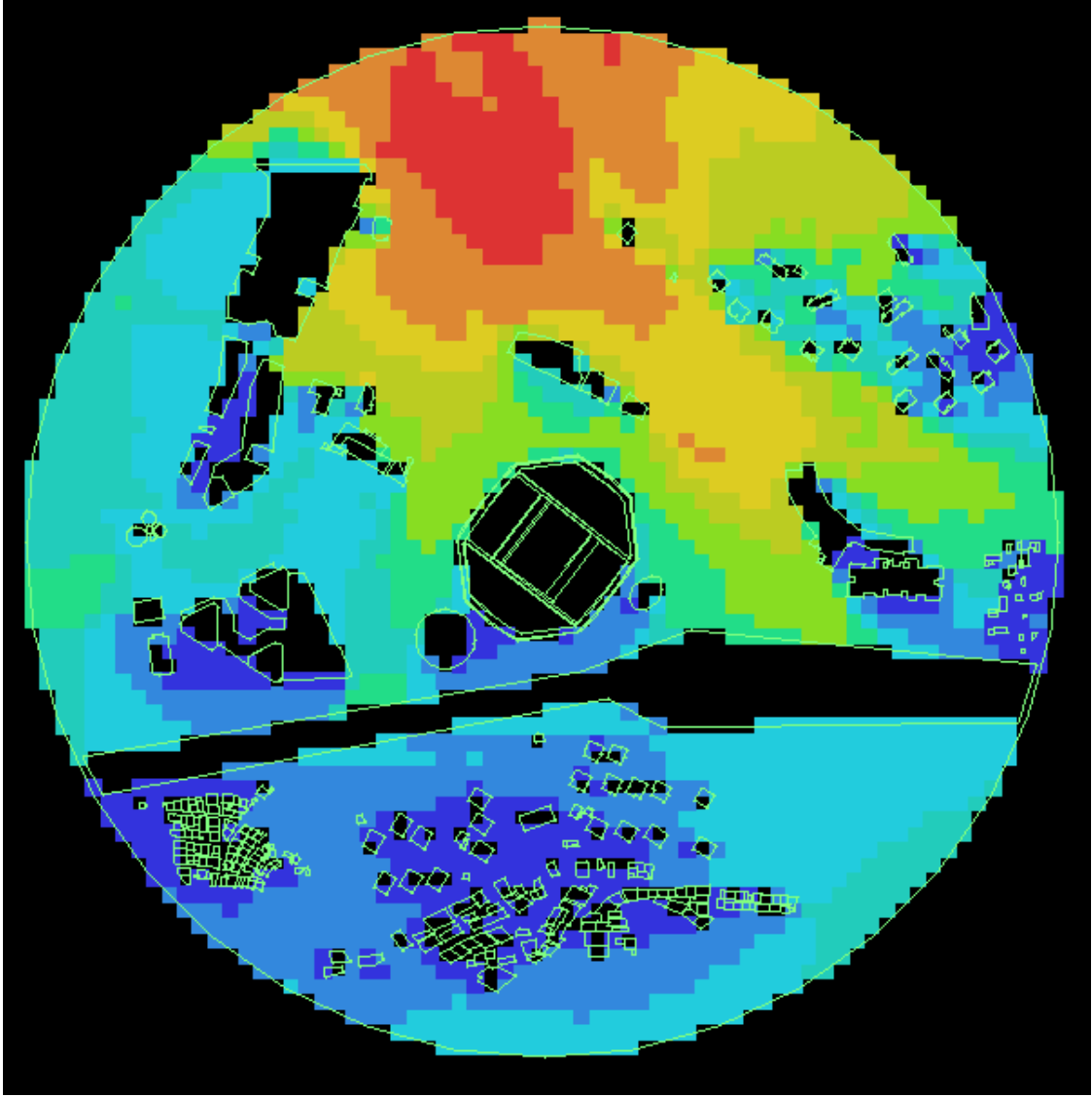


Figure 41. Visibility Graph Analysis of TT Arena 2

No	Place	Color	Value
1	Ayazağa-Cendere Cad. / Kemberburgaz Cad. Intersection	Red	1048
2	Cumhuriyet ve Demokrasi Cad. 1	Orange	912
3	Cumhuriyet ve Demokrasi Cad. 2	Yellow	833
4	Sakarya Sk.	Blue	111
5	Vadi Istanbul front	Red/Orange	928
6	Cendere Cad 2	Orange/yellow	720-850
7	Seyrantepe Metro Exit	Green/Yellow	587
8	Skyland tower front	Blue	78

9	Günlüğü Cad. / Cumhuriyet ve Demokrasi Cad. Intersection	Yellow/green	746
10	İbrahim Karaođlanođlu Cad	Blue	73-100

Table 14. Visibility values of TT Arena

The older settlements currently are stuck into the streets with a few public space because of the constructions on process, therefore, the visibility seems blue/low at that areas. The north part of the stadium could be an opportunity to create a living landscape and environment for the dwellers but the whole empty lots are now under construction. On visibility graph analysis the landscape areas of Skyland, Vadi İstanbul and main paths in front of them reduces the visibility around. In addition, the medium visibility can only be seen at green spaces around Ayazađa-Cendere Caddesi and Evyap Mosque.

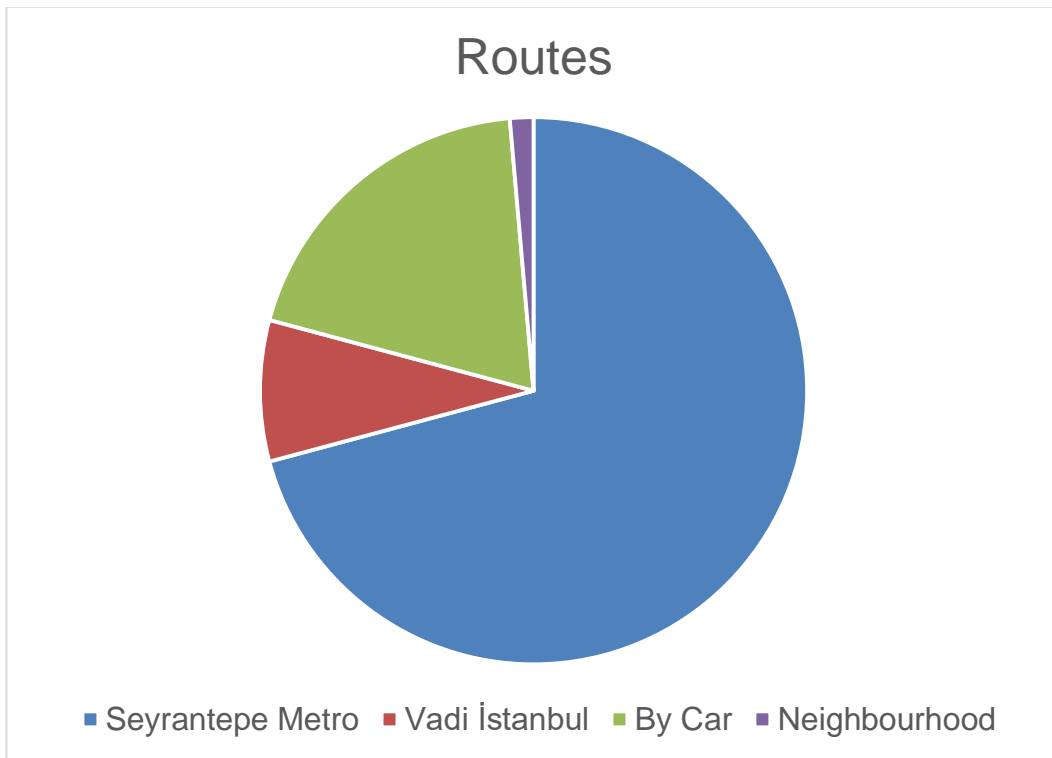


Table 15. Routes of Galatasaray Fans

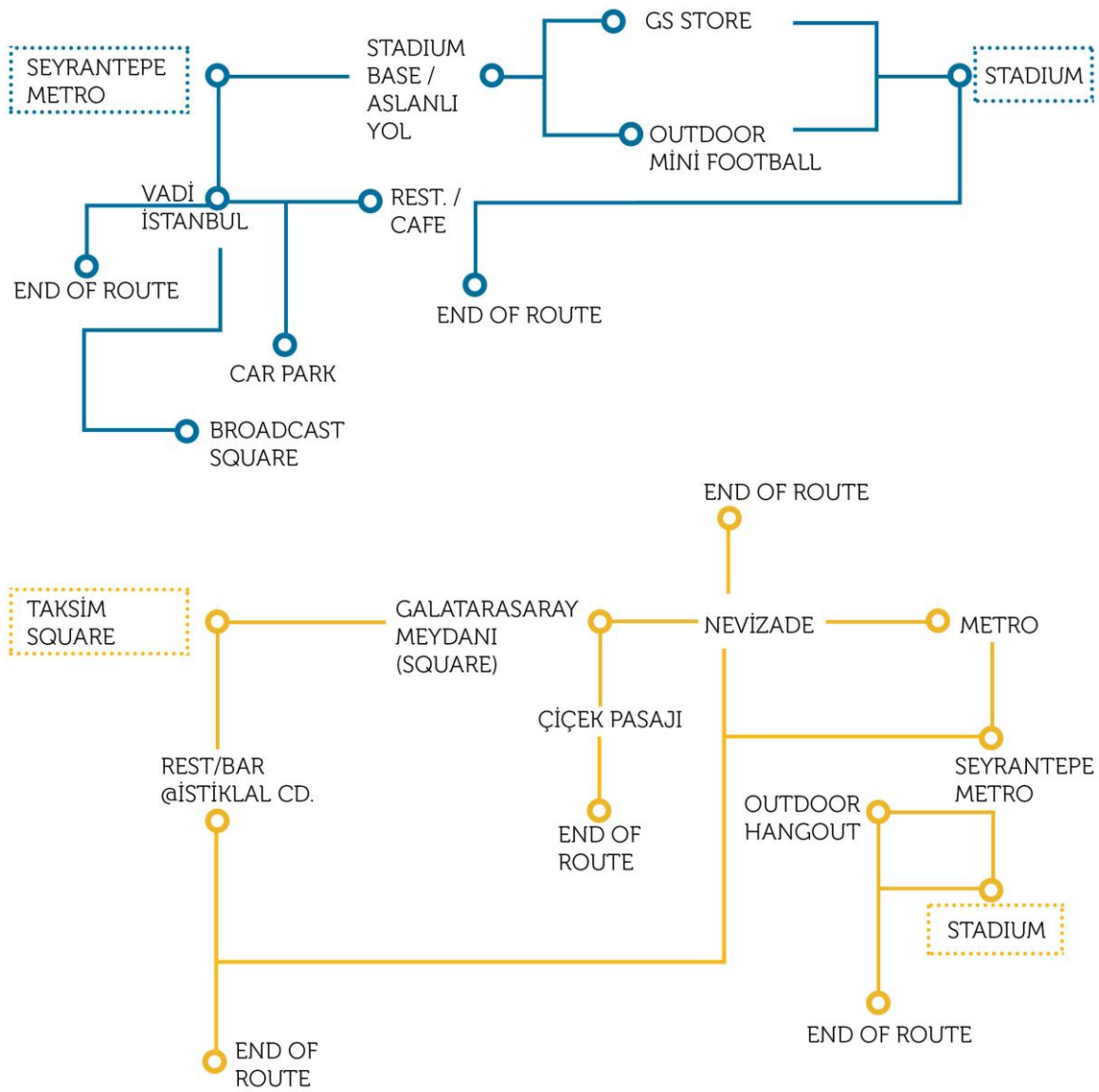


Figure 42. Routes of Galatasaray fans

CHAPTER V

RESULTS

The relationship between football, stadium and society have always been quite strong and affected the urban tissue. This relationship has an impact on urban tissue according to people's movement and group behavior and create diversified footprints on the stadium nearby. The emergent routes and behavior, habitus brings different data than the syntax outputs. The difference is because of the emergent behavior of groups, crowd behavior, and manipulation of the urban spaces usage.

Selected case study areas create different axial and visibility data, also behavioral interpretations. Location has always been a critical issue of football stadiums' zoning policies and FIFA regulations. The case studies show that the nearby environment of the stadiums has a significant impact on users. The highway near TT Arena makes a critical boundary between the users and the stadium therefore, the lack of pedestrian ways and outdoor facilities make TT Arena a non-pedestrian friendly stadium. Thus, the experience of the users has decreased from Ali Sami Yen Stadium, which used to locate and the core of İstanbul, Mecidiyeköy. The lack of outdoor facilities and gated communities don't allow the users to communicate with the built and unbuilt environment.

Vodafone Arena, which locates at city center of Istanbul, Beşiktaş, with the benefits of public transportation and nearby public spaces, embraces the user and encourages them to socialize around the stadium. However, the location and integration values are high, the historical buildings around and the main arterial roads creates a negative effect on the users, because the historical buildings are not all open to pedestrian access. Even though Vodafone Arena, and the old İnönü Stadium has always been a positive stadium for the users and tourists, because of its location. The nearby facilities of Beşiktaş, Çarşı and Beşiktaş square, the pedestrian road from Beşiktaş to stadium gives a positive impact on users. The negative effect about Vodafone Arena is one of the common problems about city centered stadiums; the traffic jam on matchdays. The stadium connects Taksim, Beşiktaş, Şişli, Kabataş and Karaköy therefore, the intersection points gets crowded on match days also on regular days.

Fenerbahçe Stadium locates at city center but really close with the neighbourhood around. Therefore, the outdoor facilities, nearby surroundings, and local people's positive thoughts about the club creates a joyful and sociable environment. People flow into streets of the neighbourhood before and after the match according to their integration values and get separated after some point. The main constraint about this stadium is nearby construction area of urban transformation, Salı Pazarı. Salı Pazarı blocks the highest value of integration and visibility zones near Söğütlüçeşme Metrobüs Transfer point and main road Bağdat Caddesi, the traffic jam occurs on the most integrated zone in front of the stadium.

The collected data has been divided into 2 different tables; first table shows the location, max. integration value, max. visibility value, outdoor facilities, public transportations, routes and nearest public space. Second table shows the human behavior at the most crowded public spaces that the fans spend their time until the match starts and the distance of the public space to the stadium, according to the first table for interpretation.

From all the data interpreted, the city center stadiums always attract the users more and creates a better atmosphere for the spectators and the dwellers. The socialization and communication at these spaces are more and the relationship between stadium and the urban tissue is stronger than the outer corner located stadiums. Many parameters affect the human behavior on match days, but the pedestrian paths, outdoor facilities, green areas and public spaces always create a positive impact on the environment therefore, the users.

STADIUM	FENERBAHÇE ŞÜKRÜ SARAÇOĞLU STADYUMU	BEŞİKTAŞ VODAFONE PARK	GALATASARAY TÜRK TELEKOM STADYUMU
LOCATION	Kadiköy, İstanbul	Beşiktaş, İstanbul	Seyrantepe, İstanbul
MAX. INTEGRATION VALUE	0.89 (Yoğurtçu Parkı Enterance)	0.48 (Dolmabahçe Cd.)	1.26 (Sakarya sk)
MAX. VISIBILITY VALUE	1186	2660	1048 (Ayazağa Centere Cd)

	(Kadiköy City Hall Square)	(Dolmabahçe Cd. / Kadırgalar Cd. Intersection)	
OUTDOOR FACILITY	Pubs, Restaurants, Street food, Merch. Store,	Merch. Store, Street Food	Merch. Store
PUBLIC TRANSPORTATION	Metrobüs, Minibus, Bus	Finicular, Minibus, Bus, Tram, Ferry	Metro, Bus (not often)
ROUTE	1*	2*	3*
NEAREST PUBLIC SPACE	Yoğurtçu Parkı Bağdat Caddesi Kadiköy Bazaar Salı Pazarı	Beşiktaş Bazaar, Maçka Parkı, Şairler Parkı, Kabataş Square	Vadiİstanbul entrance square (semipublic)

Table 16. Stadiums' comparison according to their location

***: Routes of the human activity is below.**

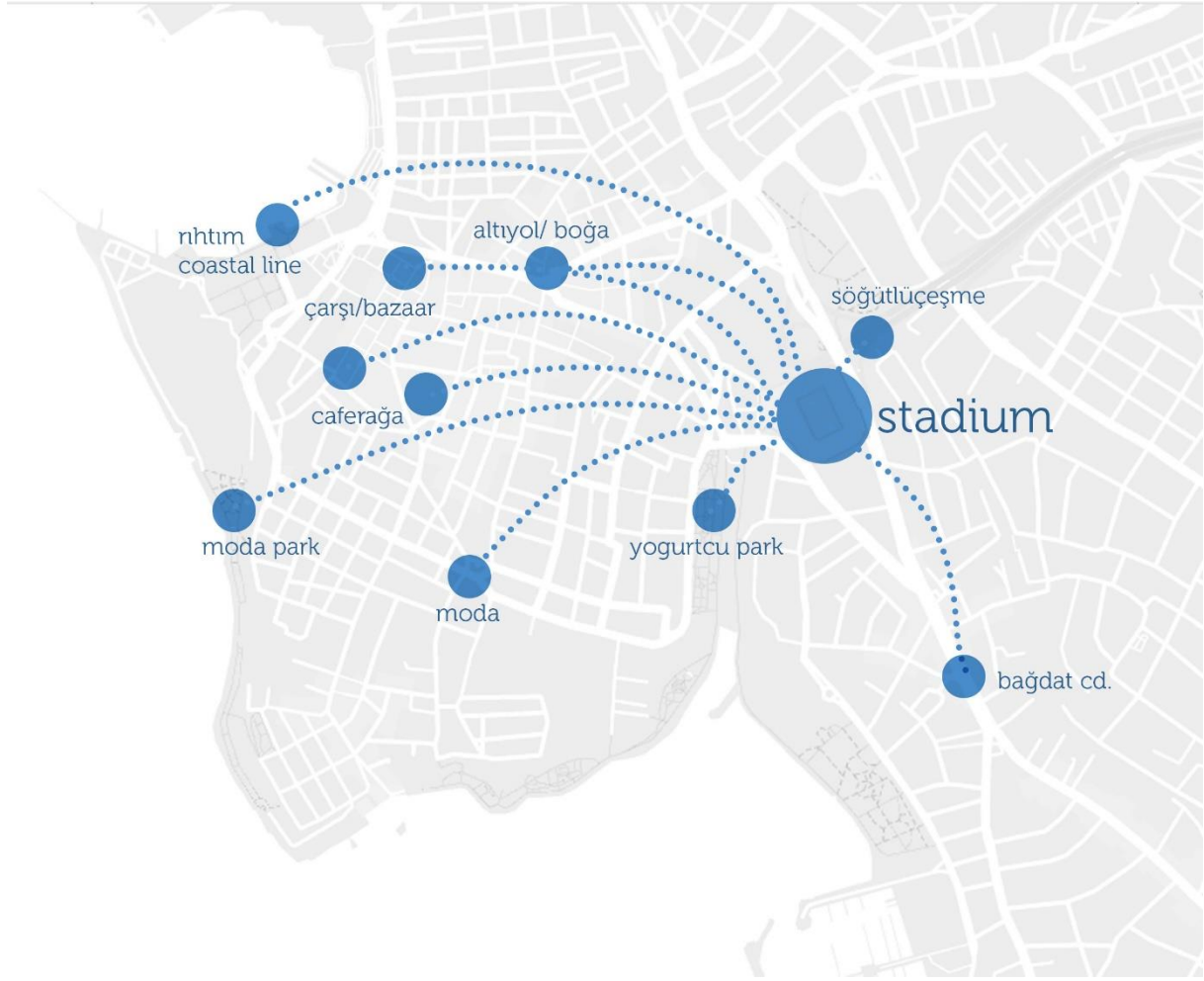


Figure 43. R1: Fenerbahçe fans' route to the stadium

According to the tracing observation,

The fans of Fenerbahçe, generally stays at Kadiköy district with 1.5 km radius. Kadiköy center includes most of the pubs and restaurants in bazaar. The main nodes in Kadiköy Çarşı are, Moda, park of Moda, Yoğurtçu Parkı, Bağdat Cd, Söğütlüçeşme metrobüs transfer zone, coastal line, Altyol and Caferağa. These locations are the places where the fans usually hang out and spend their time before the match starts.

After 13.00 pm people start to gather around Bağdat Cd and Yoğurtçu parkı. After 15.00 pm, if the match hour is 19.00 pm considered, people start to become separated in two; the ones who is going to the stadium and the ones who will watch the match in restaurants or pubs. Therefore, after 17.00 pm, stadium nearby becomes more crowded.

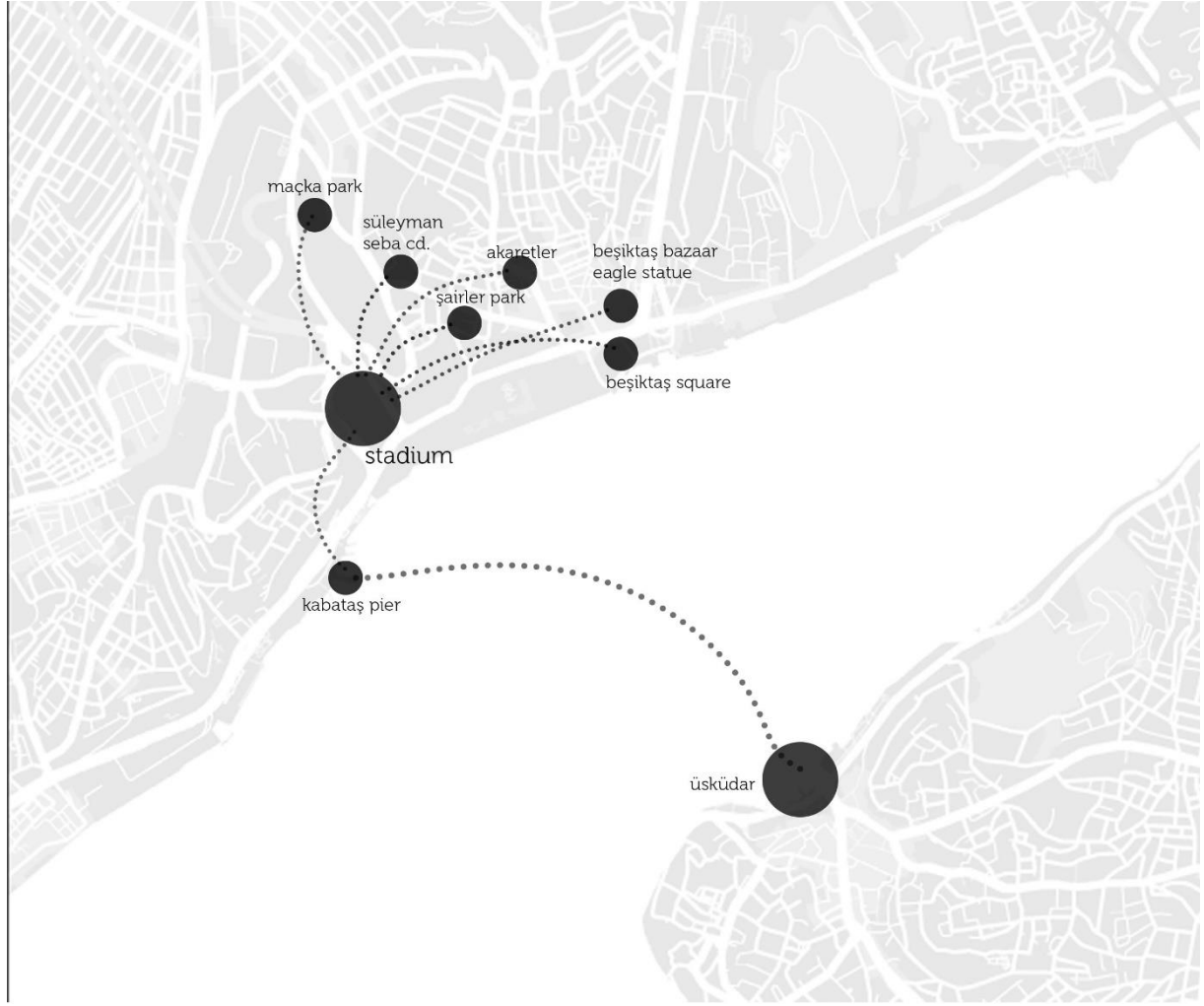


Figure 44. R2: Beşiktaş fans' route to the stadium

Beşiktaş fans' route map is different that Fenerbahçe fans because of the location of the stadium. Beşiktaş stadium's location is quite close to the Kabataş Pier. In addition, the public transportation is the most important fact that fans reach stadium easily.

People, stay at Beşiktaş Çarşı district with 1km distance. The pubs and restaurants locate at Çarşı district, and most of the crowd is at this district. Kabataş pier is advantageous because people can use the ferries from Üsküdar and Kadıköy also. The stadium is at a historical environment therefore, the public spaces and pubs locate at Beşiktaş Çarşı with 1km distance.



Figure 45. R3: Galatasaray fans' route to the stadium

Route of Galatasaray fans start at Nevizade, which is 8km away from the stadium. There's no outdoor facility or pubs near the stadium. The only public space near is Vadi İstanbul Shopping Mall's entrance square. This square also used for live match broadcast on specific matches of Galatasaray.

The previous stadium of Galatasaray used to locate at Mecidiyeköy therefore Nevizade (Beyoğlu) was quite close to the stadium. After the stadium's location have changed, fans didn't change their matchday or celebration ritual. They start the day at Nevizade, then use the metro line to reach the stadium.

The figure below shows the human actions borders according to the team. Red shows the Galatasaray fans movement on matchday, black shows the Beşiktaş fans movement and Blue shows the Fenerbahçe fans movement in context of Istanbul.

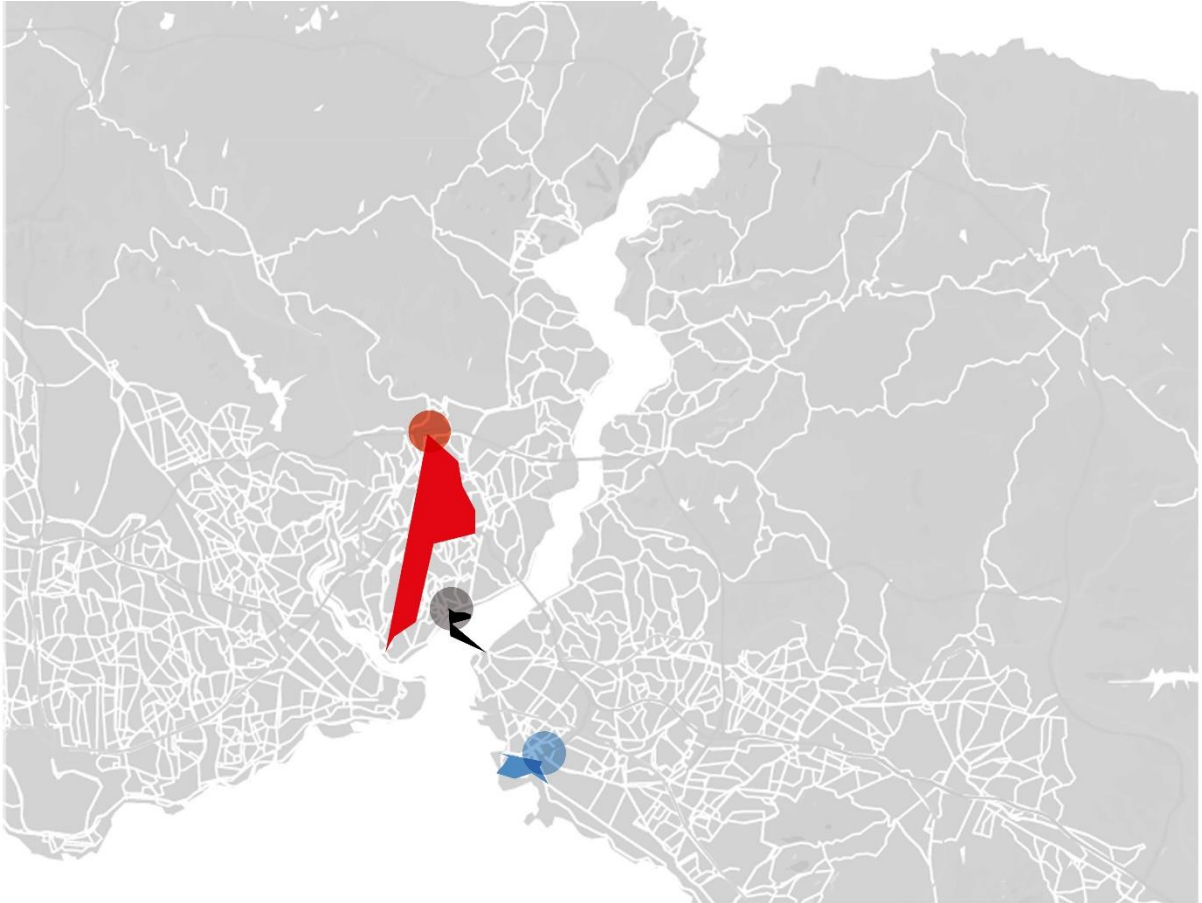


Figure 46. All 3 fans overall route

Human Activity	Bağdat Caddesi	Yoğurtçu Parkı	Beşiktaş Bazaar	Şairler Parkı	Seyrantepe Metro	Nevzade Taksim
Distance to the stadium (km)	300-500 m	200m	1 km	500 m	100 m	8 km
Active	+25	+40	+100	+40	+150-200	+30
Passive	+70	+70	+50	+50	-	+30
Walking individual	2-3	+10	-	10	+100	+10
Drinking individual	-	-	+20	+15	2-3	5-6
Sitting individual	-	3	-	4	-	-
Walking in group	+20	7	+100	25	+100	+20
Drinking in group	+50	+20	+30	+20	+50	+20
Sitting in group	2-3	+50	+20	+30	-	-
Cycling	1	3	-	-	-	-

Table 17. Overall human activity comparison

CHAPTER 6

CONCLUSION

Stadiums have a significant impact on the surrounding environment because of its mass and crowd potential. Football and society is a critical issue that is always connected to each other; football encourages society to make social interaction and share the sports' excitement. Therefore, stadiums are huge theatres for live sport events, concerts and shows but in addition, a social circle that fans gather and share interests with sports experience.

The human potential that the stadiums create also brings environmental data from human-environment relationship on match days. The repetitive rituals, football metaphors, behaviors related with habitus are influenced by the surrounding environment of the stadium location, also, the footprints of the human activities on match days have an impact on spatial pattern of the environment.

This thesis investigates 3 specific stadiums from Istanbul, and how integrated they are with the surrounding neighborhood and district. Because every people react differently to this type of venue and its neighborhood they use for socialization and interaction. How does the integration of stadiums within their environment affects the city? The question aims to answer, how correct is the stadium zoning is and affects the human activity, and how the future stadiums can be? Because every stadium, creates a huge mass on a city, and if it's not used effectively and embraced by the fans, the stadium attendance therefore the benefits of the stadium will decrease in time. Zoning policies such as economic constraints or urban transformation, stadiums constructed in center of the cities or any other location with different distances from city center. The locations have a clear impact on stadium usage because many reasons and changing physical environment creates different cognitive maps on users' mind.

The main methods used are ; Morphological analysis, Space Syntax, Environment behavior studies, Spatial attributions and attachments of the user, Habitus and group behavior in public spaces, Match day activities/routes of the user and footprints on urban tissue. The space syntax methodology has showed the integration and visibility values of the nearby pedestrian roads. In addition, the reasons that highly integrated roads are not used, has occurred after the behavioral analysis. The syntax of the urban area does not change, but on match days, the users create their own public spaces according to their route, habits and spatial attributions to football.

The aspects of urban environment, environment-behavior studies have enlightened the thesis about the methodology. The different aspects have been interpreted and a combined methodology has been used for the analysis of the urban environment and human behavior in context of stadium nearby. The morphological and geographical data from the sites, syntactic data from computational tools, and behavioral data from observations were juxtaposed with the urban pattern. The scientific knowledge from syntactical, morphological and behavioral analysis has been interpreted, therefore a perspective has been considered how the urban pattern is developed at stadium surroundings.

The outputs of the whole case studies indicate that lack of outdoor facilities, pubs, restaurants and green areas decrease the stadium attendance and push the fans to spend their time at a different place which is not close to the stadium. The urban transformation and high rise buildings have a negative impact on the new stadiums because the gated community atmosphere is directly opposite of the football spectator behavior. People like to experience the neighborhood on a match day according to their needs, and communicate with the environment without borders. The shopping mall borders, high buildings and their security is not parallel with the society needs.

The highest number of stadium nearby attendance is at stadiums which locate in a central neighborhood. The needs of a neighborhood are public spaces, food and beverage facilities and green areas, therefore, the stadiums which are close to parks and active neighborhoods. Also public transportation has a significant impact on users. Lack of public transportation choices makes fans uncomfortable and come to the stadium only a little time before the match starts.

As conclusion, stadium attendance depends on many parameters like location, outdoor facilities, and public transportation. The stadium and human activity has a huge impact on urban environment, also the urban pattern has impact on human activity. Therefore, the existing urban pattern and potential human activities should be considered during stadium zoning policies. This thesis shows that stadium users enjoy to spend time at stadium nearby which are integrated with a neighborhood, green space and outdoor facilities with scientific methods to create a further literature about stadiums and urban patterns relationship.

BIBLIOGRAPHY

- [1] Aksu, A., (2012). “Stadyumlar: Kentsel Bağlamda Spor Eksenli Dönüşüm Öğeleri”, Mimarlık, no. 364 (Mart-Nisan).
- [2] Aksoy, A. (2009). Spor Yapıları: Olimpiyat Stadyumları. Erciyes Üniversitesi, Kayseri, Yüksek Lisans Tezi.
- [3] Alexander, C. (1987). *A New Theory of Urban Design*. New York: Oxford University Press
- [4] Bill Hillier, H. J. (1989). *The Social Logic of Spae*. Cambridge: Cambridge University Press.
- [5] Bernard P. Maloy., (1991). ‘‘Planning for Effective Risk Management: A Guide for Stadium and Arena Management’’, 2 Marq. Sports L. J. 89.
- [6] Bafna, S., 2003, “Space Syntax, A Brief Introduction to Its Logic and Analytic Techniques”, Environment and Behaviour, vol.35, no.1, January 2003, pp.17
- [7] Brad R. Humphreys, (2011). “Can new stadiums revitalise urban neighbourhoods?” Significance, Volume 8, Issue 2, pp. 65-69, June 2011
- [8] Bican, N. B. (2009). Towards a More Socially Inclusive Urban Space Stimulated by Sports- Ankara 19 Mayıs Stadyumu. Middle East Technical University, Ankara, Ankara, Yüksek Lisans Tezi.
- [9] Bryant, P. (2008). Between the stadium and the city. University of Cincinnati, Cincinnati, USA
- [10] Bill Hillier, J. H. (1990). *The Social Logic of Space*. Cambridge: Cambridge University Press.
- [11] Bourdieu, P. (1979). *La distinction : critique sociale du judgement*. Paris
- [12] Bachman, L. R. (2003). *Integrated Buildings*. New Jersey: Wiley.
- [13] Durgun, Doğan. 2007. Türkiye’de Sporun Gelişimi ve Değişen Kullanıcı Gereksinimlerini Karşılıyıcı Yönde Modern Stadyum Yapılarının Temel Planlama Özellikleri, Yayınlanmamış Yüksek Lisans Tezi, Edirne: Trakya
- [14] Elias, N., Dunning, E. (1992). *Quest for Excitement: Sport and Leisure in the Civilizing Process*: Difel
- [15] Gehl, J. (2011). *Life Between Buildings*. Washington: Island Press
- [16] Hagemann, A., (2010). ‘‘From the stadium to the fan zone: Host cities in a state of emergency’’, Soccer & Society, 11:6, 723-736.
- [17] Hanson, J., 2001, “Morphology and Design”, J. Peponis, J. Wineman, S. Bafna (Eds.), Proceedings, 3rd International Space Syntax Symposium, Georgia Institute of Technology, Atlanta, pp.06.1-06.18
- [18] Hillier, B., Hanson, J., 1984, *The Social Logic of Space*, Cambridge University Press, Cambridge.
- [19] Hillier, B., 1998, “From Research to Design”, Urban Design Issue, vol.68, October, 1998, pp.35-37.

- [20] Hillier, B., Hanson J., 1997, "The Reasoning Art: Or, the Need for an Analytic
- [21] Theory of Architecture", M.D. Major, L. Amorim, F. Dufaux
- [22] Proceedings, 1st International Space Syntax Symposium, University College
- [23] London, vol.I, pp.01.1-01.5.
- [25] Hillier, B., 1996, *Space is the Machine: A Configurational Theory of Architecture*, Cambridge University Press, Cambridge.
- [26] John Geraint, R. S. (2007). *Stadia*. Oxford: Elsevier.
- [27] Köseoğlu, E., Arslan, N., (2015). "Spor Etkinliklerinin Mekânın Kullanımını Değiştirme Gücü: Beşiktaş İnönü Stadyumu ve Çevresi", *Mimar.ist* (ISSN: 1302-8219, DAAI-Design and Applied Arts Index), Kış 2015, Sayı 52, s.74-80.
- [28] Krier, R. (1993). *Architecture and Urban Space*. Michigan: Academy Editions.
- [29] Lee, S., Lee, H., Seo, W., Green, C., (2012). "A New Approach to Stadium Experience: The Dynamics of the Sensoryscape, Social Interaction, and Sense of Home", *Journal of Sport Management*, 2012, 26, 490-505.
- [30] Lynch, K., (1960). "The Image of the City", The MIT Press, Boston.
- [31] Lang, J. (1987). *Creating Architectural Theory*. New York: VNR.
- [32] Levy, A. (2000). *Urban Morphology. International Seminar on Urban Form*. Michigan: The Seminar.
- [33] Marshall, S. (1967). *Streets and Patterns*. London: Spon Press.
- [34] Norberg-Schultz, C., (1963). "Intentions in Architecture". Oslo and London.
- [35] Nixdorf, S. (2009). *Stadium Atlas*. Berlin: Ernst&Sohn.
- [36] Nascimento, C., & Amorim, L., (2017). The Gadget Building: An overview on contemporary football stadiums, *Space Syntax Symposium 10*.
- [37] Özfiliz, S., Erten S., (2006). "Stadium Construction and Sustainability: The Review of Mega-Event Stadiums", I. International CIB endorsed METU Postgraduate Conference, Mart.
- [38] Penn, A. (2003). Space syntax and spatial cognition, or why the axial line? *Environment and behavior*, 35 (1), 30 - 65.
- [39] Penn, A., Desyllas, J., & Vaughan, L., (1999). The Space of Innovation: Interaction and Communication In The Work Environment, *Environment and Planning B: Planning and Design*, Volume 26, pages 193-218.

- [40] Peponis, J., & Wineman, J. (2002). The Spatial Structure of Environment and Behavior: Space Syntax. In R. Bechteland, A. Churchman (Eds.) *Handbook of Environmental Psychology Chapter 18*, (pp. 271-291). New York: John Wiley&Sons, Inc.
- [41] Rossi, A. (1984). *Architecture of the City*. Cambridge: MIT Press.
- [42] Schultz, C. N. (1971). *Existence, Space & Architecture*. California: Praeger.
- [43] Trancik, R. (1986). *Finding Lost Space*. Canada: Wiley.
- [44] Vertinsky, P., (2001). ‘‘ A Sense of Place: Reading the Landscape of Sporting Life’’, *International Sports Studies*, vol.23, no. ½.
- [45] Woolley, H. (2003). *Urban Open Spaces*. New York: Taylor&Francis.
- [46] Zeisel, J., 1995, *Inquiry by Design, Tools for Environment-Behaviour Research*, Cambridge University Press.

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