

**Robustness as an Essential Quality of Responsive
Environments: Building and Public Space
Relationships in Çukurambar, Ankara**

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ABSTRACT

Considering the significance of the quality of robustness in building edges in public urban spaces, the study discloses a relationship between building functions on the ground level and surrounded urban space, as well as façade physical formations towards vitality of the public urban spaces.

The research includes a literature survey, a user survey, on-site observations, analyses of functional relationships and physical aspects. Findings revealed that the vitality of public edges of a building is depending on the variety of uses at building frontage. Functional relationships of mix uses on the ground floor illustrate the expansion of public encounters from a building edge to the surrounding urban space. However, a building located in an urban context, and furthermore, physical formations of ground level façade have to be exhibited and designed in a way that represent a user-friendly environment. In particular, the complex functional relationships of uses, façade formations, physical amenities and users, work together to enhance the vitality of a public urban space.

This thesis based on a theoretical study and a case study in Çukurambar, offers implications and recommendations regarding how to generate vibrant urban space through carefully designed and managed buildings.

Keywords: Public urban space, Building robustness, building and public urban space relationship, Çukurambar (Ankara).

ÖZ

Kentsel kamusal mekanlardaki binaların kenarlarının güçlü ve işlevsel olma (Robustness) kalitesinin önemini dikkate bu çalışma, binaların giriş katlarındaki işlevleri ile kentsel mekan arasındaki önemli ilişkiyi irdelleyerek kentsel tasarımın önemli bir konusunu aydınlatır.

Araştırma literatür taraması, kullanıcı anketi, yerinde gözlemler, ve işlevsel ve fiziksel analizleri kapsar. Araştırma sonuçlarına göre, giriş katındaki karma kullanımların işlevsel ilişkileri kamusal kullanımın bina kenarından çevreye kentsel mekana uzanmasıyla güçlenir. Ne var ki, kentsel bağlamda yer alan bir bina ve bunun ötesinde giriş katı cephesinin fiziksel özellikleri, kullanıcı dostu bir çevreye uygun olmalıdır. Özellikle, kullanımlar, cephe biçimlenmesi, fiziksel özellikler ve kullanımların karmaşık işlevsel ilişkileri bir arada kentsel kamu mekanının canlılığını artırır.

Bu araştırma, teorik araştırmaların sonuçlarına ve Ankara'da çok önemli bir semt olan Çukurambar'da yapılan alan çalışmasının sonuçlarına dayalı olarak dikkatle tasarlanmış bina ve kent mekanı ilişkisi ile nasıl canlı kent mekanları oluşturulabileceğine dair bilgiler sunarak tavsiyelerde bulunur.

Anahtar kelimeler: kamusal kentsel mekan, bina kenarlarının güçlüğü ve işlevselliği, bina - kamusal mekan ilişkisi, Çukurambar (Ankara).

DEDICATION

*I would like to dedicate my thesis to my beloved father,
mother and my brother*

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Chapter 1

INTRODUCTION

1.1 Introduction

One of the problems related to the buildings and public spaces is related to the role of building edge design on the liveability of urban space. Building edges are not generally designed to invite people using physical/functional relationships between a building and urban space.

Considering the role of building edge design on enhancing the overall quality of urban life, only a few numbers of studies have provided a closer look at the building edge design. This research illustrates the relationship between buildings and public urban space and tries to explore the role of building edge design and robustness on the vitality of the public settings.

1.2 The Aim and Objective

The aims of this research are: (1) to assess the general conception of public urban space; (2) to determine the relationship between public buildings and public urban spaces; (3) to identify the role of building edge design and active ground floor as functional and physical dimensions of building robustness.

1.3 Structure of this Study

This thesis is comprised of six chapters. Chapter one provides a background to the research, three research gaps and the conceptual foundations for this thesis were recognized and monitored by research problems and six research questions which followed up by justifications of this research and research method.

Chapter two covers studies and definitions for public spaces and public urban spaces and their classifications.

Chapter three delivers the conceptual framework of building robustness with its physical and functional dimensions, and the relationship between mixed-use buildings and urban spaces.

Chapter four reviews the successful and failure world-wide example of the relationship between mix-used public buildings and public urban spaces from different cities in the world.

Chapter five delivers data gained from the user survey, developed to understand and measure robustness in Çukurambar buildings and discusses the results.

In the final chapter conclusions are made to covers the similarities and differences of the research by evaluating the results in Chapter three (literature review) and Chapter five (data analysis). The implications and limitations of this research are discussed and recommendations for future research are provided.

1.4 Background to Research

Although the physical quality in the urban environment has improved over the past decades due to the practical and technological advances, the essential quality of vitality in public spaces were neglected, especially in case of the relationships between building and urban space. Calhoun (1986) argues that one of the most important social characteristics of cities is the provision of public spaces in which relative strangers can interact and observe each other, debate and learn politically, and grow psychologically from diverse contacts. On another review Moughtin (2003) offers the relationship between public urban spaces (squares, streets) and buildings. Alexander (1977) mentioned about useful interaction between buildings and surrounded spaces and suggested solutions concerning the quality of the buildings and their surroundings as patterns. The concept of robustness was firstly conceived in the mid-1980s, when Bentley (1985) introduced a new experiential approach for enhancing functional and physical dimensions of building robustness as responsive environments. Salingarous (1999) explored a physical dimension of building robustness in details, whereas Gehl (2013) offers a practical method of public life and public space study, by focusing on functional relationships between mix-used building and public urban space.

1.5 Research Gaps

1.5.1 Research Gap 1--- Lack of study which evaluates the role of physical formations of mixed-use public buildings and public urban spaces in the Turkish context.

1.5.2 Research Gap 2--- Lack of study which evaluates the role of functional relationships between mix-used public buildings and public urban spaces in the Turkish context.

1.5.3 Research Gap 3---Lack of study which evaluates the role of public urban space activity that enhance the vitality both in public space and public building, as a key in mediating relationships between public urban space and buildings in the Turkish context.

1.6 Research Problems, Research Questions

Research Problems

Despite growing interest in recent years in the vitality in public spaces, fewer architects yet have considered the role of their building development on the social quality of public urban spaces. Architects typically consider buildings as independent masses and neglect the surrounding urban settings. They just focus on the visual and aesthetic features of the buildings, and disregard the functional relationships between buildings and public urban spaces.

Research Questions

Research questions were prepared and verified in this study in response to the research problems.

- 1) Does the public urban space, fix the needs of the nearby buildings?
- 2) Does a public building feed the needs of its surrounding space?
- 3) How will we enhance the relationship between building activities and the underlying forces of the public urban space?
- 4) Do buildings feed their front space as well as inside?
- 5) What is the relationship between building edge and outdoor activities?
- 6) What is the relationship between active indoor area and outdoor activities?

1.7 Justification for the Research

1.7.1 Justification for Gap1

The physical relationships of the building and surrounded public urban space will be facilitated by intervening building façade formations to bring clarification and suggestions feed the needs of public urban context.

1.7.2 Justification for Gap2

The functional relationships of the building and public urban space will be clarified by engaging active functional activities.

1.7.3 Justification for Gap3

Identify and clarify the role of public urban space activity that enhance the vitality both in public space and public building, as a key in mediating relationships between public urban space and buildings.

1.8 Research Methods

To examine how public urban spaces and the public building use and act regarding to active building edge, on-site observation approach was applied and the method Followed up with pedestrian traffic counts, locational and behavioural mapping as a means of data collection. The survey explored the relationship between the urban quality and outdoor activities, instead of cross cutting building functions, user patterns, plans plus sections, façade details and proportions. (Santamouris, 1999; Gehl, 2013).

The introductory chapter provides a brief overview and discussion of this research. The research problems, research questions and justifications are outlined for further investigation. The adopted research methodologies are briefly presented and discussed. Ethical considerations, and the implications and limitations of this

research are covered and highlighted. Description of terms used in this research and the outlines of this research are briefly discussed.

Chapter 2

UNDERSTANDING THE MEANING AND USE OF PUBLIC SPACE

2.1 Introduction

Over the centuries, public spaces have been playing a key role in the human being's lives. Throughout history, forums, parks, commons, market places, squares and streets have been seen as the embodiment of public space (Minton, 2005). But there is always a difference between public space and public urban space. This chapter reviews public urban space dimensions regarding the determinant of robustness on the way to a vitality and enhancement of the people`s life.

2.2 Public Open Space

Public open space is the space we share with strangers, who are not our relatives, friends or colleagues, is the space for politics, religion, commerce, sports, space for peaceful coexistence and impersonal encounter. The term “public open space” refers at the outset to the parks, streets, plazas, recreational areas, spaces between buildings, which are accessible to all types of people. As a common area, it promotes the idea that everybody would have the opportunity to be perceived or make out by and the others, so that the others be able to identify the variety and responsive to their requirements. In another world, the major way we can recognize public urban space from other types of open spaces (like green spaces) is the size, location, function and the manner we use the space (Tibbalds, Stewart, & Alcock, 1990).

2.3 Public Urban Space

Public urban space is the place mainly located in the city and surrounded by buildings. It is composed of squares and streets as the main types. Streets and squares are being a physical civil element that can provide access, social activities. Public urban spaces can be defined into squares and streets as the most common urban elements (Oktay, 2012).



Figure 1: Turkish neighborhood
Source: Developed by Oktay, 2004

Oktay (2004) has proved that the character of place and public spaces have positive effects on the livability of a neighborhood (*Mahalle*) especially in traditional Turkish cities. It was a geographical entity as well as a homogeneous community providing social and economic collaboration among neighbors. Each mahalle had its own characteristics and provided an indicative, unique social environment for their

residents with a variety of functions including a religious-social center, local market, fountains, open kitchen and workspaces.

On the other hand, in the contemporary city, streets, squares and public parks are the only places where people truly meet as equals, and a high-quality public realm may help create a sense of belonging and collective identity. (Oktay, 2014)

2.4 Classification of Public Urban Space

Public urban spaces can be classified into two major types; street and square.

2.4.1 Square

Squares are the nodes of the activities or centers of the towns and city. Most of the important public events, celebrations, and also people's interactions are generally held in the squares (Oktay, 2012; Kostof (2005) assorted basic functions of the urban squares considered as below;

--Commercial activities: he believed that most of the people participate in commercial activities where we called squares and centers.

--Urban node or focal point: people use a square for pause, visit, rest, move and social interactions.

-- Social host of activities: most of the happenings include of religious, protests, recreations, residential, administrators, educators and also quays have been placed in the center of the cities as foremost squares.

Regarding the reflection on the local identity, various types of people with different social, economic, and cultural qualifications, are having the same chance of access to the squares as a major sort of urban open space. The abilities of chatting, sitting and playing instead of having respect and accepting others uniqueness, share out the local context and community values (Kostof, 2005).

2.4.1.1 Square Activities

According to Jacobs (1961); a well-designed public urban space provided diverse activities at the same time, which may lead a public life and buildings at varying ages may fix different people and businesses which can afford different levels of economic results and incomes. She also argued that neighborhood blocks should be short in order to create more appropriate paths between destination and departure points. In these paths, cities can produce gathering points which shows the much more complete livable urban spaces. As a final point, it correspondingly supports the economic and social expansion. Gehl (1987) stated that both stationary and moving activities can ignite the livability of public spaces. Chances for closer encounters and daily actions can make a same opportunity for contact and therefore experiencing diverse accomplishments and public participations. In this sense, as a usage of urban space. Gehl defined that outdoor activities can be separated into three sorts: necessary activities, optional activities, and social activities.

- Necessary Activities: represent the essential daily activities which are individuals have to participate in different positions. As an example, we can mention walking to work, waiting for bus in stations and can happen in any condition.
- Optional activities: that can take place when people willing to participate in specific activities in a framework of time and place. It might include walking in the park, going beach and taking sun bath, etc. As you can see, they are happening at a certain time and situation.
- Social activities: that depend on the participation of others in public space are so called social activities. It is included of conversation, talking while walking, and passive contacts, etc. The number of people's optional activities is intensely depends on the setting's overall condition.

The three types of activities are closely related to each other. Improvements of optional and necessary activities surely support social activities, both directly and indirectly. As it is seen these days, with a shortage of time and place, most of the public activities are low intensity activities, which are so called “passive contacts” (Gehl, 2003). Primarily, it sounds like less important than additional doings. But Gehl proved that it plays a vital role in daily communication. For example; it can make a primary hint for starting contact, or create a reason for keeping in touch with that contact level (it may lead to the closer encounters). Every so often it suggests a motivating and exiting involvement both in public or semi public/private spaces. Passive contact is rarely able to show the respect and the preliminary basis of public facts about community space around.

Gehl (2006) labeled that the importance of the overall urban quality can boost the absorption of people in local and public activates and participations. Otherwise, persons rather stay at home and use other means of communications such as Emails, Facebook, Skype and electronic methods.

2.4.1.2 Form

A public square can be molded in assorted outlines, but the matter is the core of the square and is dramatically influenced by the surrounding elements, forms, and buildings. Sitte (1889) in his work, draws a basic morphological principles likely based on aesthetics rather than function. As Sitte (1889) suggested; an urban square should be free in form, architectural attractiveness should be applied, and enough sorts of surprise have to be put on. He profoundly believed that sense of enclosure makes the space more coherent and recognizable, needs to be composed as well. Those factors would be complete with the design of the pavements and concavity (URL 9).

On the other hand, Kerrier (1979) concentrated on the fundamental geometry of typology of urban squares. He tried to explain the idea of combining, adding, dissertation, segment and overlapping of simple geometries, in the context of the urban environment. It might lead generating system or disorganized urban forms.

Finally, five types of urban squares put forward by Zuker;

The amorphous square defines a formless shape at all.

The closed square has a clear geometric form. Streets are linking to the square simply as the only tie elements.

The dominated square is in a straight line connected to the individual or group buildings or milestones. It is extremely influenced by the type of the buildings surrounded by. If the enclosed environment contains high rise buildings or historic monuments, it would be so called “deep type”. As it should deeply consider the proportions and reveal them somehow. In contradiction of the deep square, we face a low rise and if at all possible, long shaped surrounded space such as a marketplace.

The nuclear square generates coherent context between surrounded area and the fundamental urban element which places faithfully at the center point of the square.

2.4.1.3 Size and Location

One of the main important factors of urban quarters is the design in accordance with the location and size. Generally, urban squares are perceived by human factors, which are comprised of accessibility to public, both in physical and visual aspects. Location and size of the square led socio-cultural activities and close encounters in between a member of the society in squares. (URL 9) nevertheless, as an example,

every so often it gets hard to distinguish the main and central urban square of a city. In contemporary cities, with a shortage of time and place, people have no occasions to go for shopping and resting instead of having other casual of public activities. They would rather spend their miniature time and hard earning money into the one major plaza (as an urban quarter) to have all public opportunities together.

Size is also permeable defined by the concept of a place, then followed by location, uses and enclosed activities. A vast studies explored about the ideal size and proportion of the urban square. Gehl (2006) proposes a dimension of 30-35 meter for better apprehend of each person alongside of the square. For instance, in accordance with Alexander, he (1977) proposed 22 meter at a maximum distance in a small urban square. At last Lynch claimed the ideal dimension end to end each side of the square should stick between 12 to 24 meters, and 100 meters for larger areas. (Memluk, anonymous) on the other hand, the streets, junctions, and roundabouts are the shapes of urban spaces that built in the new progress. While these spaces are a fraction of city's spaces, but they would not be able to create those sorts of spaces that people require. Memluk (URL 9) said that public squares have also ecological benefits to the built-up environment. Green areas and water elements within a square offer soulful and healthy environment. It similarly aids economy, marketplace, or commercial concerns. On the other hand, improvement of air quality, minimize surface water runoff, reduce noise levels and screen unwanted or undesirable views, and reduce negative effects of urban heat islands, are the rest of the benefits. The research will discuss about ratio and proportions by way of aesthetical features in the next chapter in more dept.

2.4.2 Street

If we take a glance at the Oxford English Dictionary, the street is described as “a road in a town or village [comparatively wide, as opposed to a lane or alley] running between two lines of houses; usually including the sidewalks as well as carriageway. Kostof (2005) mentioned the Latin description of the street as “strenera” that mean “to pave”. Moughtin (1992) similarly asserts that street mainly refers to a road in a town, city or village, which is clearly differ from the alley (mostly by means of dimensions). On the word of Eliss (1991) designate that street is a kind of road or way which is separate from building masses and forms. As a Reykwet (1991) point of view; A simple way or path in the matter will not call “street”, unless it hold function, identity, and specific name. The main function is about accessibility and transportation. In a case of identity, street holds social, economic and sometimes historical engagements. Access streets are generally referred to cycling or short paths which there are no separators in between. While on transporting roads the verse is true, and they usually reflect long and incessant streets.

The street categorized into four systems:

--Main (principle) street: comprised of limited access roadways, expressways, and highways. It holds a huge capacity of traffic and a car passing from long distance milestones and regions. Having the minimal number of traffic signals and driveways alongside the main road are other appeals of the principal streets.

--Minor Street: thoroughfares with low-intensity use and multi-lane roadways which is allowed to have direct street and driveway access in utmost occasions.

--Collector street: It acts as a mediator to attach minor streets, so that to create focal points, trifling urban uses. As a Case in point, it may take in commercial streets and residential streets.

--Freeway: a different street with no intersections and toll stations which is designed for motor streams. In most cases, main streets are joined to freeways.

When we come to urban life, it gets hard to separate the street from civic environment. Streets represent vessels of the city, and with the combination of squares and other public elements, shape the overall urban space.

The movement hierarchy and street type are basically formed by the traffic intensity. Applying this issue, a bunch of street types would appear as below; Boulevards, corridors and enclosed streets, waterways.

Boulevards: wide built-up streets that provide multiple lanes of both fast and slow moving traffic, sidewalks and greenery lanes in between pedestrian and motorway roads. They often provide huge relations between places, and support altered urban uses and functions. The given functions bring the idea of choosing the best and closest examples and types of street, which may contribute to the social interactions between individuals and the public (Jacobs, 1961).

Enclosed streets: means the common area within an enclosed retail center used by the public for pedestrian travel between establishments.

Gutman (1991) cited that streets expanded into two social functions. The first is about involved and practiced meaning. By this means, Focal points and urban nodes are linked to buildings to feed the needs of citizens. The next function of the streets is called expressive which refer to a social channel communication and relations

between individuals and urban environs. Most public activities are being held in the streets. As a human point of view, the first information we discovered from our environment is generally associated with aesthetical features, both in two-dimensional and three-dimensional issues. Thus, merely the paramount investigations could be brand-named as;

- Two dimensional forms, which outline the ground properties, dimensions, textures, colors and etc.

- Three dimensional frame, displays the overall appeals of the adjacent setting, borders, dimensions, qualities, etc.

There would be some urban elements that represent the built-up features within the city and town, covers both two dimensional and three dimensional.

2.4.2.1 Street Use and Activities

Since the industrial revolution, and the invention of the motors, transportation had been dramatically altered over the time. Walking paths separated from the motorways and the transportation pace intensely transformed. Then, a number of new meaning appeared due to the function, form and design of the transportation systems. These definitions led change the urban life forever. Salingarous (1998) pointed out with no doubt that pedestrian is the most important and core of the urban setting. Rappaport (1987) highlighted the role of diverse variables on the use of streets in urban life expectancy. He proposed the physical, cultural, aesthetic and environmental urban services and variables for optimum usage in public.

2.4.2.2 Street Usage

Every region and city contains a chain of nodes and paths. It gets hard to define a specific pattern of nodes, connections and paths throughout the city. Salingarous (1999) stated that every human gathering, stopping, chatting, etc. can be categorized

into temporary nodes. The growth of the quantity of temporary nodes by grouping the people may largely form complex interactions between human beings. (Whyte, 1980). Typically pedestrian nodes are strongly joint with physical and visual urban furniture. Because, people tend to sit and chat around public buildings. On the other hand, there are a few spots along the streets of modern towns and neighborhoods where people can hang out, comfortably, for hours at a time (Alexander, 1977). One of the best solutions and examples for creating local nodes such as restaurants or cafés. For example cafés or restaurants are capable enough to cover the food/drink both with indoor or outdoor sights and services, while creating social interactions in between. Interior activities and nodes from the plan of the building, can link to the exterior pedestrian nodes very easily in this format in some cases, leftover spaces towards public building can turn into positive space by this method (Alexander, 1977).

2.4.2.3 Street Activities

Moughtin (1992) stated that the use of the streets is faithfully related to the user's activities, especially in high density area. With the procedure of the mix use area, different activities may offer. Taking the pedestrian dynamic into account, the Total Street activities can be divided into two partitions, active pedestrian activities and passive activities.

Active (dynamic) pedestrian activities; illustrated the active and natural movements and behaviors regardless of the cultural issues, ownership of the place, time and duration, age and race. For instance, walking is free from limitation of time, age, etc.

Passive (static) pedestrian activities; expressing reliant activities that to more extend depend on cultural and positional aspects. In place of example, we can name playing, lying down, sitting and chatting, resting, etc. (Rappaport, 1997).

There would be some other urban activities which bring life and enhance a sense of a place, indirectly, just like recreational activities. People keen on resting, chatting and playing some passive activities around recreational parks and areas. It will carry socially interact. The opportunities to access to the shopping center and shops are prepared by streets. Due to the setting, topography and climate, the city or neighborhood might build a covered street or corridors as a way of attracting societies. The most significant and basic outdoor activity is walking. It may Leeds you to do all kinds of activities, particularly in crowded urban spaces. But it also can make problems and limitations as well (William, 1995).

2.4.4 Conclusion

To understanding the meaning and use of public urban space, this chapter donates the review of the literature on the definition of an urban space, and classification of urban space in to squares and streets as urban elements. Consistently, this chapter categorizes each urban elements into usage, form and activities and illustrates their relationships as civic networks.

Chapter 3

CONCEPTUAL FRAMEWORK OF ROBUSTNESS

3.1 Introduction

Nowadays, there is growing concern over the robustness in buildings and public urban spaces. Urban functions were spread over the paths and surrounded the buildings. The active interaction had happened in between people and public spaces especially at the front sides of the public buildings. Then again over the centuries, public functions have moved inside of the buildings and enclosed activities ongoing to produce larger. Generally the first layer which holds the vigorous activities between public space and a building is the ground floor. Depending on the uses and setting of the urban masses, ground floor grasps various occupations. Then the necessary of front façade design turn out to be more and more significant (Bentley, 1985).

This chapter is going to discuss the concept of the relationship between building and public space regarding the role of building edge and active areas; an outline of public urban space; issues of the qualities and uses of public realm; the importance of robustness; the concepts of robustness and determinant of building edge and active areas as a designated dimension of robustness will explore further.

3.2 Definition of Robustness

The ability of delivering diverse and active accomplishments in between a building and surrounded setting was ignited by Jacobs (1961) and magnificently described as

“robustness” in “responsive environments” book which was written by Bentley (1985). Alexander (1977) had drawn diverse patterns about the relationship between buildings and public urban spaces, and furthermore, he suggested advantageous implications to the matter of efficient user control. These ideas were established and applied in the real world by Gehl (2013) and Salingarous (1999). Then Cowan (1963), Duffy (1980), besides Whyte (1980) had discovered and suggested more vast solutions and implications about designing of building edge as an active area.

The initial idea of the user control seems to vibrate with professionals and architects, which considered as a pattern. A small number of the architects have mentioned the building as part of the superior and more unified pattern regarding the public surrounding environment. Quite a few authors have prepared the argument that the robustness can promote the overall urban quality of life (Bentley, 1985; Alexander, 1970).

3.3 Qualities of Robustness

The demand of developing concern over unity and diversity in urban design has led us to renewed view of urban space. Buildings and neighborhoods would not determine as only two-dimensional enclosures. The overall three-dimensional urban quality which managed by social use, define a major aim of the public urban space. Buildings with the combinations of streets form the overall image of the cities or neighborhoods. Much of the spatial information and characters can be achieved from architectural details. The two-dimensional map has been used to display the form and distribution of public space.

In old times, settlements included paths and merchants. With the fast development of technology, vehicles were taken the place of transportation tools. Then at that point, the division of the buildings and paths were getting brighter. Buildings and shops got more self-oriented rather than the past. Their functions were moved to inside of forms and buildings. It was the necessity of those times, which rule the functional aspects of urban environments. On the other hand, the connections of the buildings and people have been unremitting in a shocking wave until now. In case of public space, it may illustrate that how people enter and exit out of a shared area or city, and how they act and contact with each other, and in what way they feel the equality and unity.

Bentley (1985) disputed that the ability of a building or space, to convey diverse functions and uses is known as robustness. With the limitations of time and place, deciding on how a single place should be furnished, and designed to feed the necessities of different uses seem like so vibrant. The association of a single building about dealing with surround area and the building itself, steered the sorting into internal robustness and external robustness.

Internal robustness: clearly correlated to the different uses within a building which may offer not the same spaces within one bigger space. It works about the detailed design of a single room or space inside the building, and consideration of major spatial layout to shape the forms and sizes of the rooms and spaces. The overall shape and size of the room might affect the number and types of the activities in a room. Cowan (1963) had drawn a graph which illustrated the optimum room size and shape due to the number of activities. Then he explained that by the usage type, there will be a most favorable size, which bring the best about the space (Bentley, 1985).

External robustness: concerning the variability of a building, as a fragment of a neighborhood or larger environment (Bentley, 1985) from a bigger point of view, a single building is a follower of the neighborhood context.

Most of the public and private buildings shared both structural feature will barely change during their prime lifetime. (Columns, walls, etc.) These spaces are called; hard space. But in a case of soft spaces, they are more likely to change by the time and situation. (Like greenery or some landscape features) hard and soft spaces can be seen in both indoor and outdoor areas.

Above and beyond, Salingarous (1999) and Bentley (1985) clarified two main categories of robustness dimensions; Physical formations and functional relationships. With the combination of buildings, a bunch of usages may possibly appear in the specified background. Giving the Improvement of robustness, a building should serve different activities regards to surrounding environment which motivate diversity and variety of the uses in the setting. It is entitled as the functional relationships of robustness. (Bently, 1985)

As a very first encounter layer of a building and surrounded public space, the edge of the building would indicate that contains of urban active elements (pedestrian ways, seating places or components, vehicular activities, and micro climate), structural elements. In a matter of classification, it is understood to be as a physical dimension. (Duffy et. Al, 1980); (Bentley, 1985); (Whyte, 1980). The research will discourse about the building`s role of robustness in each dimension and the effects on the public will discourse the next paragraphs, in more dept.

3.4 Physical Dimensions

Salingarous (1998) defined an inclusive spatial dimension of public spaces into two parts; Physical Context and Access.

The Physical Context: a public space generally surrounded by geometries and forms. Both in two and three dimensional orientations. All the environmental data can be categorized into plates, surfaces, geometries, and the directions and their orientations toward an urban space. Alexander (1977) defined the context of urban spaces, as patterns. In cities, we may see lots of patterns which certainly contribute to each other. For instance, individuals like to enjoy sitting in outdoor spots and these needs a fine and sunny weather, or else it should prepare shades or special orientations and extra tools to reach that ambition (Pattern No. 105). We can correspondingly make outdoor spaces by giving each building some degree of enclosure; surround each space with wings of buildings, trees, hedges, fences, arcades, and trellised walks, until it becomes an entity with a positive quality and does not spill out indefinitely around corners (Pattern No. 106). Another pattern is building mass and volume, which people always try to find a spot where they can have their backs protected, looking out toward some larger opening, beyond the space immediately in front of them (Pattern No. 106). Furthermore Building edge that connects the interior to the exterior (Pattern No.160), form and place of the traces, openings and arcades are being able to categorize into patterns (Patterns No.140, 160).

The Access: the way and channels we perceive the physical context of information is characterized as accessibility. A pedestrian pathway which contributes to the building façade, has particular inspirations on the surrounded environment. For instance Gehl (2013) and Alexander (1977) mentioned that the color, material, dimension, scale and

level differences, are the main elements through the pavement analyses. Dark, concrete flat plates with no shining or aesthetical details, make less eye contact and much a smaller amount of spatial data. That means less attractions. In a case of distance, a walking pedestrian and façade pattern should not be so close that disturb angle view and so far façade data. A human-being needs to maintain a good position towards a façade, so that he/she can well see the proportions and particulars. Gehl proposed a minimum distance of three meters from eye level to the façade (in a straight line).

The overall context data, such as geometry, dimensions, forms and portions of surfaces would be achieved through the sensual implements. Then the orientation of surfaces, their differentiations on the smallest scale, and the microstructure in the materials placed on accessibility and digest in more dept. Human being can receive, understand and digest the information witnessed. We have sharp enough eyes to see, accurate enough ears hear the voices, and sensible enough to smell odors (Salingarous, 1999). Humanitarian needs of spatial facts tend us to make a connection in the direction of our urban environment.

Significantly, the visible data is surely affected by the angle of our view. Our perception has a tendency to see data less confused and more legible. The basic visionary orientations are recognized at 0 degrees, 90 degrees and 180 degrees. Our downward angle of vision is approximately 75 degrees, but for the upward, it is around 50 degrees. It is quite logical, since we lower our vision towards down a bit, to see the walking road or path and barriers. Fig (1)

Likewise, our perception is pretentious of the human-being pace. Scholars itemized that the best speed of walking for the optimum data observation is 5 km/h, particularly for small scale settings. Using this quickness, details are getting more vivid thus you positively have enough time to see, recognize and choose our experience (Gehl, 2013; Salingarous, 1999).

The more speed we get, the less detail we gain. For higher speeds, the perceptibility of our vision is much lower than the low speed. For example, while we drive at 60 km/h, we cannot focus on the adjacent details, because we have to pay more attention to driving and seeing forward to avoid accident. Another reason is that our brain and visionary functions, were not well made to analyze the passing details of the settings (Varning, 1970).

All the Urban geometries illuminated by three-dimensional coordination (x, y, z). With the connection of each two coordinate points and reference point (0.0.0), a plate appeared to describe the exact position. A simple flat façade can be seen in X, Y direction. But for a more complicated façade, in addition to the X, Y directions, we have Z direction Fig (2). Each pattern in urban areas, may have sub patterns to describe it better. In the following paragraph, it is aimed to analyze the façade (as a pattern) into visual elements, portions and plan plus section.

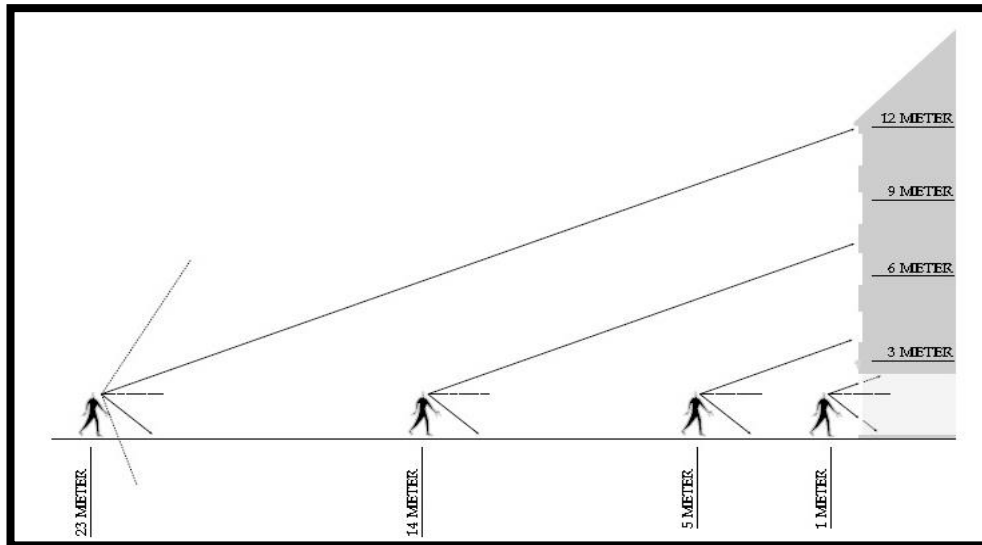


Figure 2: Effecting viewing distance
 Source: Developed by Gehl, 2006

As we look into the façade of a building at right angles (90 or eye level), it gives us both horizontal and vertical sub elements, scales, openings, materials and colors.

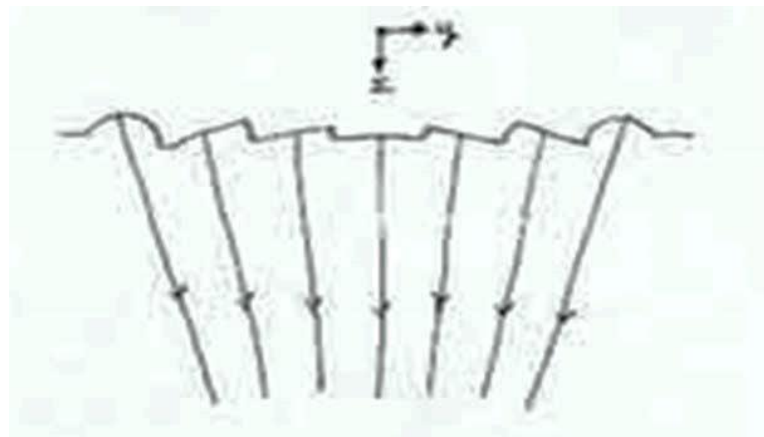


Figure 3: Building surface at ground level into vertical facets and lines
 Source: developed by salingarous, 1999

The entire patterns expand us an understanding and feeling of what we have seen. With our eyes angle of vision, we barely see the full and real data, since we only see two dimensions (plan view) and it is pretty tough to recognize the third dimension correctly Fig (2). Dissimilar geometries send diverse signals to our eyes, then the

viewer has to turn a bit around, to comprehend more complete visual and geometrical aspects. The early and well-designed example is the Auditorium in ancient Greek and Roman culture. The curvature tells us actual information with a better focus (Whyte, 1980; Salingarous, 1999).

3.4.1 Vertical Rhythm

It gives us vertical information cross to the building and pedestrian foot path. A simple column stretched upon the ground or lower levels of upper heights.

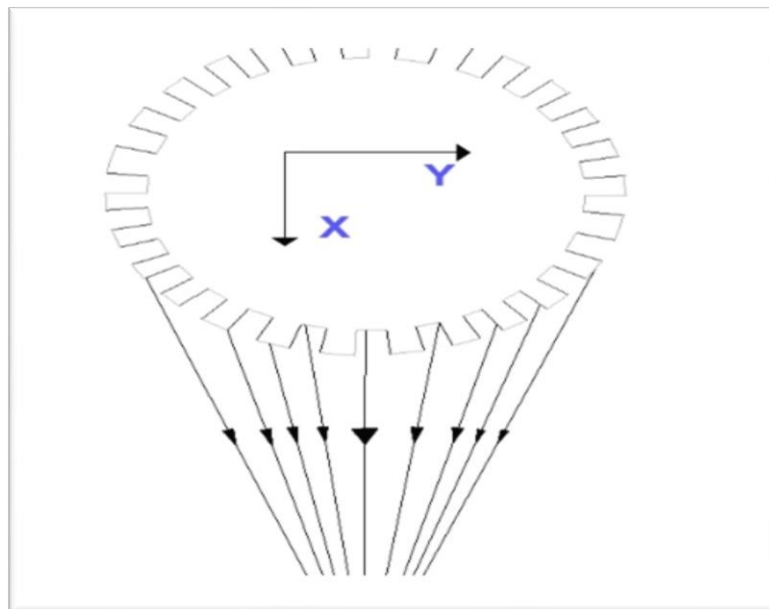


Figure4: Fluting a column multiplies the points of contact
Source: Developed by Salingarous, 1999

All the properties of this element or elements, at eye level, can give us only two-dimensional data. But as long as it's attached to the plate of building façade, reflectivity of both plates and columns are amplified dramatically Fig (3). Things may differ if the dimension and shape of the column changes. For instance fluting a column intensifies the eye points of contacts in Fig (5).



Figure 5: Vertical rhythms

A virtuous example of this kind is clustered column. The size - scale of each small column integrated to the main bigger column (tank column) vastly upturn the concavity, Fig (5). That is why most of old medieval forms followed this method to break the monotony and overlook exterior convexity.

3.4.2 Horizontal Rhythm

Once we look to the building or façade, we are able to realize three types of vision. Eye level, above eye level and beyond eye level. Human being usually tend to see the world around at eye level. By this means, the façade dimensions, angles and plates turn downhill in such a way that make better reflections to the spectator Fig (6). Having mentioned as important as ground level edge, the skyline has been neglected due to the angle view of this element towards human eye level. At that point, information received from silhouettes are barely able to illustrate in compare of ground level`s. With the variety of roof types, vast data could be achieved (Lynch, 1960; Salingarous, 1999).

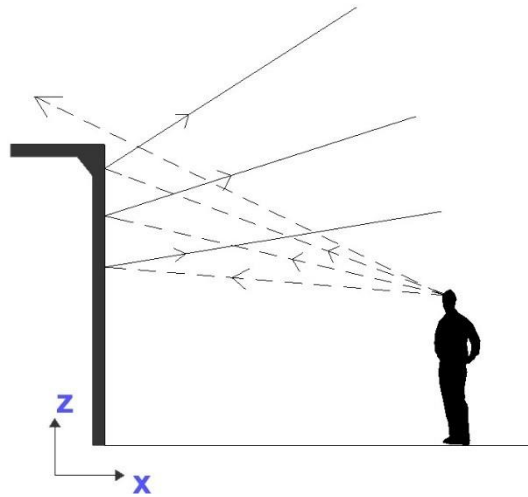


Figure 6: Vertical undifferentiated building surface offers no points of contact above eye level

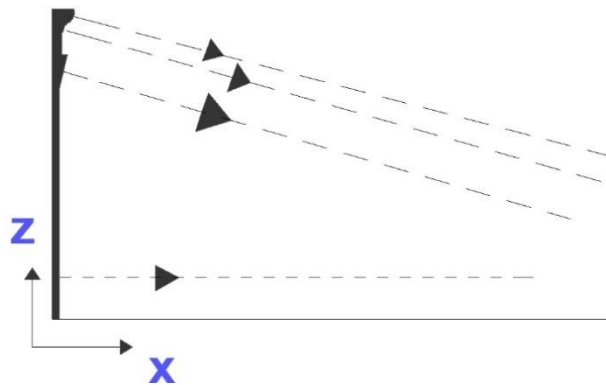


Figure 7: Decomposition of vertical wall in to horizontal facets flutes

3.4.3 Scale and Speed

At the certain speed of moving, the receiving data of surrounding will be intelligible and more accurate. According to Gehl (2006); the 5km/h architecture is the best counterpart for walking speed. By the side of this pace, surrounding data and details realized are much more legible. Keeping in suitable distance from buildings can boost above issues aswell. In general, we called this walking pace as a speed scale. Opposed to this pace is the fast moving speed, commonly associated with vehicles (60Km/h) shows that drivers and passengers are less able to perceive enclosed data.

So as a walking street or pedestrian sidewalk, it is better to hear the sounds and smell, see things plus analyze information.

3.4.4 Façade

Façade with simple windows and opening frames, have been making less information and eye contact rather than the more complex ones. Sometimes we needed to create such form for specific intentions such as domes in mosques or cupolas for burial chambers. The angles of those structures provide us different types of data. For instance, they might act as a screen wall or shades to divide between public and private places, closure or enclosure dwelling, and acoustic or silent domicile. Figures and extras attached to facades, far-off from their shapes, histories and intentions, can give us additional data regard to façade. Consequently, they left visual impact in excess of the general information field.

On the other hand things may pole apart when we come to analyze them not as a solo person. For a bunch of the observers, for each element, there would be an independent data channel received from the same façade Fig (8) as it is shown in the figures, the more the plate or façade concave, the less scattered information audiences achieve. Curved surfaces permit a multiplicity of reflection angles, directing a signal towards many different observers (Salingarous, 1999). That is why the designers make a silver screen (cinema) concave. It lets us to have a better encounter.

Entering a space without perceptual preparing may cause being felt insecure and confused. Alexander (1977) believed that there should be a semi-space in between. Arcades can enhance this feeling while they authorized people to walk in and walk

out or sitting and chilling out as easily as possible. Another discussion is about level differences in building age.

Stairs and level ups and downs will sort different views and insights which help individuals achieve more data field as on the assumed environment. Human mind and eyes tend to see and feel the thing in a perfect way, try to form to date and Spotify empty and incomplete views (Salingarous. 1999; Alexander.1977).

3.4.5 Material and Transparency

One of the most vital factors in the building façade design is the texture and material. In the main, each material contains individual texture and grain. With this scope, the assumed data established from dissimilar materials are assorted. Textured surfaces with light colors reflect much more data than the dark ones. For the reason that it reveals more light lines and echo effects on the urban space. Therefore, the environmental data are more clear and readable. New high-tech materials with flat planes fails to hit this goal line. The modern texture incapable to give us full visual details in most directions. Therefore, our eye receives less data and vice versa.

The transparency of a material gives us the chance to see the inside from open air and the outside from in. As Gehl stated, it will boost the visual and sensual experience in both sides. People that sit inside a cafe can track the events outside easily, and for the pedestrian whom walks by a transparent window, he/she would be able to sensory connect to the inside`s. However the expenditure of translucent materials with the combination of other elements sounds so essential.

3.5 Functional Dimensions

The diversity of functions inside a building may will lift the connection in-between buildings and public urban spaces. Different functions means miscellaneous activities which need unlike spaces. A successful ground floor function can accommodate all related activities in one bigger space, and also can deliver a wider range of services both for inside and outside. That is one the key points of a well-designed ground floor level in public buildings (Gehl, 2006; Salingarous, 1999; Bentley, 1985; Whyte, 1980).

3.5.1 Mix Use Context

The mix use development enable to integrates of different functions such as residential, commercial, office, retail, restaurant, café and others, within one specific area or single site. Regarding the sprawl migrate; it makes the most of space usage with the help of architectural expressions and amenities.

The choice of overlapping different activities in a neighborhood/building lead to have a tendency of living in more of a small space/neighborhood or town. People can live, work and play options, it can affect mental impression of civil life and correspondingly lessen the crime instead of rising the safety, facilities and land prices. The active traffic system promotes by locating diverse destination close to each other within a mix use development. As a contemporary city the call of these amenities should support a public open space that encourages social interactions as their other necessities (Niemira, 2007; Bowe, 2004; Jacobs, 1961).

On the other hand Jacobs (1961) outlined four major conditions to breed diversity in public space;

1. The area must serve more than one function and activity.
2. There should be enough dense connection of individuals in the area.
3. The district must have mix uses and buildings that vary in conditions.
4. Most urban blocks must be short; that is, streets and turn-corners must be frequent.

Llewelyn Davies (2002) put pen to paper more benefits of mix-use developments. He suggested to have higher ventures for social interactions which may lead diverse social communities. Firstly it can improve by decreasing the amount of daily routine congestion by for example adding some resting/ visual/chatting/... points to the daily home to work tedious ways. Secondly, the more consumer choice of life style and buildings means the superior urban vitality. It also covers the sustainable space usage that cause an energy/ resources efficiency in the urban context. Thirdly, a greater safety feeling assets through more eyes on the urban space (Davies, 2002).

Followed by a master plan, parking and place making are the most important issue creates benefits for user instead of having extra costs. The best way is to have a shared parking area to diminish parking area costs and spaces for mix use development, but automatically generate some problems as well. Each user type wants their own parking area with private enter/exit way separated from all other user groups. It is strongly related to the sense of privacy and having right and decent amenity (NAIOP, 2007).

The best definition of place making is “the creation of pedestrian friendly and vibrant area with a mix of complementary land uses. It is generally about creating an experience which related to:

1. Future outlook of the mix use development that is linked to design features and having quality of all aspects.
2. As a successful place making process, integration of public spaces and buildings is so important in mix use developments. Although public spaces like public squares pay no rent or money to the developers, but the prices of uses nearby them and selling volume will increase intensely.
3. Fire retardations, loading area for commercial uses are placed through the construction. Noise reduction may apply by using soundproofing separation between uses. Odor suppression will enhance by separation venting of the odors. Pedestrian cycle should apply between uses and link to the public transport system. In transition areas, different uses and amenities should applied and sometimes discrete from each other by landscape, color, buffering, screening, etc. Allowing 24/7 types of activities supported by the dense residential activities led a successful mix use area (NAIOP, 2007; Davies, 2002).

Motivated by Ottoman mahalle and city scheme, finally, a good quality of life is discussed to be sustained, with high concentrations of people providing social conditions of vibrancy, liveliness and cultural production and consumption (Oktay, 2014).

3.5.2 Edge Zones in the Context

Baring in mind as an interface between indoor/outdoor or public/private spaces, edges zones delivers functional privacy and useful social interactions. On the functional level, privacy contributes to the visual and sense of hearing privacy. Visual privacy directly linked to the public and private realm which had explained in physical dimensions of robustness. Aural privacy is generally about generating no

noise in public spaces. Having the distinction of this issue, noise generating activities and noise sensitive uses can be ordered into physical distance, sound insulation and sound barriers. More physical distance means less noise disturbance. Using the special materials, shapes, height levels and spaces may create a screen upon the insulation of the barriers.

Edge designing of an urban space is provide a formal or informal places to sit, play, walk and rest. It might be higher/ lower the urban space surface level and somehow play a key role as a means of protection from the outside, rather than a visual, environmental aspects.

3.5.3 Demand of Senses

As we close the building, we have the noble fortuitous to see, touch and sometimes small details. Building blocks, shops and openings are made bigger than old times. In order to make closer encounters, it is vital to use transparent views and windows, or semi open shades, etc. Being accessible and viewable from passengers to shop and interact between close experiences, make the city spaces more and more intense and dynamic (Gehl, 2006).

The notion of drawing on our senses can be perceive in several conducts. For instance, poetry is able to develop public awareness in public spaces. Reading of poems formed exciting exchanges between individuals in many cases such as commercials. It might also led momentarily and future communications and interactions in between. Meeting cultures and traditions can be done by this art (Boykoff, Sand, 2008).

Food shopping options like open bazars enhance the connections between public and let them have enough time to smell, touch and choose nutrition choices. Meeting other foods and cultures is a unique fortuitous that might not be easily attain in daily life. (Gehl, 2006.) Through the inclusion of foods, the integration of public art and public events using traditional/modern technological ways of communication, can produce a focal point in a public space. The idea of 24/7 public space would support vast vitality of street life. The connection this events, even in a small scale and size, with the cooperation of greenery, provide a great prospective of enough safety and sufficient amenities. For instance, a café would create a fantastic outdoor gathering and serve as a key element of the neighborhood. It also appeal to visitors arriving off the street, offering them a reason to sit, rest, watch, talk and enjoy life. Using modern tools like open cinema/theatre hall, digital adverting boards moreover book store, shops, retailers, sidewalk artists, street performances and farmers market can promote the public awareness and attract the crowd to what has become a lively and exciting entertainment.

Also sitting right beside of public building (museum, restaurant, library, cultural center, concert hall, and cinema) would give the public a feeling of belonging, identity and pride. It might improve by present diverse civic services. These planning would fill the blank and useless parts of public space/building and engender a pleasant view instead. (Gehl, 2006)

The people participations in design process is one the most important parts of appealing of sense in urban spaces. Developing a strong sense of partnership will be able to improve active involvement in improvement and maintenance activities. Taking care of trees, street furniture, flowers, cleaning up and other activities will

bring the community participants together and support to keep actions getting recovered. (URL 9))

The spirit of a public place would colored by public art. Providing a place for diverse happening and interaction, public art attempt to get persons together and may collapse the obstacles to elevate a creativity and inspiration in public spaces (URL 9).

3.5.4 Lighting and Safety

For the reason of architectural, technological and cultural advanced in these days, the number of buildings and urban spaces using interior/exterior lighting have dramatically grown. Particularly to protect and enhance the architectural characteristic of a building and neighbourhood, the lighting might be applied to highlight building structures and site features such as façade, outdoor sittings, etc. on the other hand, getting to work all day long, the public has no Free time except at nights. Hence the exterior lights has to be in a way that covers directly the night life and the façade, but not directly into the interior spaces. This lighting includes clear light which does not misrepresent the unique color of building materials. Also lighting fixtures must be minimum possible size, covered by landscape features, concealed or attached to special parts (URL 7).

Horizontal light is strongly uses for the façade lighting and spotting on specific features. But the pedestrian area is largely used vertical light sources. Another group of factors affected on human viewpoint is the angle of the light and orientations of objects/planes in which light spread on. Night lighting creates an impression of three-

dimensionality and compromise custom-built design options that produce attractions, patterns, especial atmospheres (URL 10).

Sometimes lighting aspects goes far more than ordinary lighting usage. It can be able to present as an advertisement, messages and so on. Media content such as text, animation and images are the subject to the projected screen scene over the façade (URL 10).

Only a few seconds of lighting that makes the visibility of surrounding things is enough for a human walking pace. As a slow scale speed (5Km/h) enables safe passage for individual to walk with no injury. In accordance with human security, lighting is a key to intensify visibility of approaching persons. The lighting in a street should permit of mutual recognition before coming almost face to face and provide sufficient visual information regarding a person anywhere on the street while he or she is still a reasonable distance away. This has to do with the feeling of security. (Caminada and Van Bommel, 1980)

3.5.5 Street Furniture

Another important functional factor is to apply street furniture that address practical retailing requirements but also stimulate use and street activity levels. For instance, a restaurant furniture covers different aims and materials. Items such as protective screens, umbrellas, awnings and planter boxes has also been developed to ensure the attractiveness, character and significance of the street.

Also the government should serve DDA (Disability Discrimination Act) requirements (Ramps, Parking, etc.) for street furniture throughout the entire public area (Gehl, 2006; Gehl, 2010, Gehl, 2013).

3.5.6 Climate and Greenery

A vital contribution to the health and amenity of urban spaces are represented by greenery and good conditions. Regarding of decrease air pollution, surge convenience and provide related structures, urban greenery forms a respectable definition of urban space, particularly between public buildings and urban spaces. Exotic and native trees should planted to ensure a health and diverse tree population into the future. Moreover, where space is available, a variety of smaller trees must planted to provide compatible scale, horticultural diversity and offer a subtle emphasis on local character. It can also avoid bad wind situations and employs sun shades in order to sit and pause (Gehl, 2010).

3.5.7 Access and Traffic

Day by day footpaths have been widened throughout the cities. Gehl (2006) claimed that making open lunchtime closures will present informal social interaction and reducing vehicular impact to reinforce a social life at the front paths. These groups of public activities have to gain an access to public transport or car parking. Paths and pedestrian sidewalks should widen and paved to cover the accessibility and creating more spaces for gathering.

Public transit plays an important role on public stationary activities and building activities. As an example, widening sidewalks and narrowing traffic lanes will ease pedestrian movement and get them proper space to walk, sit and enjoy. The Contribution of new development like café or new residential apartments increase business and community activities. New public building, widening sidewalks, adding greenery, lighting and façade improvement may follow a plan to establish an integrated residential/commercial urban space. Shopping plus walking easily through

the vicinity can be undoubtedly improve by accessing to the public transport system station like subway or bus station. Pleasant waiting places and entrances play as a functional role to fascinate new expansions. In this case, public participation in art program including of local artist performances, alongside with the accessibility for shopping market right beside the stations create an enjoyable and short-term/long-term strategy for vitality and public growth (Project for public spaces, 2008).

Table 1: elements of robustness for active edge and mixed-use area

Physical dimensions	Functional relationships
Vertical rhythm	Mix use and context
Horizontal rhythm	Edge zones
Speed and Scale	Demand of sense
Façade	Lighting and safety
Material and transparency	Street furniture
	Climate and greenery
	Access and traffic

3.6 Research Gaps

Gap 1: Lack of study evaluates the role of physical formations of mixed-use public buildings and public urban spaces in Turkish context.

Based on the Salingerous (1998) and Whyte (1980) appeared direct relationship and influence between physical façade robustness of a building and engagement of social activities. Salingerous (1998) illustrate the theoretical concept of the visual

effects of façade on public space, active and passive activities through to motivate the vitality of the overall environment.

But there is a lack of theoretical and empirical studies that investigate the role of façade design on the building and public space activities and usage in newly developed context.

Gap 2: Lack of study evaluates the role of functional relationships between mix-used public buildings and public urban spaces in Turkish context.

Gehl (2013) suggested a couple of solutions, especially for European, Australian and American context. But there is a lack of theoretical and empirical studies that investigate the role of ground floor activities on a building and adjacent public space in newly developed contexts.

Gap 3: Lack of study evaluates the role of public urban space activities that enhance the vitality both in public urban spaces and public buildings in newly developed contexts.

Gehl suggested a couple of solutions, especially for European, Australian and American context. But there is a lack of theoretical and empirical studies that investigate the role of public urban activities as mediator to building and public space in Turkish context and culture.

3.7 Justifications of this Research

3.7.1 Justification for Gap 1

In this research gap, the physical dimensions of robustness would be considered as a key for enhancing the quality of urban life in public urban spaces.

The current literature reviews only assess the impact of physical formations of robustness on the vitality of the public urban spaces particularly in European cities. (Salingarous, 1999; Bentley, 1985; Gehl, 2013). There is a lack of study to assess the relationship between physical façade formations and vitality of adjacent public urban spaces in Turkish context.

Table 2: Research Gaps and Research Justifications for this Research

Research Gaps		Justification of this Research
Research Gap 1	Lack of study evaluates the role of functional relationships between mix-used public buildings and public urban spaces in Turkish context.	The current literature reviews only assess the impact of physical formations of robustness on the vitality of the public urban spaces particularly in European cities. (Salingarous, 1999; Bentley, 1985; Gehl, 2013). There is a lack of study to assess the relationship between physical façade formations and vitality of adjacent public urban spaces in Turkish context.
Research Gap 2	Lack of study evaluates the role of functional relationships between mix-used public buildings and public urban spaces in Turkish context.	The current literature reviews only evaluate the direct role of ground floor activities on the vitality of the public space in western cities. (Bently, 1985; Salingarous, 1999; Whyte, 1980; Gehl, 2013). There is a lack of study to evaluate the role of ground floor activities on the public urban spaces in Turkish context.
Research Gap 3	Lack of study evaluates the role of public urban space activities that enhance the vitality both in public urban spaces and public buildings in newly developed contexts.	The current literature reviews only evaluate the direct role of ground floor activities on the vitality of the public space in western cities. (Bently, 1985; Salingarous, 1999; Whyte, 1980; Gehl, 2013). There is a lack of study to evaluate the role of public urban space activities on the vitality of the urban space and public building regarding to Turkish context.

3.7.2 Justification for Gap 2

In this research gap the functional relationships of buildings and urban spaces would be considered as key role on vitality of public urban spaces.

The current literature reviews only evaluate the direct role of ground floor activities on the vitality of the public space in western cities. (Bentley, 1985; Salingarous, 1999; Whyte, 1980; Gehl, 2013). There is a lack of study to evaluate the role of ground floor activities on the public urban spaces in Turkish context.

3.7.3 Justification for Gap 3

In this research gap the current literature only review the role of physical and functional public urban activities in western cities. The current literature reviews only evaluate the direct role of ground floor activities on the vitality of the public space in western cities. (Bentley, 1985; Salingarous, 1999; Whyte, 1980; Gehl, 2013). There is a lack of study to evaluate the role of public urban space activities on the vitality of the urban space and public building regarding to Turkish context.

3.8 Research Problems

Despite growing interest in recent years in the vitality in public spaces, fewer architects yet have considered the role of their building development on the social use of public urban spaces. As we know, places and buildings with diverse functions can usually propose different suggestions and activities. Architects typically consider buildings as independent masses and furthermore, neglect the surrounding urban settings as a multi-functional environment. Due to that, a series of questions arranged to solve this problem and May led suggestions. The research gaps, research problems and research questions for this research are illustrated in Table 2.2.

3.8 Research Questions

Research questions were prepared and verified in this study in response to the research problems which this research cares to name such as:

- 1) Does the public space, fix the necessities of the nearby buildings?
- 2) Does a public building feed the requirements of its surrounding space?
- 3) Do buildings feed their front space as well as inside?
- 4) What is the relationship between building edge and outdoor activities?
- 5) What is the relationship between active ground floor area and outdoor activities?
- 6) How will we enhance the relationship between building activities and the underlying forces of the public urban space?

Table 3: Research Gaps, Research Problems and Research Questions for this research

Research Gaps		Research Problems	Research Questions
Research Gap 1	Lack of study evaluates the role of functional relationships between mix-used public buildings and public urban spaces in Turkish context.	2) Considering a building façade design without mentioning the role of activities happening on the ground level of a building.	1) Does the public space, fix the necessities of the nearby buildings? 4) What is the relationship between building edge and outdoor activities? 5) Do buildings feed their front space as well as inside?
Research Gap 2	Lack of study evaluates the role of functional relationships between mix-used public buildings and public urban spaces in Turkish context.	2) Considering the role of ground level activities on the public urban space, without mentioning the role of edge design and façade formations on public space activities.	2) Does a public building feed the requirements of its surrounding space? 5) Do buildings feed their front space as well as inside?
Research Gap 2	Lack of study evaluates the role of public urban space activities that enhance the vitality both in public urban spaces and public buildings in newly developed contexts.	3) Considering the role of public urban space activities on the public building, without mentioning the role of public building activities and physical formations.	1) Does the public space, fix the necessities of the nearby buildings? 3) What is the relationship between active ground floor area and outdoor activities? 6) How will we enhance the relationship between building activities and the underlying forces of the public space?

3.9 Conclusion

The conceptual framework of robustness chapter grants the review of the literature on the building edge dimensions, ground floor activities and uses and how they link to each other. Correspondingly, this chapter categorizes three major research gaps. Based on these research gaps, three major justifications were set to navigate the research problems of this research. At that point six research questions were recognized to follow the scope of the research.

Chapter 4

REVIEW OF SELECTED BUILDINGS IN TERMS OF PUBLIC SPACE RELATIONSHIP IN VARIOUS WORLD CITIES

4.1 Introduction

Through the years, architects and designers with the co-operation of new techniques, fresh materials and forms create eye-catching public places and buildings. However, the point is that furthestmost of architects forget the role of a single building as a part of the urban context and design without mentioning the overall urban aspects. In this chapter, two unsuccessful public buildings and three successful urban spaces and buildings were selected. Regarding the combination of failure and successful real places, the examples attempt to show how these two urban elements are responding to the given criteria in a different state of affairs. All analyzes were captured through the literature agenda and presented in accordance with the methodology framework.

4.2 Unsuccessful Examples

4.2.1 Phaeno Science Center, Wolfsburg, Germany, 2005

As a huge science center with 27000 square meters, the building was built in 12600 square meters by Zaha Hadid. The initial concept of the design was to discover the new spaces and places in asymmetrical plans and levels. This aim was enforced by unique materials and the special lightings which shows the way through the buildings. However, the building has failed to feed the needs of surrounding. (Ouroussoff, 2005)

4.2.1.1 Functional Relationship

Mix Use and Context: Fascinated by internal restaurant, workshop studios, library, auditorium and conference rooms, Phaeno science center, suffer from having no continuous association to outside. Built in conjunction of commercial and city center, the museum has no direct relationship to the context and the building form could not invite other retails (Ouroussoff, 2005).

Edge Zones: despite of being a focal point between different urban patterns, the building edge itself, has no active frontage or designed façade to liven up the stationary activities. Hadid ignored the role of dynamic and vibrant urban buffer that the museum would be able to generate (Ouroussoff, 2005).

Demand of Senses: without doubt, the museum was built for people while it holds no enjoyable relationship to the surroundings. Activities are held inside by means of no visual connections for the pedestrians. Concrete façade with a little odd opening are failing to appeal a sense of touch and grace (Ouroussoff, 2005).

Lighting and safety: having stylish ceiling lamps of the ground floor and interior spaces, the museum has strange method and concept of exterior lighting. Being outside, the darkness mentioned as a key point to illuminate interior lightings. There is only a few ground lighting in parallel to the pedestrian paths and train access route which shows the way (Ouroussoff, 2005).

Street Furniture: as an artificial landscape designing, the street furniture are customized with the overall context. Related signs, bicycle holders and fences around sloped pedestrian trails are placed the borders of the complex. One particularly marvels at the modern light poles, simple benches around small trees presented (Ouroussoff, 2005).

Climate and Greenery: the shocking view of a lesser greenery amount of the environment, led the building to have less social activities in a healthy setting. Lack of such an important amenity leave a vital gap in social contribution (Ouroussoff, 2005).

Access and Traffic: located over the city center, the center meets high speed train station. Pedestrian paths and automobile compass an interconnection directions. (Ouroussoff, 2005)



Figure 8: Phaeno science center, Wolfsburg, Germany
Source: URL 11

4.2.1.2 Physical Formation

Rhythm: the borders and overall building form follow the urban axis of the city center and castle of Klieversberg, but to visual delight, the façade rhythm left no vivid trace, both in window traces, landscape lines and also internal functions. (Ouroussoff, 2005)

Scale and Speed: getting no trend to the ground level, the museum stands on concrete legs, which form, nor harmonic frames neither help to perceive surrounding data yet it has not been designed with rich details. (Ouroussoff, 2005)

Façade: the less façade detail that makes the hardest impression on visitors means less information which led to unhealthy relationships between private and public. Openings and windows generate no meaningful order between inside and outside (Ouroussoff, 2005).



Figure 9: Phaeno science center, Wolfsburg, Germany
Source: URL 14

Material and Transparency: giving flat mate concrete tiles, the museum façade have minor opportunity to conduct a visual interaction. Unique color of building and it`s setting plus indistinct entrance has made it as a gigantic form with no respect to the human scale senses. People would not be able to see inside while the verse is true for the insiders.(Ouroussoff, 2005)

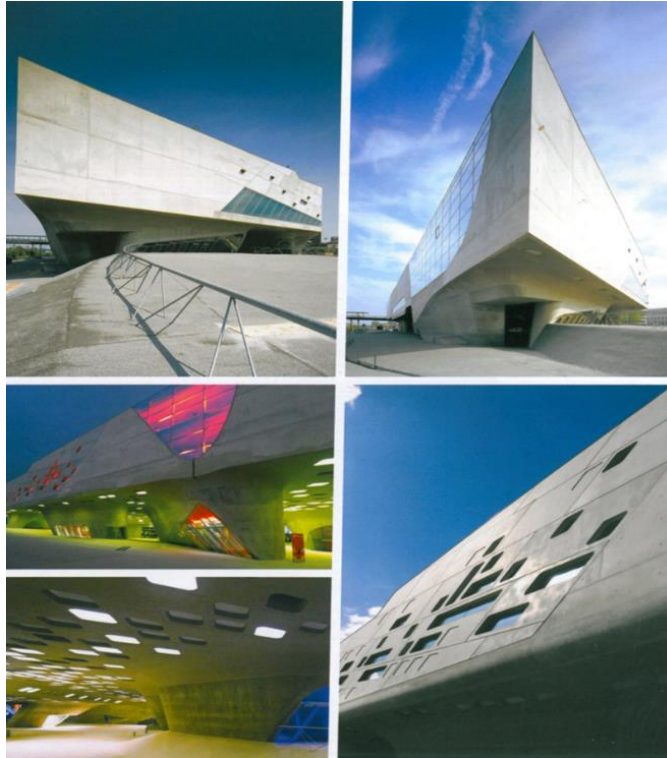


Figure 10: Phaeno science center, Wolfsburg, Germany
 Source: Developed by CA, 2008

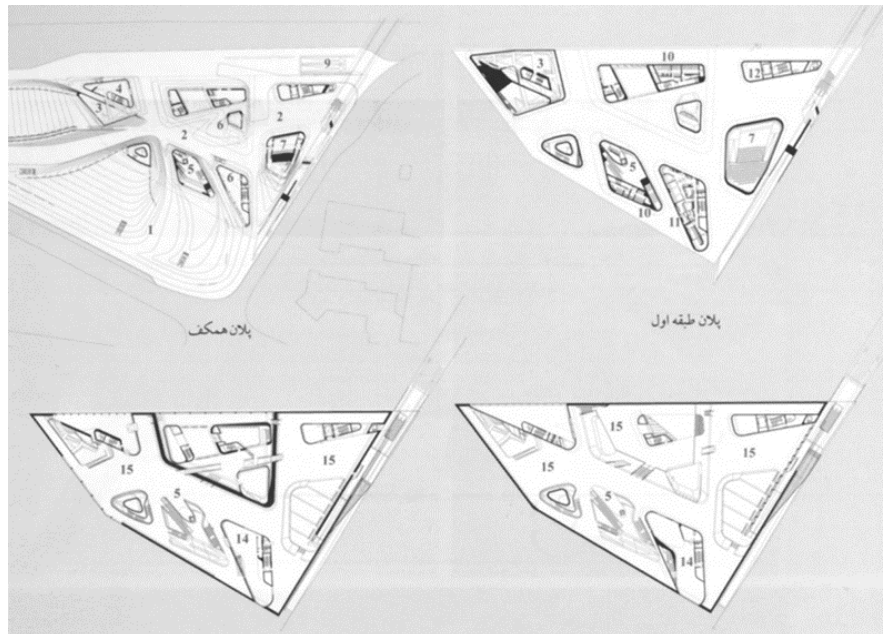


Figure 11: Architectural plans, Phaeno science center, Wolfsburg, Germany, Plans
 Source: Developed by CA, 2008.

4.2.2 Casa da Musica, Porto, 2005

Put right at the edge of the historic neighborhood and working-class area, Casa Da Musica appear as a very first place in Portugal that had made particularly for recording, learning and performing music. The design of the building was held in competition in 1999 and the winner was Rem Koolhaas. The purpose of that design is to enhance public participation in a case of music, both in local and international dimensions. With 12 floors and 30 meters height, it has a main core in the center, which is linked to the minor chores around and contains performance hall, rehearsal space and recording studios for the Oporto National Orchestra. Having no respect for the urban environment, the building itself fails to do between two different contexts (Ouroussoff, 2005)

4.2.2.1 Functional Relationship

Mix Use and Context: as an odd angular shaped form which serves as music hall, the Casa Da Musica surrounded by a mix use neighborhood, neither humble to the historic part nor eye-catching to the working-class area. As a focal point, it may fall to meet both sides admiration, yet it has been only serving for specific usage and have no related retail activities particularly where the mass run into the ground level (Ouroussoff, 2005).

Edge Zone: being at the edge sectors of historic quarter and working-class neighborhood, Casa Da musica agonizes from offering an active ground level edge which may introduce social activities to the building (Ouroussoff, 2005).

Demand of Senses: as far as intelligent interior architecture, the exterior is preserving something different, no public activities and urban retail have seen even in small scale (Ouroussoff, 2005).

Lighting and Safety: down to the surrounding, the light poles are covered the landscape, insure the care of well- being at night, laminated entrance stairs are glowing to show by way up to the building (Ouroussoff, 2005).



Figure 12: Casa Da Musica, Porto
Source: URL12

Street Furniture: ensuring no benches or resting urban furniture instead of public activities, the building has a potential to procedure from its urban lightings, trash holders, signs and the open square (Ouroussoff, 2005).

Climate and Greenery: visitors are generally fascinated by the public square greenery of Jardim da Boavista which acts as a lung to the whole environment(Ouroussoff, 2005).

Access and Traffic: placing at the edge of two neighborhoods, the major access to the downtown is prepared by the Avenida DA Boavista Street. There is no public transport station nearby. The pedestrian can easily walk from everywhere to the square (Ouroussoff, 2005).

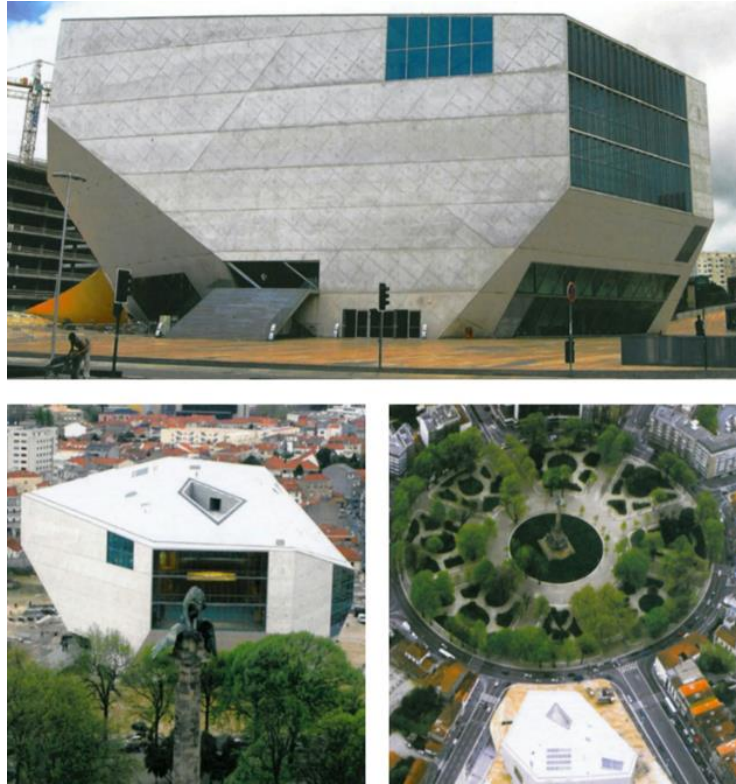


Figure 13: Casa Da Musica, Porto
Source: URL 12

4.2.2.2 Physical Formation

Rhythm: the designer, aimed to produce a tolerance between the old area skyline and the other one, but in a case of façade, the opening rhythms, and window lines in ground level are not matched at all. There is no physical or visual vertical rhythm to put-on the huge mass down into human scale.

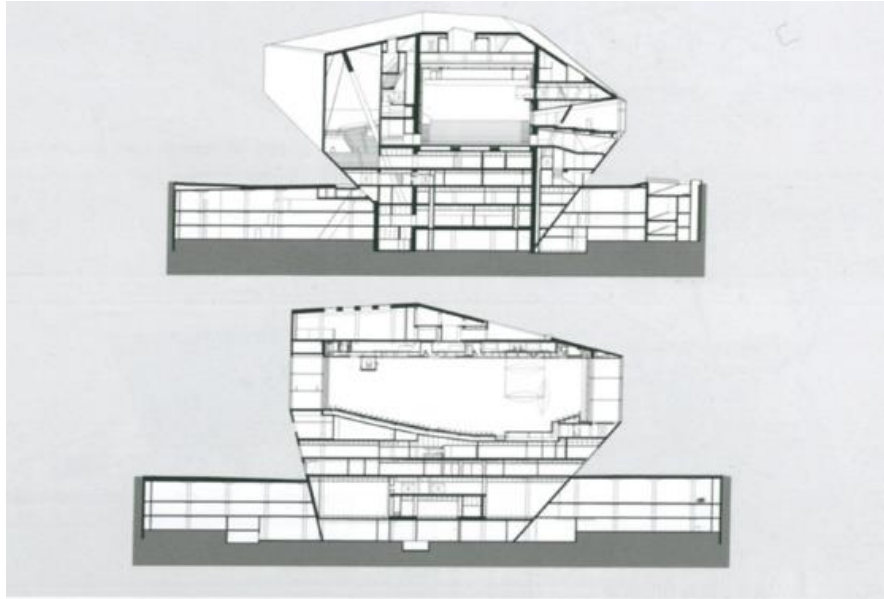


Figure 14: Architectural details, Casa Da Musica, Porto
Source: URL 12

Scale: as a weird enormous shaped building, the Casa Da Musica has no close deal to the environmental ratios, regarding its failure to complement the human scale proportions (Ouroussoff, 2005).

Façade:The site of this building is placed towards a huge square which is the edge between historic and residential contexts. It might somehow turn into a joint in between these two areas. Sharped edge Massive building with chaotic form, laid beside a plane that turn like an urban plaza. It is equipped with attractive lightings at night (Ouroussoff, 2005).

Material and Transparency: the façade material serves as a physical identity of a Casa Da musica, regarding the humid weather condition of site. A mix of concrete, glass, stoned pavement and aluminum, make a less chance for transparency to do respect and engender visual and sensory connections to the neighborhood.(Ouroussoff, 2005)

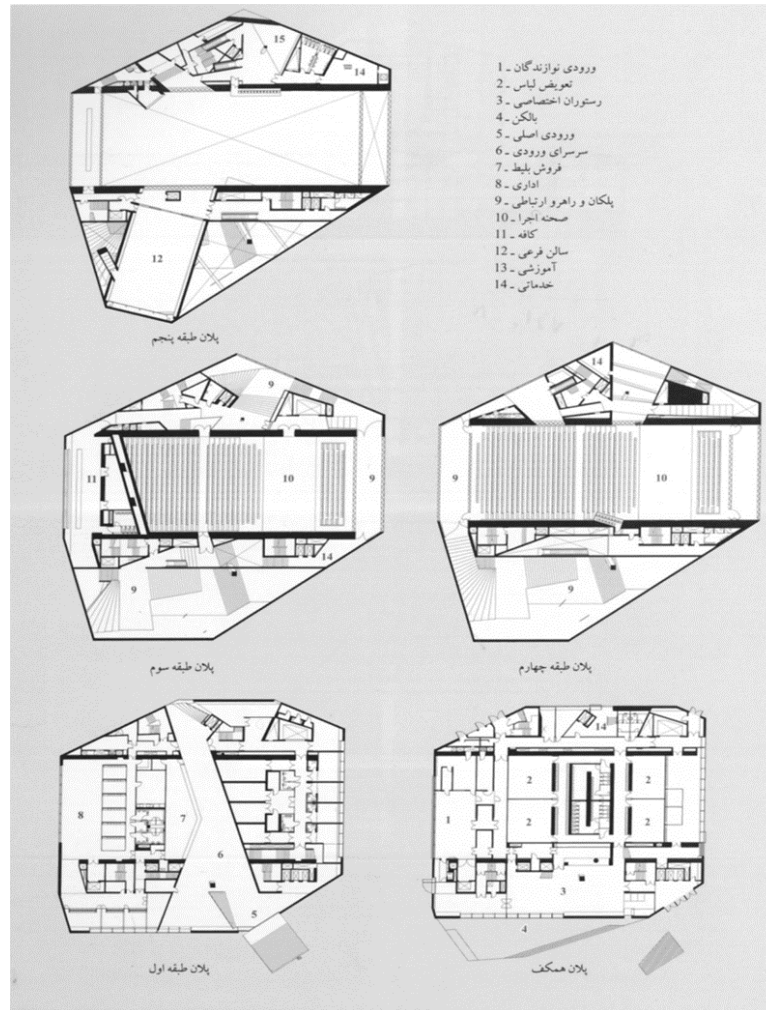


Figure 15: Architectural plans, Casa Da Musica, Porto
Source: Developed by CA, 2006

4.2.3 Tepe Prime, Ankara

Tepe Prime was built in a newly developed urban area on the western axis of Ankara. The project was incepted in 2007 by Tepe İnşaat as a client. The whole constructed area is about 93000 square meters. It holds 218 offices and 100 studios in 38 floors. The ground level is full of diverse retails and restaurants which bring life to the mall (URL 8).

4.2.3.1 Functional Relationship

Mix Use and Context: in order to the main aim of the designers, Tepe prime delivers a vast sort of trades, brands at the ground level instead of having offices in higher altitudes (URL 8)

Demand of Sense: cafes, restaurants and other public retails at the border of the complex are mainly open up until midnight, artists and entertain mentors perform events at the mall and also a show pool carries water exhibitions.

Lighting and Safety: generally, we are busy in daytime and taste lack of restraint at nocturnal. The idea of 24-hours livability offering life to public spaces by enhancing the light system to make the setting used in corresponding to daytime. The safety comes after the light, when it meets with designing public area and security establishments (URL 8).

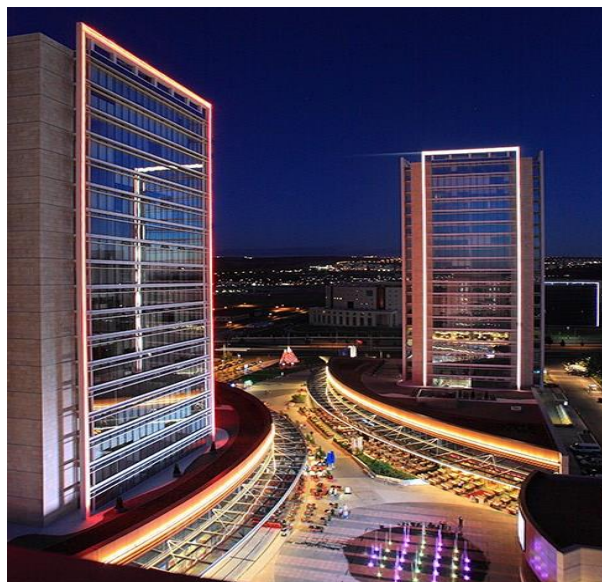


Figure 16: Tepe Prime at night
Source: URL 1

Street Furniture: designed as human scale environment, Tepe prime has diverse urban features with the support of architectural landscape design (URL 8).

Climate and Greenery: with small scale vegetation that bring friendly and eye-catching avenue, Tepe prime is trying to arrange human-scaled public definitions by hedges, small plant holders, etc.



Figure 17: Active frontage, Tepe Prime
Source: URL1

Access and Traffic: focusing on the new city extensions, Tepe prime erected on the Eskişehir highway, delivering a better way of access by providing 24-hour parking, is also a pleasant dwelling for residents. They have almost everything in hand, which means less travel time, minor extra costs and more sustainable life. Also, there is a bus station about 250 meters remote in 415 cadence, provide a public transport solution to the downtown of Ankara (URL 8).

Edge Zones: expending small public spaces, restaurants and cafes, live performances over the stage, Tepe prime has generated an active frontage for diverse

social activities. University students, residents, employees and visitors would be able to meet and enjoy life in a marvelous setting. (URL 8).



Figure 18: Bird view perspective, Tepe Prime.
Source: URL1

4.2.3.2 Physical Formation

Rhythm: with the variety of uses at the façade, speckled types of frontages are represented which tends to follow rhythmic tracks, proportions and expressions. Shades and green parts are bending towards building's orientations that generate a connection vibe between inside and outside (URL 8).

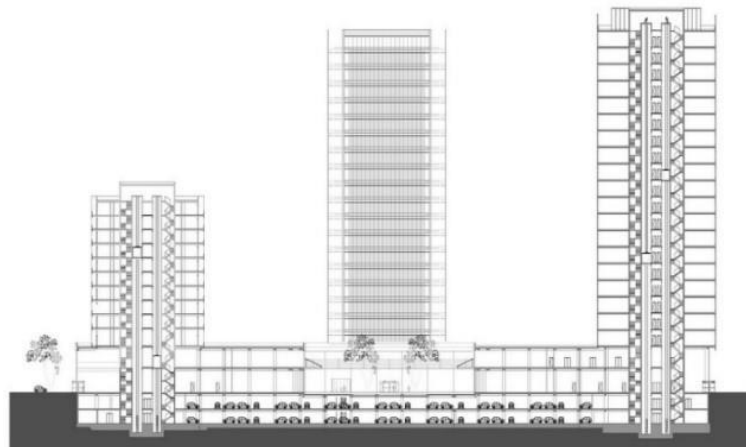


Figure 19: Physical Architectural details, Tepe Prime.
Source: URL1

Scale and Speed: different in size, location and proportions, the façade elements monitored an unbroken routine that suits to human scale activities. There is no need to step distance to see the whole details of ground level. Exquisitely, the upper level scales match by the glassy shelf cover attached to the base level (Fig 19).

Façade: as a first layer of encounter in public enclosure, the façade serves enough to diversity, fitted out sufficient to design tools, and enclosures or open performances enough to bring livability.

Material and Transparency: through custom glassed windows equipped with dark aluminum, the transparent façade overlook all visual barriers and produce better-quality surroundings in human scale point of view.

4.3 Successful Examples

4.3.1 Downtown PLPS Study, Melbourne, Australia, 2004

As one the most vibrant city of Australia, Melbourne gets herself to the public life survey which was held by Jan Gehl in 1993. The information included on survey, analyzes and explanations were publicized in “places for people; Melbourne city” in 1994. Ten years later, professor Gehl and Gehl architects were called to bring up to date the prior data gathered by themselves and extend the annex neighborhoods and public spaces of the city.

This survey was examined the Central City area of Melbourne bounded by Spencer Street, Latrobe and William Streets, Victoria Street, Spring Street and the Yarra north bank to the north, and the area of Southbank bounded by Clarendon Street, Whiteman and Power Streets, Grant Street and St Kilda Road. Parklands (Gehl Architects, 2004).



Figure 20: Downtown Melbourne, Australia.
Source: Developed by Gehl, 2004



Figure 21: Mix use plan, Downtown, Melbourne.
Source: Developed by Gehl, 2004

4.3.1.1 Functional Relationships

Mix Use Context: as a way of extending the local characters of a Melbourne city, mix use policy in downtown had applied to display heavy-duty public consequences. By increasing the density of downtown with the cooperation of mix use multiplicity, diverse groups of civic were invited to the neighborhood. Tourism centers, plazas, restaurants and houses. Academic facilities and above large scale residential

apartments with retail occupations at ground floor level develop a new mix use fabric in the city center.

Edge Zones in the Context: active frontage represents dynamic activities, design and engagement. The more ground floor level is rich in details (both physical and functional), the greater urban experience invites to the related edge. Street sides serve to define zones so that the pedestrians can easily recognize the pathway from frontage zone. Building entrances do not obstruct the pedestrian ways or urban amenities. In some case, public arts, seating facilities and lightings are carefully placed and designed in according to the width of the edge zones.

Demand of Sense: one of the most important factors of live city is the number of cafes, restaurants and other local retails. A mixture of mix use development and 24-hour city which hold events, functions and activities leads to a lively and friendly environment. The opportunity of getting drunk or food while sitting and talking in a safe atmosphere, Shopping occasions, seeing and joining public events, dancing to the music played out of a café, etc. , extended through lanes, arcades, and active frontages.

Lighting and Safety: new deeds have been host to the lane ways, streets and parks of downtown. In order to keep those activities over the nighttime, lighting and safety sound vital. Sequence of Protection and public lighting system are applied through different aspects such as; lighting of the streets (especially edge of the street), lane ways, park, and public transport stations.

Street Furniture: as a stamp of the local character of a city, street furniture has been designed for illustrating real retailing and inspires street bustle level and usages.



Figure 22: Stationary activity summer Saturday
Source: Developed by Gehl, 2004



Figure 23: Stationary activity summer Saturday
Source: Developed by Gehl, 2004

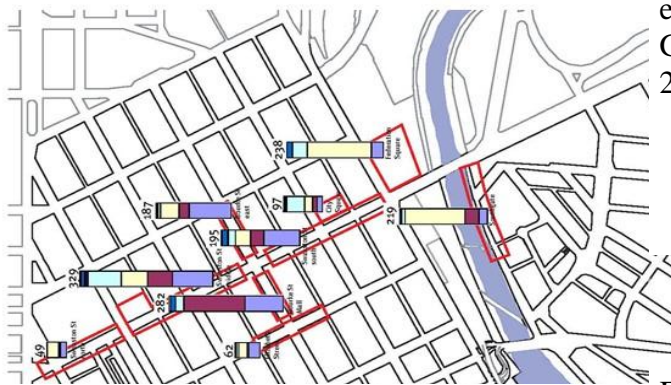


Figure 24: Stationary activity summer Weekdays
Source: Developed by Gehl, 2004

On the other hand, pedestrian flow has been dramatically increased. Records of ten sites during the week and Saturdays shows that during the daytime weekdays, pedestrian traffic is lower than Saturdays, and the verse is true for nighttime. The same pattern is available for Saturdays, but in a minor amount in numbers. The stationary activities were recorded in nine areas, offering all types of activities people engage in when not walking. The more retails diver like café or restaurant means a bigger amount of people, and greater time they spent out and. So the overall amount of stationary activities is getting much higher than before in the city center of Melbourne.

4.3.1.2 Physical Formation

Rhythm: many new buildings were built in the old context of downtown, Melbourne. They kept the contextual identity while creating new form, rhythms and scales. For instance outlet services have a display window or opening measuring at least 5 meters or 80percent of the ground floor façade.

Scale and Speed: buildings are providing the same scale and proportion. As the new building's scale fit into the area context, even in opening scale, roof line and entrance scale, etc.

Façade: the Combination of façade design, clear types of window glass and considered lighting enhance the security in all cases. At the ground level, the façade portions must be in small dimensions so that the visual appearance fit to human scale view.

Material and Transparency: visual permeable openings, particularly for shops are a good way of inviting customers while enhancing the level of security. It also gives a sense of lightness in material and visual continuity of the overall façade perspective.

High durable interesting material plus transparent portions are applied in façade and cooperate to signify active frontage which opens to the community.

4.3.2 STRØGET – Copenhagen, Denmark

Through the Copenhagen historic center, Strøget street extends about 2.3 miles on the western edge at Vester volgade which headed east to Kongens Nytorv, holding more than 6800 inhabitants. Meeting public urban spaces such as; Amagertov, Nytrov and Højbro Plads, the Strøget has been still the longest pedestrian street in the world since 1962. As a successful condensed Danish urban project, Strøget is one of the best livable streets with a density of 19,000/sq. mi in terms of quality of life (Bates, 2013).

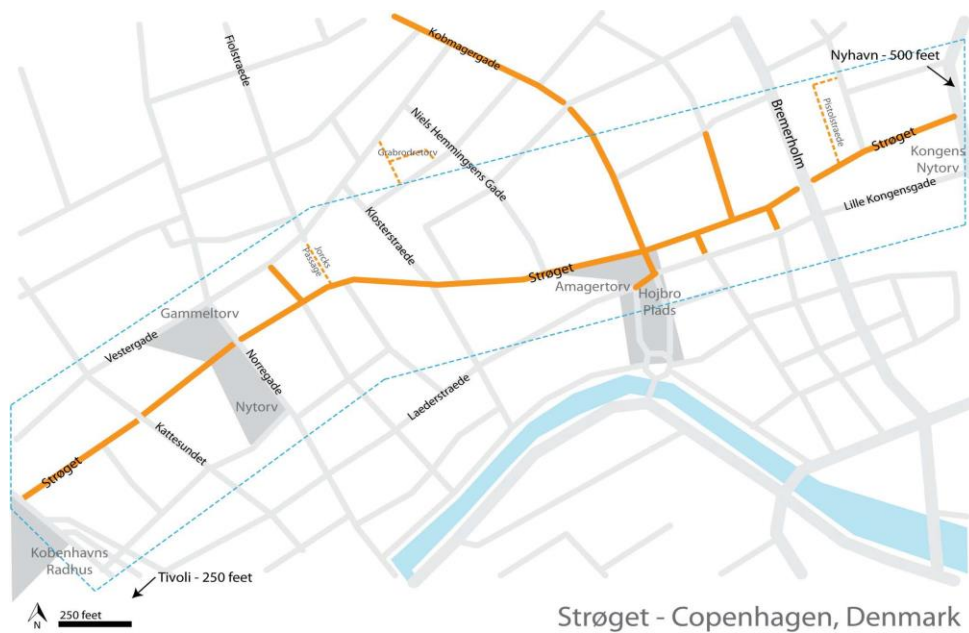


Figure 26: Study area of Strøget, Copenhagen
Source: Developed by Bates, 2013

4.3.2.1 Functional Relationship

Mix Use Context: From the beginning of the 21th century, the Strøget Street has been witnessed diverse retails and food establishments. Over than 127 business merchandising and 25 restaurants & cafes exist alongside of this street. (Gehl & Gemzøe, 2001) Being close enough to Copenhagen University may provide for the

6800 inhabitants to be able to hold diverse public and religious events in public plazas (Gammeltorv and Nytorv, Amagertorv, Højbro Plads, historic cathedrals Nikolaj Kirk and Helligandskirken) in the street (Bates, 2013).

Demand of Senses: there is a strong substantiation of diverse cafes and restaurants in Strøget Street. It is very difficult to run away from food smells, when you sit, talk or chat with the others in front of restaurants in public buildings. A similar pattern emerged in Strøget studies of cafes (Bates, 2013).

Lighting and Safety: Copenhageners love to go out, especially on the weekends. There would be bars, restaurants and pubs, so the need of proper lighting and security sounds vital to make the most comfort. An amusement park near the Strøget with special light decorations (particularly in winter) plus cathedrals produces a passionate Danish night life style (Bates, 2013).

Street Furniture: walking on the Strøget, only to information pillar and small commercial pillars are seen. The lightings are mainly hanging over head the street, in between the buildings (Bates, 2013).

Climate and Greenery: The Danish people use less likely greenery since the limitations of Strøget physical dimensions (height and width). But it still serves in local squares with shaded cafes and make a more pleasant habitation to sit and rest. Tivoli Gardens, one of the most famous urban amusement parks in the world, is only roughly 250 feet from the Strøget western entrance. Trees are primarily located in and around Helligandskirken and within Højbro Plads (Bates, 2013).

Access and Traffic: lots of well-defined pedestrian access points are to be found in parallel to Bike parking. However, they are still not enough because the number of bike user is much larger than bicycle stations and racks. Also, there is a good access via subway near Kongens Nytorv. Within Strøget, there are Kattesundet and

Klosterstraede, two minor crossing streets which play as access intersections. Nørregade and Bremerholm are another two major streets which cut the Strøget to delineate a starring role of accessibility. Transit access is provided via bus stops at Radhuspladsen, Gammeltorv, and along Bremerholm. (Bates, 2013)



Figure 27: Street life, Copenhagen,
Source: Developed by Google image



Figure 28: Street life, Strøget, Copenhagen
Source: Developed by Bates, 2013

4.3.2.2 Physical formation

Rhythm: with the middling width of 30-39 feet and average height of 40 feet, Strøget generate a special rhythmic characteristics. As per it traced in the center of

the historical core of Copenhagen, Strøget preserve and illustrate eye-catching horizontal and vertical rhythm with openings and arcades towards the street. These rhythms plus a cathedral, make a virtuous continuous visual experience that is enlarged by break ups and portions to generate plazas along the route (Bates, 2013).

Scale and speed: as it can be seen in the pictures and figures, from the human point of view, the overall streetscape is amusing. Scale of buildings, openings, amenities are well-matched to each other. On this dimension and proportions, only with the normal walking pace, a person would be able to recite and observe surrounding data properly. Strøget has done it before (Bates, 2013).

Façade: the silhouette and the lower edge of the buildings in main junctions and alongside of Strøget are in line to some extent. The openings, shades, protections and street meanders have been carefully designed and attached. They respect the historic context and also bring diverse materials, shapes, etc. To make the whole space more livable (Bates, 2013).

Strøget - Copenhagen, Denmark
Block between Rådhuspladsen & Mikkel Bryggers Gade

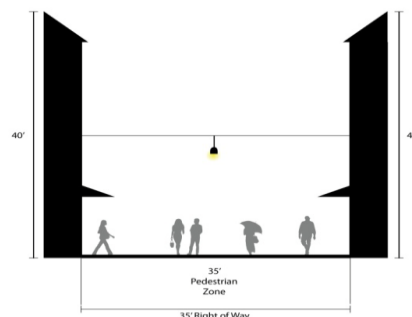


Figure 29: Strøget cross section
Source: Developed by Bates, 2013

Materials and transparency: durable, high-quality materials such as different bricks, stones, cobblestones, etc. Constructed the walkable streets. Making the Strøget more amiable, resilient and dazzling. Ground floor transparency encourages and invite people inside to see what is going on there and may have them less feeling of solid enclosure. Residents and passengers enjoy watching the sequences and opening towards the streets. Another aspect of transparency is due to safety and costs of the building. More visually means less crime, and more transparency of light material means less costs to build sustainable and long lasting environment (Bates, 2013).

4.4 Conclusion

This chapter initiates with introduction on the topic of why and how the study select the world-wide examples, and carries on by separating the cases in two categories; successful and failure examples. The review methods are conducted with the main methodology of the research, dividing analyzes into Functional relationships and physical formations.

Chapter 5

CASE STUDY: ASSESMENT OF ROBUSTNESS INSELECTED BUILDINGS INÇUKURAMBAR, ANKARA

5.1 Introduction

At the dawn of the 21st century, Ankara has experienced a steady urban place, making of neighborhoods that donated diversity and public life. Planning strategies and urban design initiated through city council and government and demonstrating accomplishment in inviting people through physical and functional enhancements. Çukurambar as a leading urban activity node in new urban development located in the Cankaya municipality on the way to the Eskisehir yolu, where the new mixed use buildings, cafes, restaurants and shopping centers settled.

The case study chapter will be analyzed this particular building and its surroundings. In the first part of the chapter, Ankara, particularly Çukurambar neighborhood will be considered at the outset. The second part displays methodology indicates how the research survey, on-site observation went on. The third part reveals case studies through functional and physical charts, bars, trends and analyzes. The fourth part outlines the results and justifications that are followed by monitoring applications contrary to thesis objectives and principles. Last but not least part illustrates the conclusions and lesson learned.

5.2 General Information about Çukurambar, Ankara

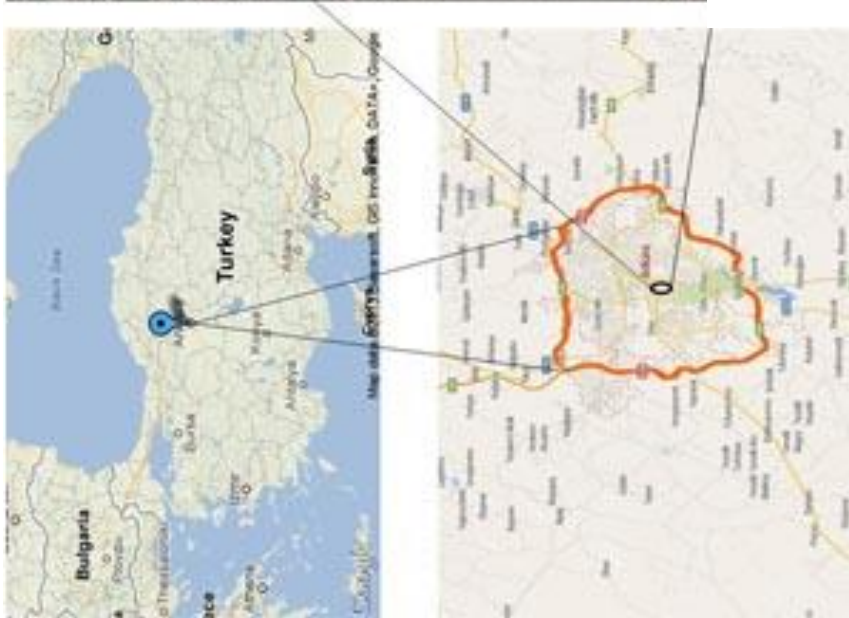
Over the past few years, the Çukurambar has seen the stunning urban transformation projects and development municipal plans. Çukurambar was once covered by unplanned and corrupted slums. In 1982 the “Ankara metropolitan planning bureau” had made a planning to distribute the dense population of the Ankara headed for the west part of the city. According to the plan, the ideal plot density, size and height plus usage of the buildings are increased noticeably. This is a key element for high land value which led improved urban transformation (Köroğlu A. Bilge, Ercoşkun Y. Özge, 2006).

The head chief of the municipality in disputed the facts of new plans for creating direct or indirect relocation of dense neighborhoods of Ankara regarding the urban facilities for new populations. Architects and owners are generally appealed for generating mixed use high quality living style over the neighborhood. It is mainly dealing with physical architectural qualities and functional aspects (Köroğlu A. Bilge, Ercoşkun Y. Özge, 2006).

As a community oriented municipality, Çukurambar aims essential urban principles led environmental and social benefits, based on economic, social and also cultural ground. So the government believes that by designing the urban spaces will affluence the person's life and generate a dazzling chance of having equal opportunity without any discrimination. For a sake of urban design and architecture, pedestrian priority neighborhood in addition to marketplaces mixed with residential projects reveal the aptitudes of social and environmental functions are the most necessary issues over the development (Köroğlu A. Bilge, Ercoşkun Y. Özge, 2006).



Figure 30: Location map (city scale-District scale)



5.3 Methodology

The methodology of PLPS developed by Jan Gehl (2013) and had applied in Copenhagen, Denmark in 1968, and drawn-out in London, New York, Sydney and Melbourne, etc. It helps studying the human behavioral patterns and maps over the civic area or street. A public life study (PLPS Method) method which stands for “public life, public space” method is divided into two parts; The PL includes of pedestrian traffic that would be done by observations, and stationary activities which describe the activities related to people. The PS (Public space) is about the environmental aspects relating to the overall quality of public space, traffic accessibility, and age/gender division of users, etc (Gehl, 2013; Appleyard, Lintell 1981, Whyte, 1980).

In this study, based on the Gehl`s methodology, the public life and public space method were applied over the Çukurambar. The PL (Public life) survey consists of information over and done with direct On-site observations and counting people prepared in two levels; the first part draws the functional user relationship includes of; Mix use, demand of sense, lighting and safety, street furniture and greenery plus traffic analyzers besides edge zones. Stationary activities, Behavioral mapping, passerby traffic, and movement tracing inside or crossing a limited space around each of the buildings which drawn as symbols on a plan of selected areas marks the number, type and position of the activities come about in the area. The second part describes quantitative data of. PS (Public space) is about the systematic and physical observations focusing on the overall quality of public space. The primary data collecting methods through; survey, on-site observation (physical evaluation,

functional mapping) and assessment approaches. The findings are organized, analyzed and compared between study areas in graphs, chart and tables.

Alternatively, PS (Public space) quarrels the systematic and physical observations focusing on the overall quality of public space just parallel to ground level building details, façade rhythm, material and transparency and scale and speed. According to literature reviews, building details were indicated and analyzed as patterns in two and three-dimensional analyzes and diagrams (Salingarous, 1999; Gehl, 2103).

The main idea of this methodology on the subject of functional aspects is to review the existing state of affairs regarding human traffic, analyzing possible demands, guiding the design of pedestrian traffic planning over the evaluations of project implementations. In a case of physical dimension, it may give us substantial information about quality of the built environment and sustainability issues like space use or sense of place (Gehl, 2006; Salingarous, 1999).

All of the areas conducted in spring and data were collected on Saturdays, and Weekdays. The different time interval was picked to fulfill the total daily data take place in each case study. Functional activities were mapped over the target areas every two hours. Individual traffic maps were complete in the selected building and in front of each study area for 10 Minutes per hour between different time intervals from 8 a.m. To 10 p.m. As a repeatable random sample, it makes a fairly accurate daily rhythm image of city life and calculate pedestrian traffic per hour (Gehl, 2013).

5.4 Area Analysis

Covering functional and physical relationships between mix use buildings, this study attempts to express, analyze and compare the characteristics of the newly developed

neighborhood to comprehend and challenge the building robustness qualities in a real world.

5.4.1 Area 1; Armada

In parallel to the city center extension of western alignment, Armada raised in 1999 and opened to public in 2003. By way of a shopping mall, the main overview of designers tends to enrich the complex with greenery, proper transportation system, continuity of pedestrian paths. As we stand before the main entrance, a designed square using steps invites you to the two tall buildings. Great pedestrian connections were created to get to the university campus transport station and also to Mevlana Boulevard (URL 8).

The complex has two parts which were built in two periods. First one is the main mall, and the second one is attached parts which were constructed at the after the finishing point of the main mall. The expansion constructions created a fertile plane for further developments and mixed-use activities in a dynamic robust interior and exterior spaces.

“Double mall” as two major forms have shared both covered and open plaza to mingle individuals easily. It boosts circulation of the ground floor level of the outdoor activities. As a first outside layer of the mall, the aluminum composite façade plus semi-green glasses take a great affection in public, particularly at what time it colored differently in dissimilar time moments. As to the aim of the research, the main principles of evaluation is prepared and revealed below.



Figure 31: General view from Armada business and shopping center
Source: URL1

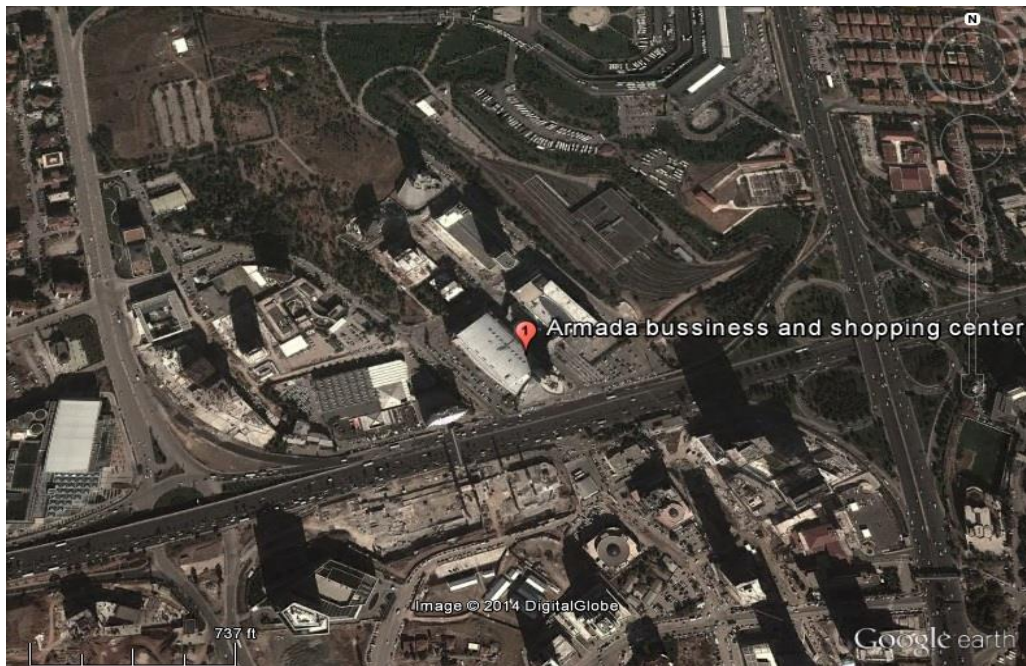


Figure 32: Location map in district scale, Armada business and shopping center,
Source: Google map



Figure 33: Armada business and shopping center at night

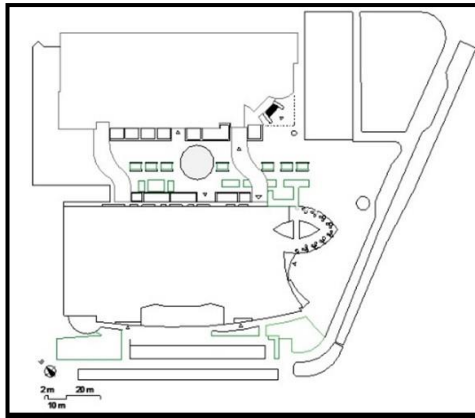


Figure 34: Armada center area plan



Figure 35: Armada at night

5.4.1.1 Functional Relationship

Mix Use and Context: armada, as a developed mall includes of different social facilities such as; hotel, offices, shopping centers, restaurant and cafes. It has a pedestrian friendly environment decorated with decent greenery which is supported by the transport system. A pedestrian pathway in association with two bridges between two buildings of armada complex plays as a passage that complete the whole complex as a perfect public urban space (Appendix A).

Edge Zones and the Context: there is strong evidence of active outlook in southern façade and the frontages between two buildings. The great range of vibrated public

cafes and restaurants offer a noble continuous context that spread over the complex. It may possibly be able to improve connections for further expansions for urban life.

Demand of Senses: holding divers restaurants, cafes, cinemas, shopping units with game zones and etc., Armada represent a wide range of display frames and entries towards the public space. Sensory impressions are strong enough to attract everybody.

Lighting and Safety: interior and exterior lightings are designed and applied to make Armada environment nightspots as upright as daytime. It uses different colors in façade, landscape (on site and over the floor) to generate passionate in parallel to the translucent facade. Armada also has a security team whom controls everything on the setting.



Figure 36: Armada business and shopping center, Pedestrian mall



Figure 37: Armada business and shopping center at night, Pedestrian flow

Street Furniture: it is important to note that all the street furniture used in Armada have collaboration with the landscape design and usage. Likewise Armada's pavement material has been designed for any weather condition.

Climate and Greenery: there are different kinds of small trees, basins and green grass plots are laid alongside of the pedestrian mall, enhancing the impact of urban furniture and public health. It somehow defines spaces within the plaza without using barriers of inflexible elements.

Access and Traffic: the pedestrian plaza has been prolonged to the Yaşam Street and Eskişehir highway. The major traffic paths through the site have shown in the next image with a blue colored line. There are taxi stations and bus stop just placed at the rear and front side of the complex. Also the mall has a big open parking at the edge of the highway. It has also three-leveled underground parking for owners of the mall facilities. The subway station and the pedestrian bridge over the Eskişehir highway are the other transportation options for the complex.

The results of traffic intensity in time intervals are illustrated in chart 1.

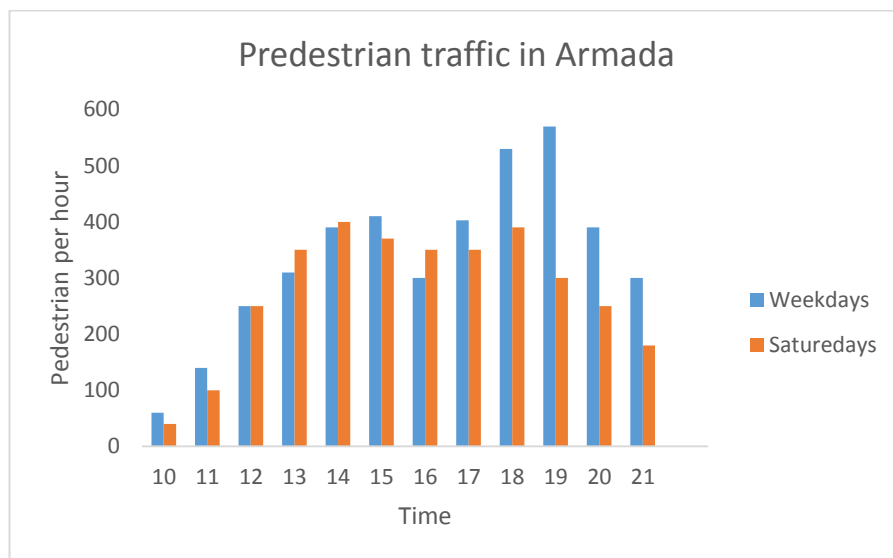


Chart1: Pedestrian traffic, Armada business and shopping center mall

Stationary Activities: stationary activities were documented in three places, two at the entrances of two buildings and one in the middle of the pedestrian mall. In pedestrian mall, the majority of people is sitting in cafes rather than informal sitting, both in Saturdays and weekdays. During the daytime the peak of the stationary activities, is happening in early afternoon and lunch time. At the entrances there have been few formal sitting and standing activities over the urban furniture.

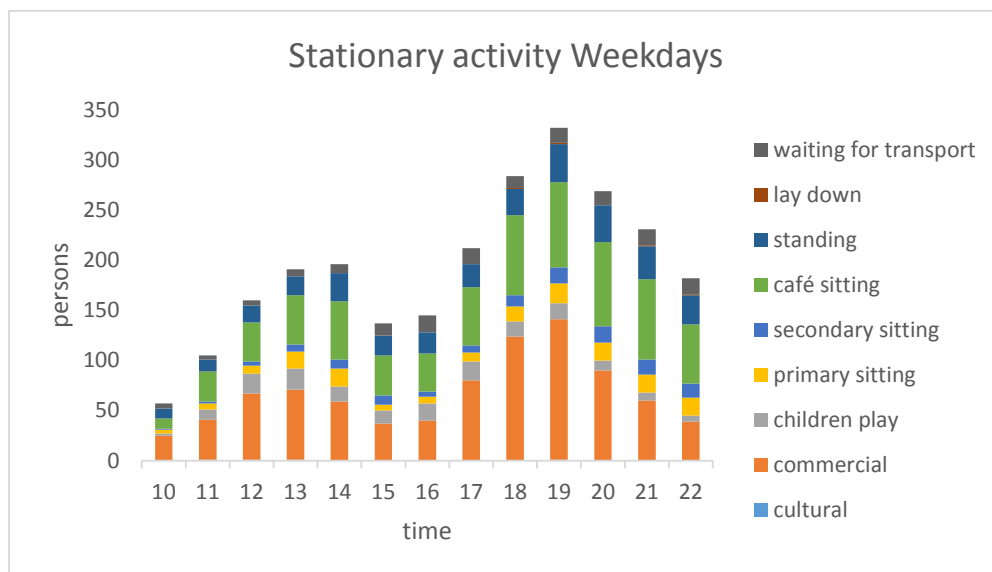


Chart 2: Stationary activity weekdays, Armada business and shopping center

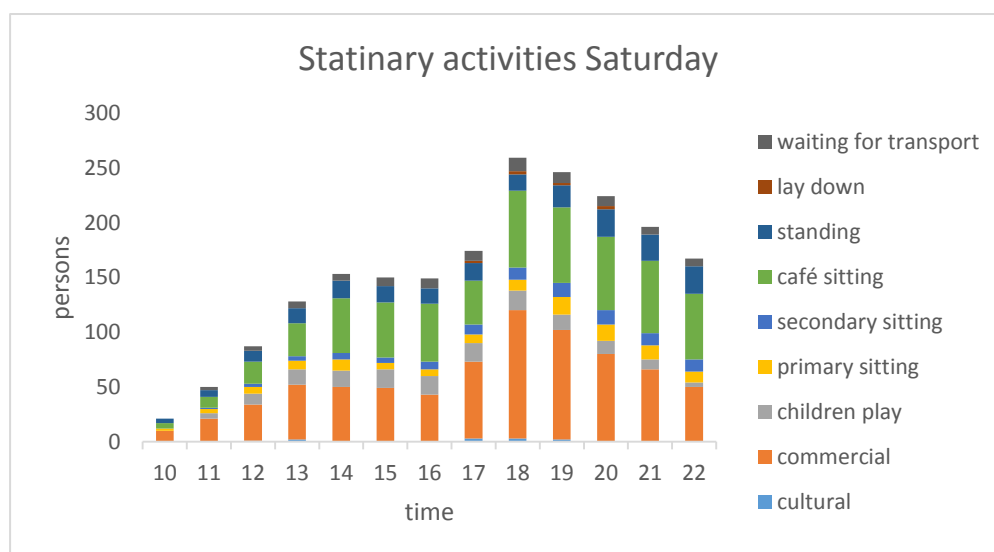


Chart3: Stationary activities Saturdays, Armada business and shopping center

5.4.1.2 Physical formation



Figure 38: Vertical and horizontal rhythm, Armada

Rhythm: in order to enhance the quality of walking right beside a Mall, armada has followed a good rhythm both in vertical and horizontal axes. It makes a huge mass into smaller portions and get the form closest to human scale and shorten the distances in between the Mall.

Scale and Speed: at the human speed pace, the smaller façade scale brings the bigger urban experience. It means that have more time, further details to see and enjoy, as well as more proportions and events to understand.

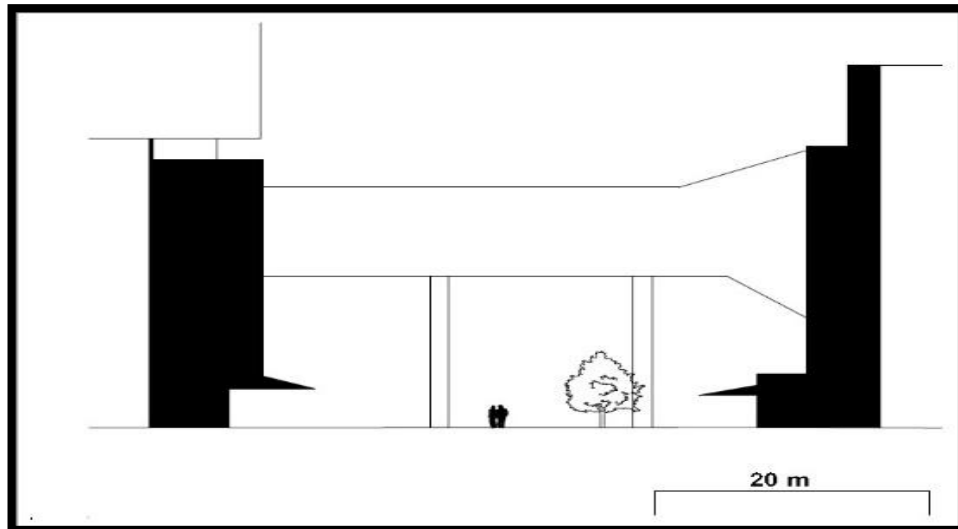


Figure 39: Scale and section of pedestrian mall, Armada

Material and Transparency: the Armada provides excessive occasion to let visitors experience the visual capability from inside to outside and vice versa. It may make you curious to know what is going on from outside to inside, and let you feel and touch the façade material. And from inside to outside, visitors can track events outside, or boost the sensitivity of being in larger urban space versus rigid and solid material design.



Figure 40: Rhythms and proportions, Armada



Figure 41: Material and transparency, Armada

Table 4: Functional and physical qualities evaluation of Armada

		Positive aspects	Negative aspects
Physical Aspects	Vertical rhythm	Rich in Details	
	Horizontal rhythm	Varied & aligned skyline	
	Speed and scale	Human scaled proportions, proper distance of viewers and building	
	Facade	Rich façade details in order to human speed and distance	
	Material and transparency	High transparency and quality materials	
Functional Aspects	Mix use and context	User diversity, Interior/Exterior connections	
	Edge zones	Defined edges and entrances, Linked interior & exterior spaces	
	Demand of senses	Touch & Experience, Odor & smell, enhanced sense of invitation	
	Lighting and safety	Shades, Night light & patterns, Comfort & safety, Variety of lights	
	Street furniture	Varied functional which supported by greenery	
	Climate and greenery	Work along with lighting & furniture, enhancing the local characters	
	Access and traffic	Access to public transport and street	



Figure 42: Location map in district scale/General view, Ambrosia business center

5.4.2 Area 2: Ambrosia

Ambrosia has been located at the junction of the Muhsin yazıcıoğlu highway and ufuk University Street built and prepare by Faik Ahmed Senel, as a member of Fon Mimarlik Ltd architecture group. The overall area is about 10060 m2 holding lots of offices with cafes, restaurant and other rituals.

5.4.2.1 Functional Relationship

Mix Use and Context: currently, there are about twenty eight active offices, four restaurants/cafes, one bookstore and about ten other types of retails. The commercial/official complex has no close neighborhood since the surrounding area is under construction (Appendix B).

Edge Zones and Context: as a matter of fact, Ambrosia have no active frontage, nor enough attraction for passengers to stop and enjoy. The only chance is due to the cafes that unfortunately have no decorated frontage, only occupied as an open roof small parking. It acts similar to a visual barrier, keeping all good things about active edge away from Ambrosia.

Demand of Senses: the wide footpath and beautiful shading of cafes towards the street edge let you observe and conduct closely to the building yet the tallest office block placed at the rear side.

Lighting and Safety: the only light sources which lit up the environment at night are directly related to the frontage cafes and entrance street laps.

Street Furniture: there is no street furniture found around Ambrosia except tool palettes which represent the retails of complex and street lighting.

Climate and Greenery: ambrosia has suffered from lack of greeneries. There is a bunch of bushes right at the entrance and partially in front of cafes.



Figure 43: No appeal of senses in Ambrosia

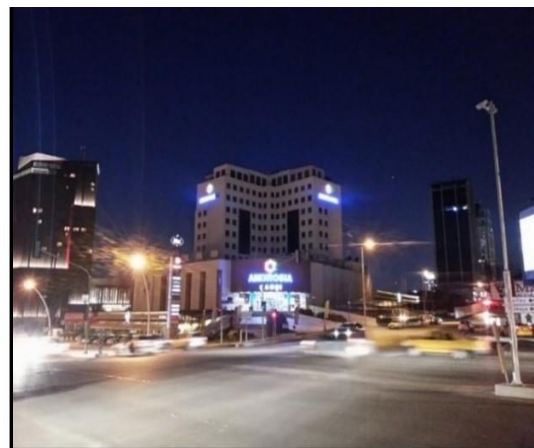


Figure 44: Ambrosia at night



Figure 45: Ambrosia greenery

Access and Traffic: there has been a few pedestrian flow around the building. The main access to the site is motorway. There is only one bus stop sited about 130 meters and about two minutes by walk, straightforward to the northern Ufuk university street that has presented in the map. The pedestrian traffic intensity is illustrated as chart 4.

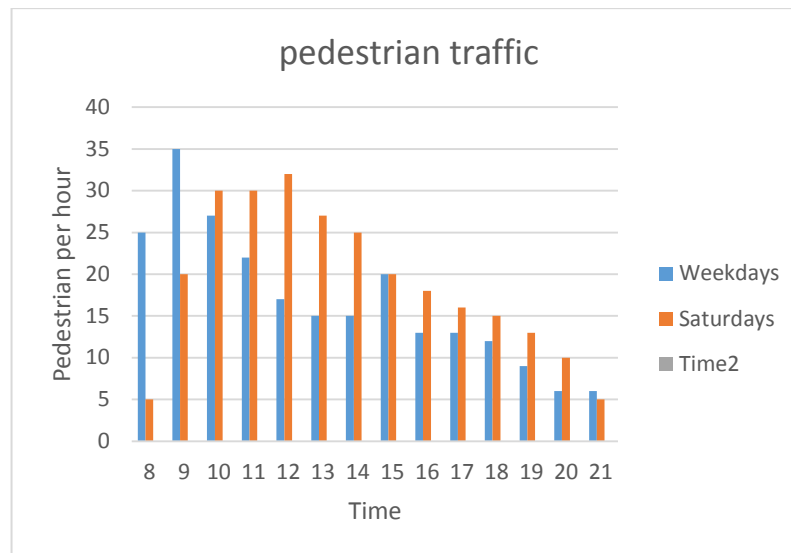


Chart4: Pedestrian traffic for Ambrosia business center

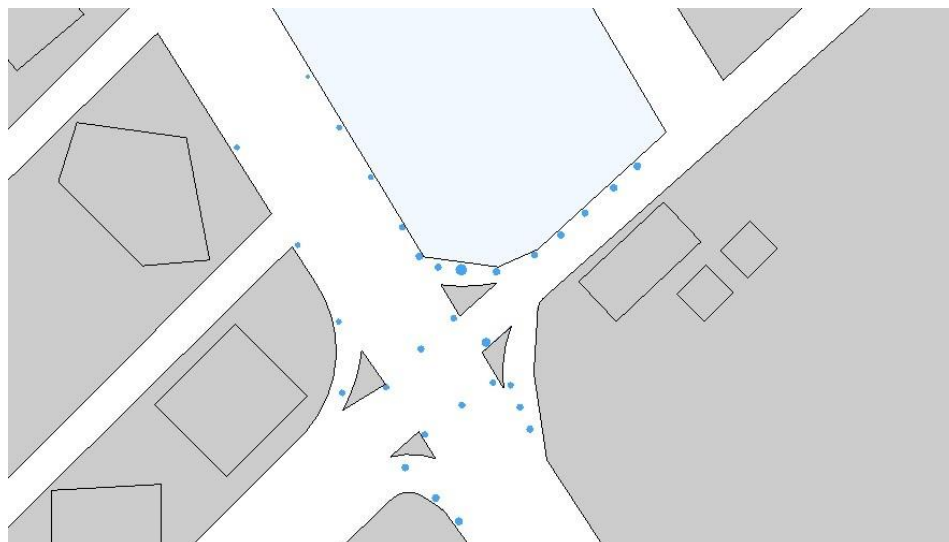


Figure 46: Pedestrian flow of Ambrosia

Stationary Activities:

Stationary activities were documented in three places, two at the entrances of two buildings and one in the middle of the pedestrian mall. In pedestrian mall, the majority of people is sitting in cafes rather than informal setting, both in Saturdays and weekdays. During the daytime the peak of the stationary activities, is happening in early afternoon and lunch time. At the entrances there have been few formal sitting and standing activities over the urban furniture.

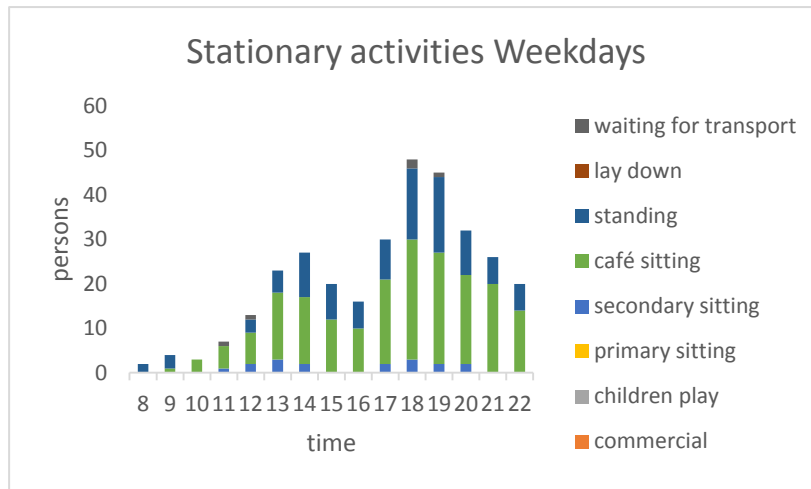


Chart5: Stationary activities weekdays, Ambrosia

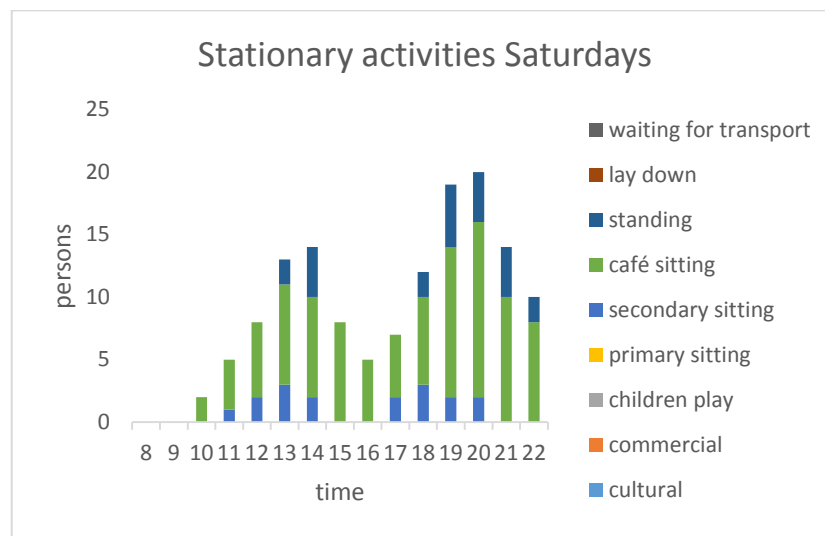


Chart6: Stationary activities Saturdays, Ambrosia

5.4.2.2 Physical Formation

Horizontal and Vertical Rhythm: if we take a look at eastern or western façade, rhythmical proportions recognized and marked (Fig 43; 47) Vertical red bricked columns are aligned and framed by white stone plate. Roof café shadings are established alongside the length of the façades at both southern and eastern facades. As a turning element between eastern and southern frontage, the curved entrance opens up to the heart of the junction. The office blocks are set at rear part and the two façade skylines are lined up to each other.



Figure 47: Façade rhythms and edge zones, Ambrosia

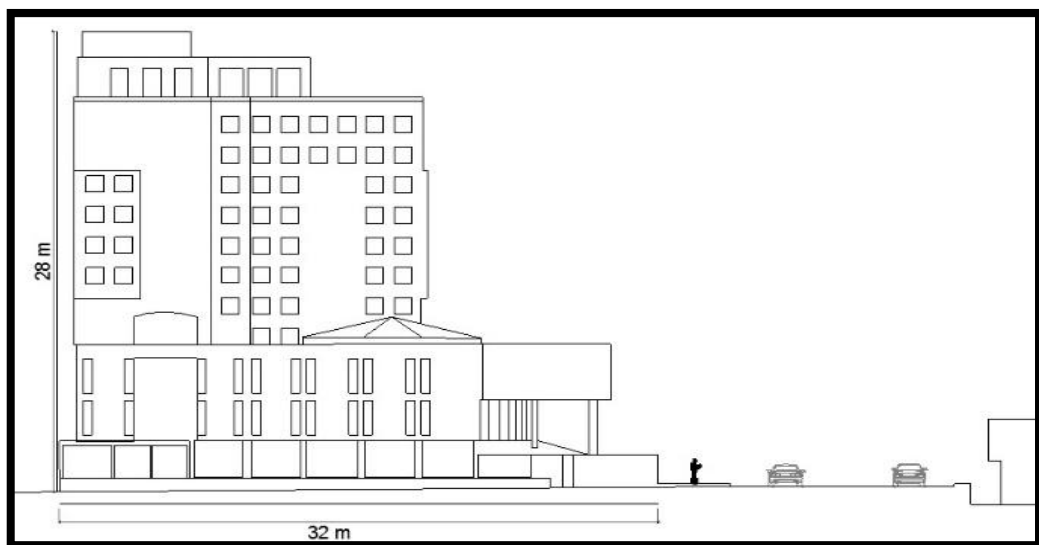


Figure 48: Ambrosia building scale and section

Scale and Speed: façade blocks follow the reasonable proportions regarding to the distance to the street edge. The frontage scale is in such a scale that the passengers can simply recognize most of the details.

Façade: having no design for the exterior façade at the ground edge of the building, Ambrosia unable to generate a perfect and enjoyable encounter between visitors and cafes.

Table 5: Functional and physical qualities of robustness in Ambrosia

		Positive aspects	Negative aspects
Physical Aspects	Vertical rhythm	Varied ground level façade rhythm	
	Horizontal rhythm	Functional & stylish tents	Constant skyline
	Speed and scale		Close distance between viewers and huge building makes a bad visual perception
	Facade		Poor façade details
	Material and transparency	High quality materials	Low transparency material
Functional Aspects	Mix use and context		Lack of diversity of uses, Poor connection between interior & exterior
	Edge zones	Defined edge	
	Demand of senses		Lack of sensory experience especially at night
	Lighting and safety	Functional Shades and enough safety	No variety in lighting system
	Street furniture		No diversity of street furniture
	Climate and greenery		No greenery match the context or lighting and local characters
	Access and traffic		Poor parking connection

Material and Transparency: Ambrosia present a durable façade material as white stone. Particularly, there are no direct windows or opening towards pedestrian, on the other hand, the only transparent front is belong to cafes on the ground level.

5.4.3 Area 3: Akgül Apartment No.1

It is situated on the southern part of the Muhsin yazıcıoğlu road. As a semi-high rise residential/commercial building, Akgül holds 28 residential units, a private garden and 5 other retail. What makes it so special is that Akgül is the very first tall building on the main road as we reach through one of the densest areas of Çukurambar.

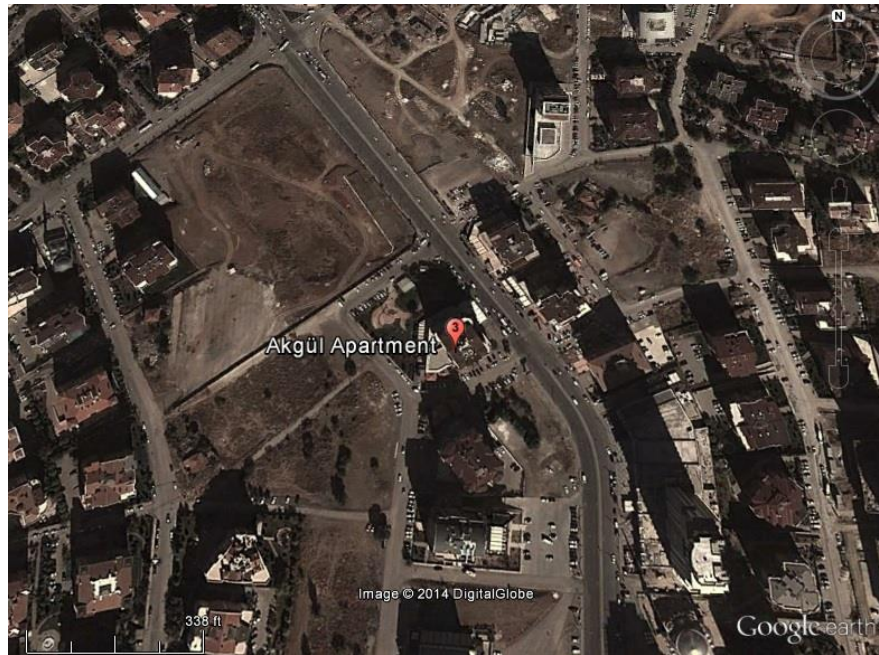


Figure49: Area plan, Akgül Apartment No.1

5.4.3.1 Functional Relationship

Mix Use and Context: the Akgül, standing at the edge of the street overwhelming passengers, has a delightful impression with diverse uses. Over the ground level towards street Akgül consist of famous café brand called Mado and Decline as a house furniture exhibition. In a case of southern façade, retails include of pharmacy, hair dressing shop, laundry and residential/commercial entrance are placed. In the backseat, it has a garden filled with kid amusements. Also the right side of the building, there is a hospital and open space settled. On the front side, the same complex stands out (Appendix C).

Demand of Senses: Akgül makes an impression on the major visitor because it has such a desirable active frontage of Mado, not deep too far from the edge to hear the music. Smell of foods is the most outstanding feature of this building. Yet the prospect of seeing inside through clear-glassed short walls, makes it more perceptible. Also the exhibition with tall glass walls allows the people to see through.



Figure 50: Akgül Apt No.1 at night

Lighting and Safety: confidently, the café needs to support a night life, as most of the visitors have their leisure time close to evening and night. Then it is impossible to image an exhibition without exterior/interior lighting system even in the daytime! Main Street lighting in association with exterior façade lightings are covering the environment at night. As a safety issue, the backseat garden control by cameras and lighting systems. However, the public park over the south part of the building has not been equipped since the municipality did not officially open it yet.

Street Furniture: getting so close to the street, Akgül has not enough space to maneuver up. Street lights, as the only furniture, link Akgül to the southern public park, which holds some benches to sit.

Climate and Greenery: at the backside of the building, people and children are enchanted by the private garden. The garden lets individuals interact directly and indirectly with the building and spend time together. However, inappropriately, I have no entrance to the public street. Standing at the right side of the building, a public park is somehow awe-inspiring young and old people to sit, chat and enjoy from fresh air.



Figure 51: Akgül Apt No.1 greenery

Access and Traffic: the perception of the Akgül assumes that majority of the transport system is by car. It means that walkability and public transport system are the secondary alternatives. The people whom rely on a vehicle can use back parking and to the bus travelers, there is just one bus stop right in front of the building.



Figure 52: Akgül Apartment No.1, pedestrian flow

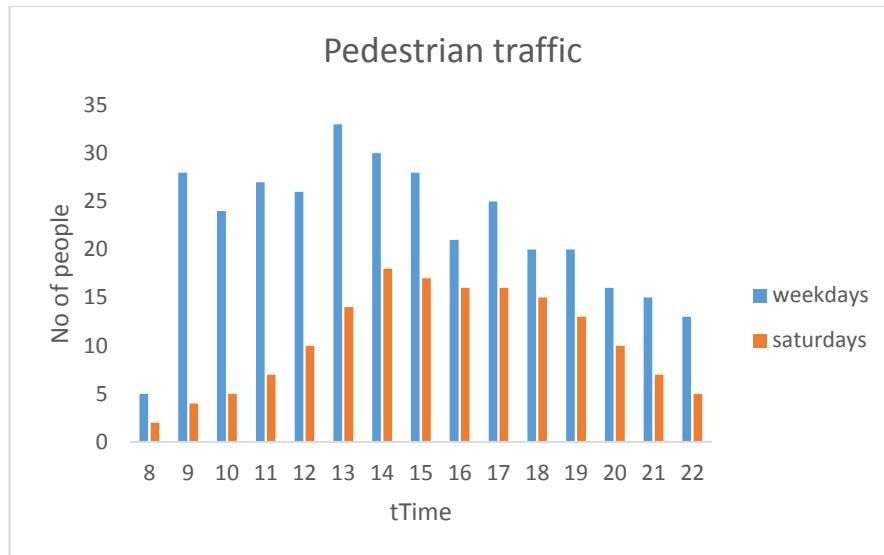


Chart7: Pedestrian traffic of Akgül apt No.1

Edge Zones and Context:Akgül reflect a semi-cohesive, dynamic, incorporating the frontage zones in to the south façade and Public Park. Active semi-open restaurant frontage with 3 floors delivers a number of stationary activities connect to the Akgül in line with shades, lighting systems and other physical proportions that may enhance the relationship between residents and public.

Stationary activities: stationary activities were documented in three places, two at the entrances of two buildings and one in the middle of the pedestrian mall. In pedestrian mall, the majority of people is sitting in cafes rather than informal setting, both in Saturdays and weekdays. During the daytime the peak of the stationary activities are happened in early afternoon and lunch time. At the entrances there have been few formal sitting and standing activities over the urban furniture.

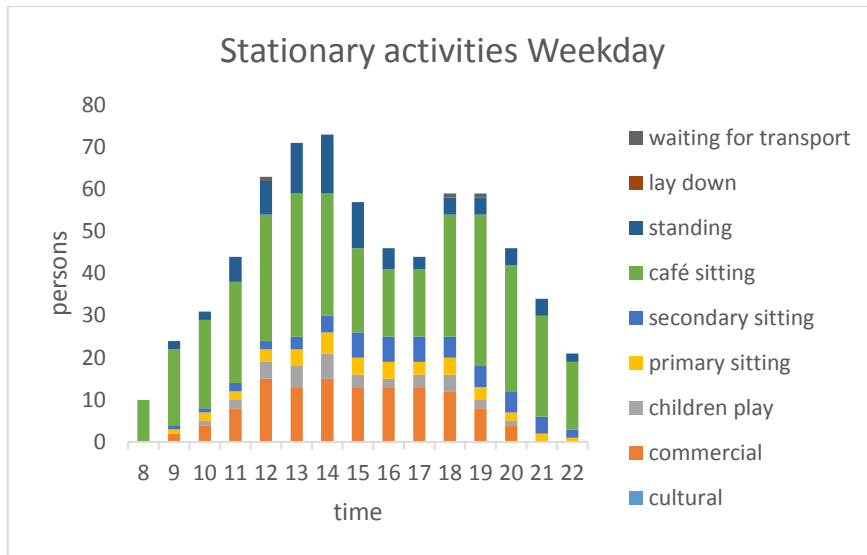


Chart 8: Stationary activities weekdays, Akgül Apt No.1

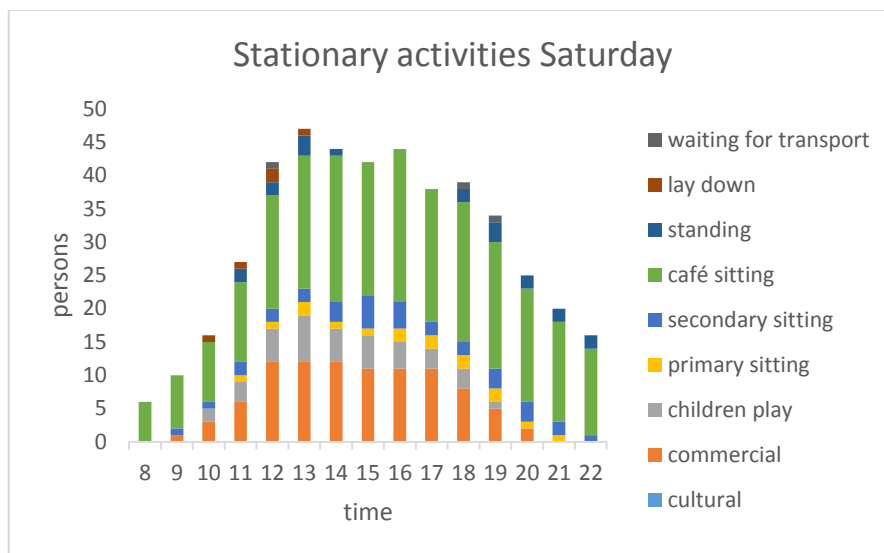


Chart9: Stationary activities weekdays, Akgül Apt No.1

5.4.3.2 Physical Formations

Horizontal and Vertical Rhythm: Akgül offers a general horizontal rhythm parallel to the first floor slab, since the basement sloppy slab makes it so hard to follow. Details agreement works together with the straight and curved line reprises, characterize an eye-catching visual rhythm.

Scale and Speed: in keeping with the human scale, Akgül carries the appropriate semi-high rise dimensions which keep the residential and commercial issues right together. The ground level can be distinguished easily through 5km walking speed.



Figure 53: Akgül Apartment No.1, section and rhythms

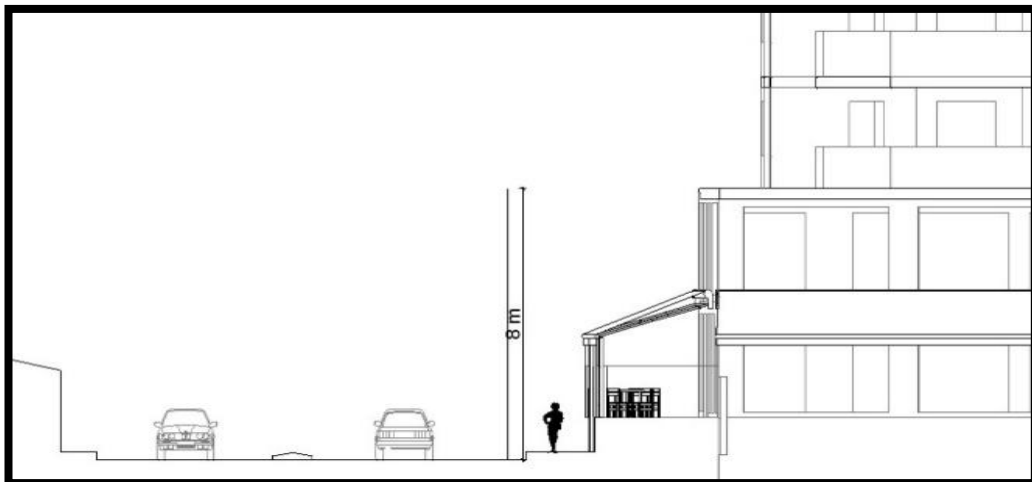


Figure 54: Street section, Akgül Apartment No.1

Façade: the façade is planned for human proportion. The roof line follows as traditional Ottoman style which suits to the environment. Bearing in mind that the mass body of façade has been keeping the rhythmical issues. In a lower part, the

most noticeable façade feature lays upon the huge windows of exhibition and friendly open entrance of café. Those features with an exterior light pole and the fame of Mado café, laid back a successful active façade which are lingers to the south side of the building.

Material and Transparency: long lasting composite frames in three colors with the cooperation of tiled openings and units, are promotes a sense of place for visitors. In the upper levels, the clayed-brown cement and reddish brick roof signify the Turkish identity of housing. Total size and scale can be easily perceived. Regarding the huge size of transparent openings, the façade allows people to connect in between interior and exterior spaces, propose public usages and enhance pedestrian accomplishments. As a residential part, upper openings are in less size and proportions, bring the idea of more privacy to the façade.



Figure 55: Façade of Akgül Apt No.1

Table 6: Functional and physical qualities of robustness in Akgül Apt.No.1

		Positive aspects	Negative aspects
Physical Aspects	Vertical rhythm	Number of rhythms	
	Horizontal rhythm	Eye catching skyline and ground level rhythms	
	Speed and scale	Good distance between viewers and building, human scaled proportions	
	Facade	Complex visual data and defined openings	
	Material and transparency	High quality and high transparency materials	
Functional Aspects	Mix use and context	Diversity of use	
	Edge zones	Defined edges and entrances between interior and exterior spaces	
	Demand of senses	Acceptable touch and experience, Enhancing the sense of invitation, Great odor and smell	
	Lighting and safety	Enough sunshine and shades, Night light and safety	
	Street furniture		Lack of enough functional street furniture without supporting greenery
	Climate and greenery		The greenery does not match the overall context and lightings.
	Access and traffic	Close connection to street, Good access to public transport,	Narrow pedestrian pathway

5.4.4 Area 4; Hayat Sebla Evleri

The pedestrians whom walk up from Akgül apartment to the south part of Çukurambar, suddenly stuck by the staggering height of Hayat Sebla buildings. The project started in 2005 by Gestaşconstruction LTD over the 28000 m2 area, and completed in 2011. As a huge modern complex, it consists of 388 residential units and more than 18 commercial retails on the lower level (URL 2).

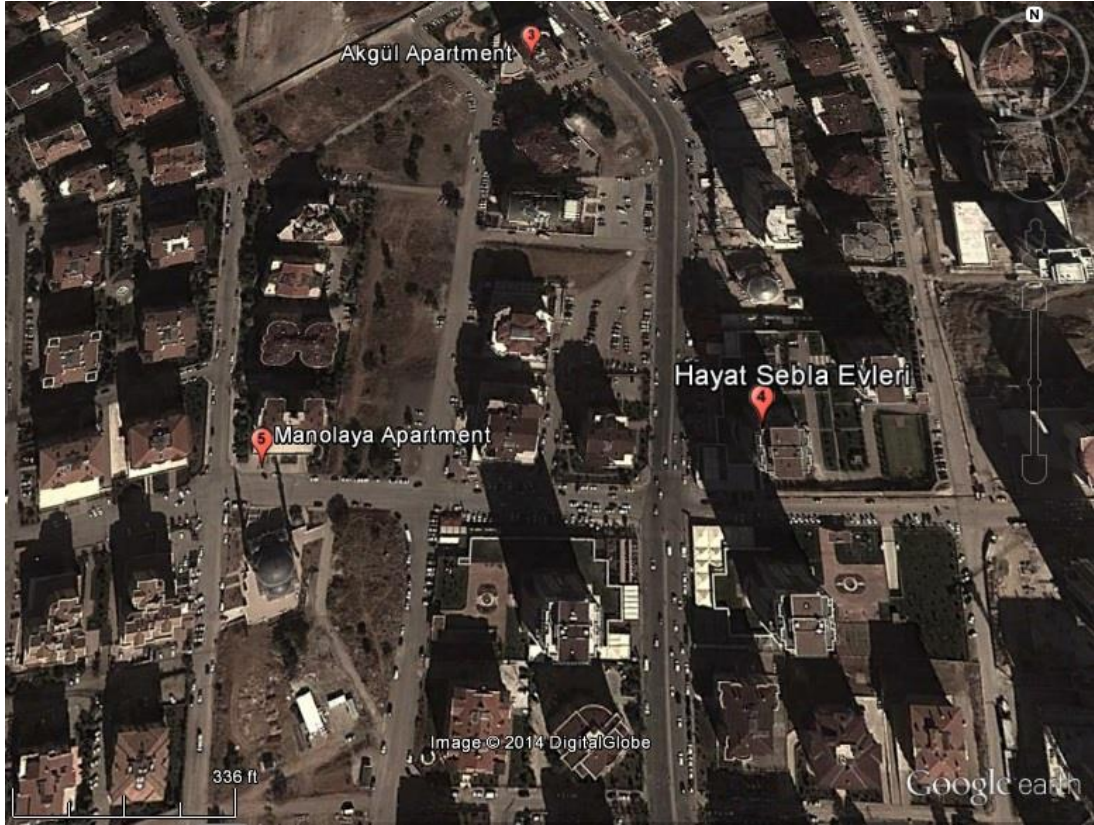


Figure 56: Location map of Hayat Sebla Evleri
Source: Google earth

5.4.4.1 Functional Formation

Mix Use and Context: The large number of residents, turned it into the crowded area, that elaborating the great variety of uses alongside of the street. Hayat Sebla consists of four banks (İş Bank, Deniz Bank, Halk Bank and Garranti Bank) that covers the financial interactions and some stationary activities of populations. Burger Kind and BIG Cafes are two great fast food leadership in the nutrition industry of Turkey. They provide a good condition for using the environment, both in exterior and interior. Immediate space in front of cafes. Allow to flow, pedestrian circulations and activities. Especially, when it comes to sitting, the Burger King and BIG Café use elevation as a design tool to attract individuals. The ground -stepped level trades are the most popular retails in the area which invite a great number of users in every day(Appendix D).

Demand of Sense: the primary thing one notices about the Hayat Sebla is its giant size. But with the assistance indesigning ground level,what attracts pedestrians to Hayat sebla most is the flawless combination of giant building and human scaled ground level. After that, the building seems like close enough to touch, sufficient enough to vibrant, see and falling public activities.



Figure 57: Hayat Sebla Evleri at night

Lighting and Safety: as a security matter of fact, the Bank should supported by security cameras at night and the police or guards in daytime. Assuredly, the vitality of the ground level at night, is intensely related to the cafes. City lighting system extends in parallel to the cafes and bank securities illuminations, enhancing the quality of public us and activities at night.

Street Furniture: the frontage façade is in a dilapidated state of urban furniture. Only a few light poles, trash containers and retail pillars are standing on the ground level front part.

Climate and Greenery: built, in no greenery in line with street, Hayat Sebla is completely encountered by solid forms, except the public park garden on the other side of the street. The public park is recently opened and suppose to improve the amenity and community health by reducing air pollution and space definition.

Access and Traffic: being right at the corner of the junction, Hayat Sebla has a great access to both Mevlana Boulevard, Muhsin Yazıcıoğlu. But it has not been designed for cycling or walking. The nearest bus stop is about 3 minutes walking distance.



Figure 58: Pedestrian flow, Hayat Sebla Evleri

Edge Zones and Context: despite the fact that the visitors walk alongside of the façade, food smells, café music with physical expression pathway encourage welcome foot-travelers through, make them look, explore, sit and enjoy.

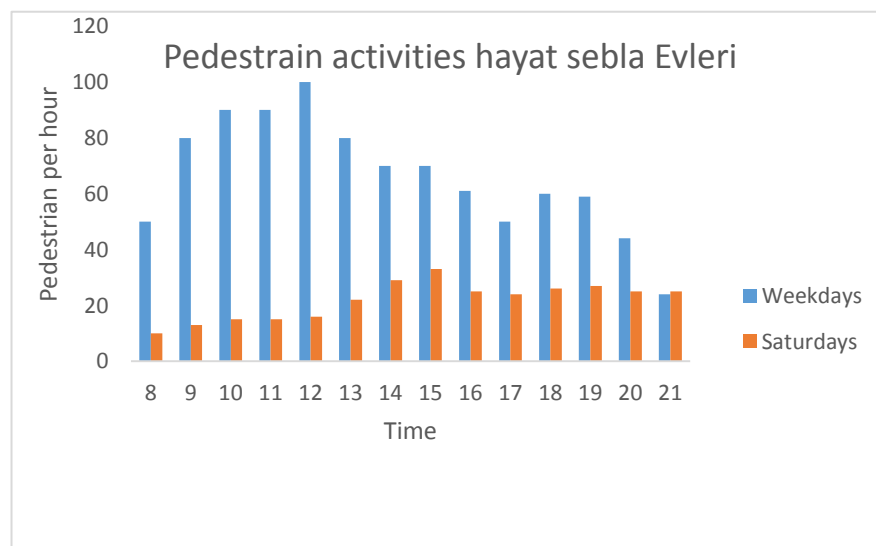


Chart10: Pedestrian traffic, Hayat Sebla Evleri

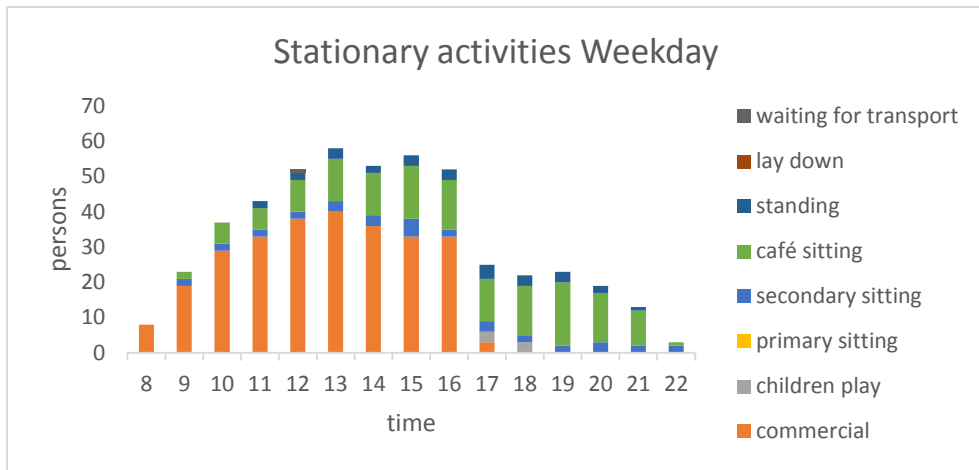


Chart11: Stationary activities weekdays, Hayat Sebla Evleri

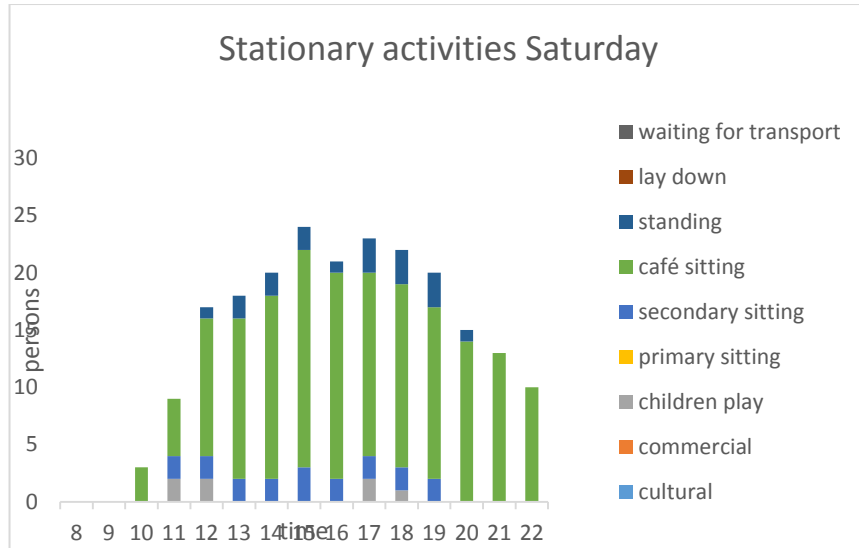


Chart12: Stationary activities Saturdays, Hayat Sebla Evleri

5.4.4.2 Physical Formation

Rhythm: as a high rise mix-use residential complex, the building erects up vertically, characterized by both horizontal and vertical harmonies. As Salingarous (1999) mentioned; the more the environment compound, the greater data you will achieve. Equally, horizontal and vertical linear grouping of façade elements (windows, opening, arcades, etc.) steered to produce visual rhythm.

Scale and Speed: the fascinated thing about the building that makes an excessive impression on visitors in that the overall scale has divided into smaller human scale at ground level. This idea creates a legible continuous form of shapes and physical or structural details which clearly conceived at the walking pace.

Façade: dominating the open and solid portions in façade, the building frontage is complied with rhythmical traces. It may allow wind flow and break down the huge façade blocks into slighter slices which ease the sense of a close encounter to the building.

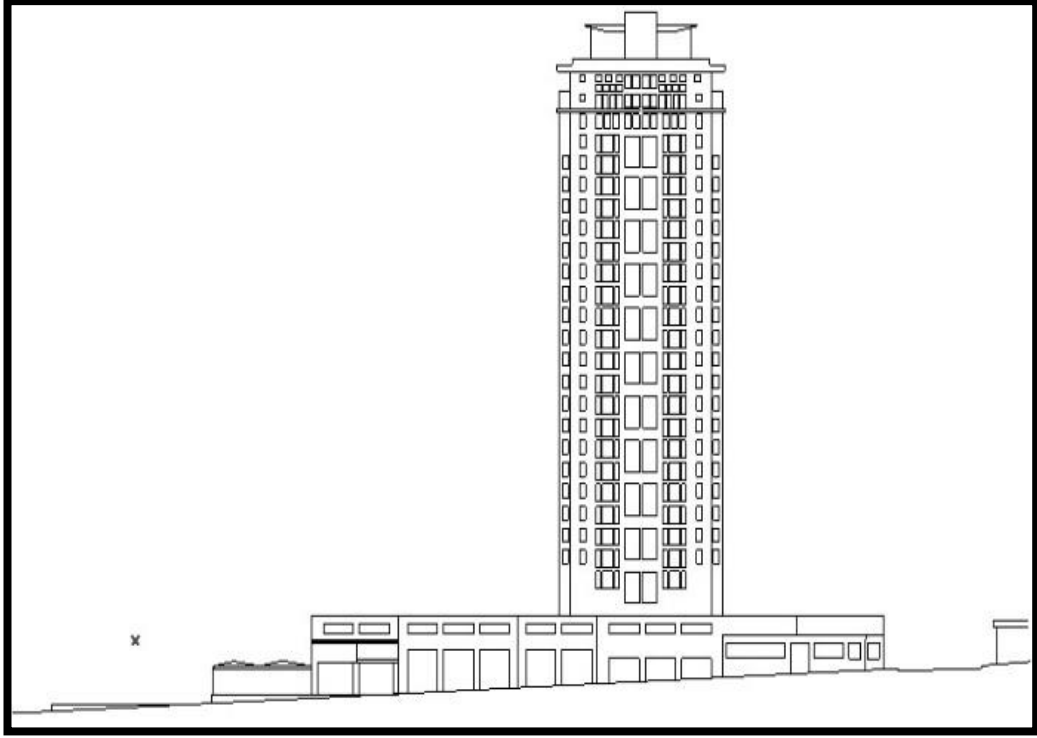


Figure 59: Façade view, Hayat Sebla Evleri



Figure 60: Ground level façade, Hayat Sebla Evleri

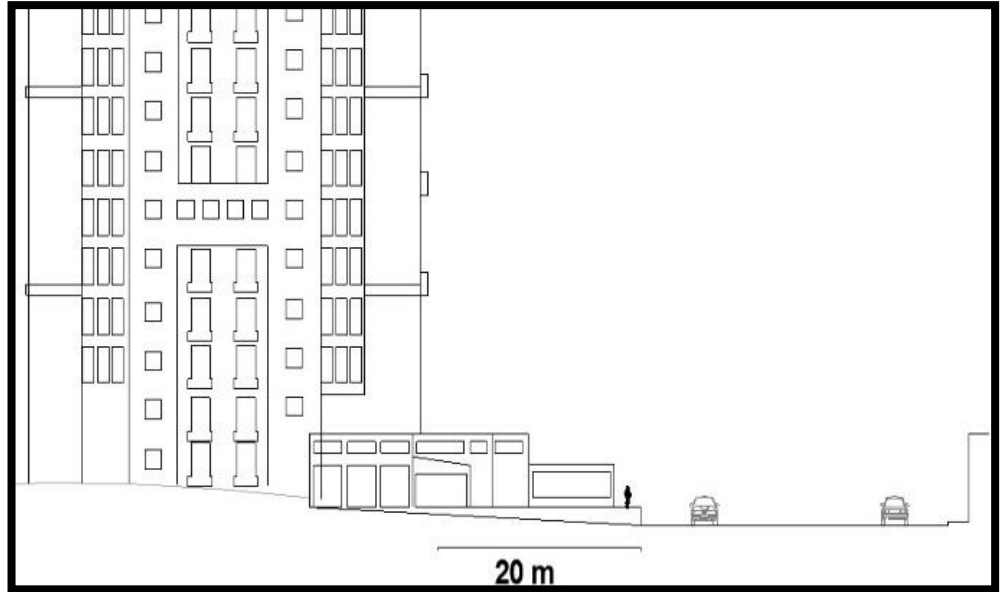


Figure 61: Street cross section, Hayat Sebla Evleri

Material and Transparency: the façade materials include off white stoned tile, gray fiber and brown bricked age. High quality long-lasting materials support a sustainable, pedestrian friendly setting. Each of the façade parts that filled with different materials, are branded as a dissimilar grouping unit. Each unit has an opening or windows, connecting the inside to the open-air events. Therefore, almost all of design principles like window rhythms, scales, safety, senses, and other qualities are closely involved with the transparency.

Table 7: Functional and physical qualities of robustness in Hayat sebla Evleri

	Positive aspects	Negative aspects	
Physical Aspects	Vertical rhythm	Rich in vertical rhythms, simple and functional architectural style	
	Horizontal rhythm	Functional and unified horizontal rhythms	
	Speed and scale	Good facade proportions, enough details for walking speed enjoyment and observation	
	Facade	Defined openings and legible façade proportions	
	Material and transparency	High quality unified materials with enough transparency	
Functional Aspects	Mix use and context	Diversity of uses. Nice connection between interior and exterior	Experiences are reduced during night time since most of the uses run in daytime and weekdays only
	Edge zones	Defined entrances and clear boundaries	Poor edge design at south and parts
	Demand of senses	Normal sensory experiences due to the size and proportion of the ground level units, good sense of invitation in most parts	
	Lighting and safety	Ordinary sunshine and shades, Night light and safe environment	
	Street furniture		Not varied
	Climate and greenery		No greenery at front edges
	Access and traffic	Connection to street, Near access to public transport,	Poor access for disables

5.3.5 Area 5: Manolaya Apartment

As a low density mix use building, Manolaya positions on the 1425 cadessi, has only four minutes distance walking form Hayat sebla. It was built in 2005, consist of two commercial retails and 32 residential units.



Figure 62: Manolaya Apartment

5.3.5.1 Functional Relationship

Mix use and context: having just two educational offices, the Manoloya apartment has been sited on the mix use neighborhood. There is a small beautiful mosque laid in front of it, offering pedestrians and elderlies to have a seat and rest in its Turkish-Islamic urban furniture. The residential entrance opens towards the west side of the building (Appendix E).

Edge Zone and Context: the worst thing about Manolaya is to have no active frontage, both in physical and functional issues. No defined public zones means no urban activities.

Demand of Sense: the ground level retails are so poor to deal with the passengers, only a few students of employees sometimes do some activities at the frontage and over the mosque urban furniture.

Lighting and Safety: the only source of lighting is due to a mosque and just one light pole. However, because of being at the root of a semi-dense area, the overall safety has been fulfilled to some extent.

Street Furniture: the Manolaya has only faced a single light pole and commercial pillar of the offices. A few wooden benches are placed at the right side of the mosque, which permanently occupied was elderlies.

Climate and Greenery: the unacceptable view of the unsightly hedges at the front and on the western side of the building, has been run to have a pathetic climate condition and foliage. There are two left over spaces around Manolaya and the mosque, which kept useless yet.

Access and Traffic: certainly, the most impressive functional factor of Manolaya, is the number of passer's, not to use it, but just to pass it through the street.

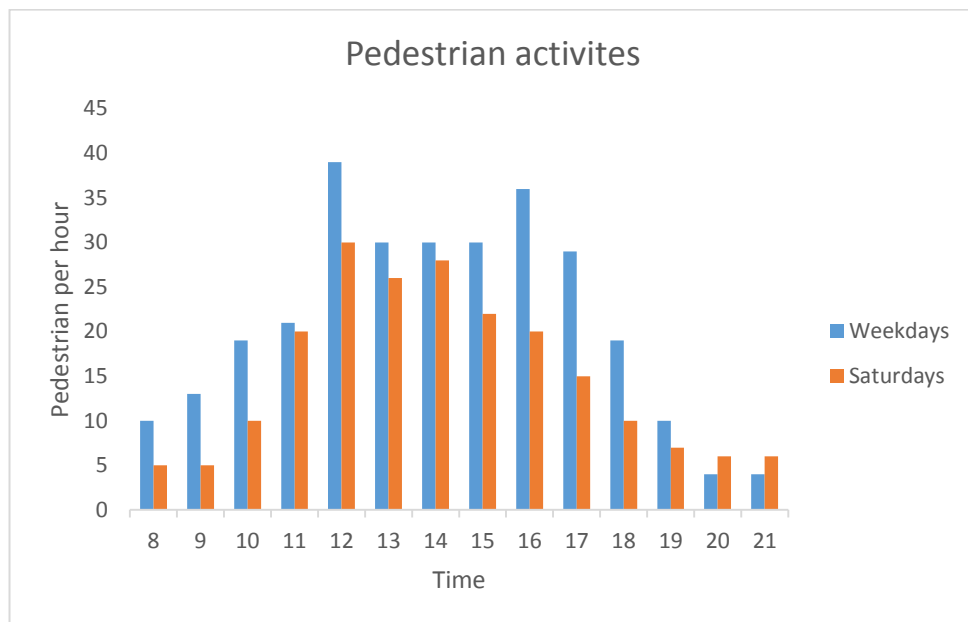


Chart13: Pedestrian traffic and activities, Manolaya

Stationary activities:

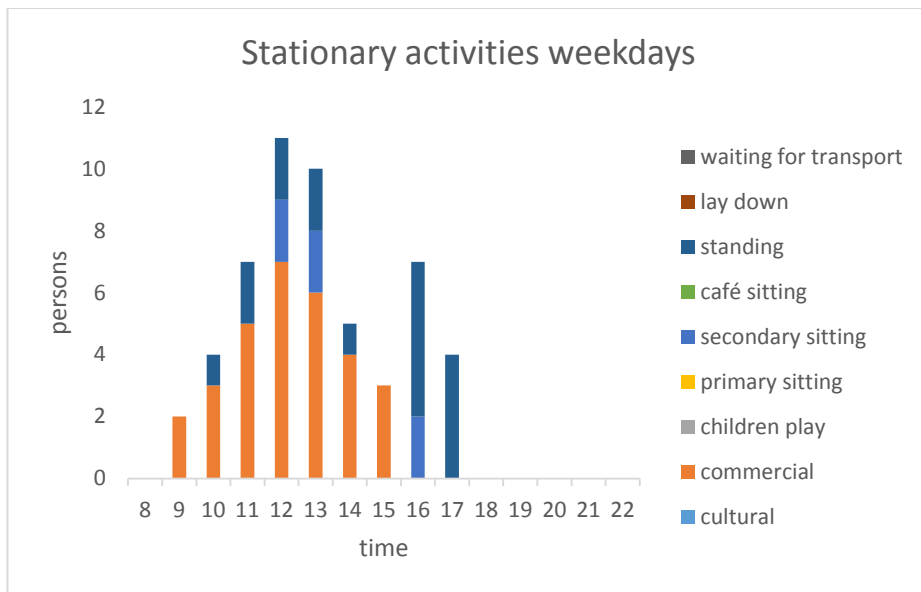


Chart14: Stationary activities weekdays, Manolaya

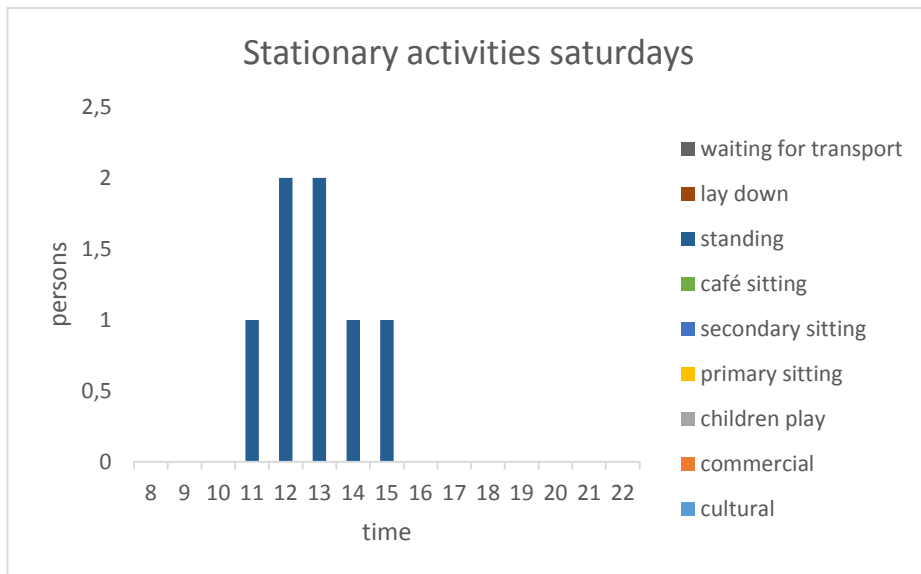


Chart15: Stationary activities Saturdays, Manolaya

5.3.5.2 Physical Formation

Rhythm: vertical and horizontal poles are categorized by window edge traces, skyline and building borders.

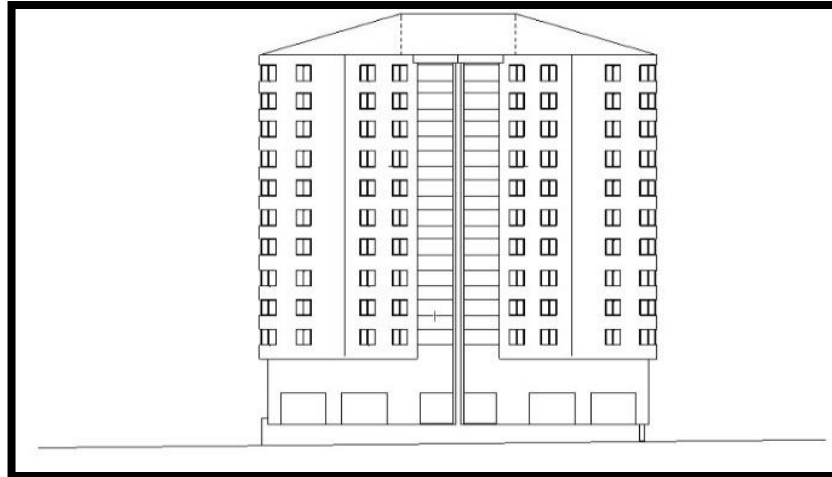


Figure 63: Façade view, Manolaya Apartment

Scale and Speed: the ground level frontage has a big distance from the body of the building; consequently as we reach the building, our perception becomes lesser in details.



Figure 64: Manolaya Apartment side view

Façade: the ground level is choosing a ruthless way of expressing façade details, no responsive articulation of pattern, undersigned entrances and logos, nor contribution to enhancing functional activities.

Material and Transparency: the faded blue colored tiles with small proportioned openings, have no connection to the main building's color, were built to prevent the visual connection between indoor and outdoor.

Table 8: Functional and physical qualities in Manolaya

		Positive aspects	Negative aspects
Physical Aspects	Vertical rhythm		Lack of legible vertical rhythms
	Horizontal rhythm		Lack of horizontal façade rhythms
	Speed and scale		Short distance between pedestrian and building makes no visual interests
	Facade		No façade details, Poor visual proportions, Weak defined openings and entrances
	Material and transparency		Lack of high quality transparent materials
Functional Aspects	Mix use and context		Very limited low activity uses restricted to daytime
	Edge zones		Unclear edge between building and surrounded setting
	Demand of senses		Lack of architectural aesthetics to invite sensory experiences, Lack of proper use of space
	Lighting and safety		Lack of night light and sun protections or shades
	Street furniture		No street furniture
	Climate and greenery		A very poor type of greenery with no link to the context and local characters
	Access and traffic		Does not have near access to public transport

5.4 Result and Discussions

All through the five studied areas of Çukurambar, there were huge differences between pedestrian flows illustrated by charts 16 and 17. As a result, the functional relationship between building and surrounding factors as well as physical formation factors mentioned according to literature review chapter.

As Gehl stated in Melbourne study (2010); we can define a general framework for the quality of functional and physical façade formations of the urban space into numbers or letters.

“1” grade façade signifies a high quality two way encounter.

“2” grade façade represents a medium quality of happenstance.

“3” grade offers a lower quality of interaction.

The results obtained from the comparisons of grades are set out in the charts 20 and 21. In terms of functional relationships among selected areas, Armada business and shopping center tends to be more concerned with high functional urban qualities, whereas Manolaya apartment and Ambrosia complex gain lowest points in this challenge. From this data, we can clearly see that Hayat Sebla Evleri and Akğül Apt No.1 resulted in the same normal value of functional quality and placed between Armada business shopping center and Manolaya Apt.

Two key aspects of pedestrian activity analyzes can be listed as specific time intervals and the number of people. As it revealed in the previous parts, a dramatic difference found in the total number of pedestrian between Armada to the rest of studied areas. The research indicates four exact time intervals for further discussion; 9Am, 13Pm, 17Pm and 21 pm.

Referencing statistics from two robustness quality of surveillances in declaration to each study area endorsed the process of drawing conclusions according to the relationship between building façade and the surrounding environment.

The following markers line displays the pedestrian intensity over time intervals in weekdays and Saturdays.

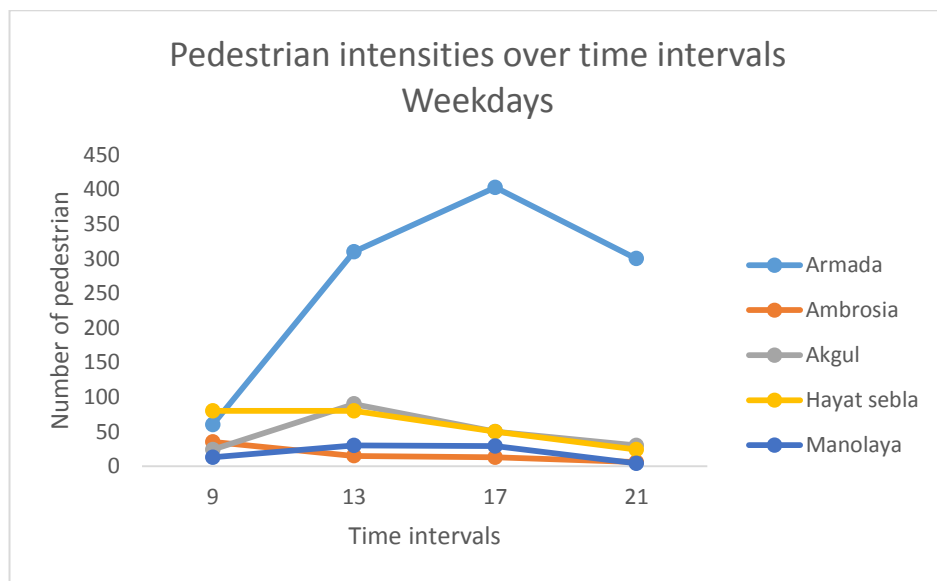


Chart 16: Pedestrian intensities over time intervals

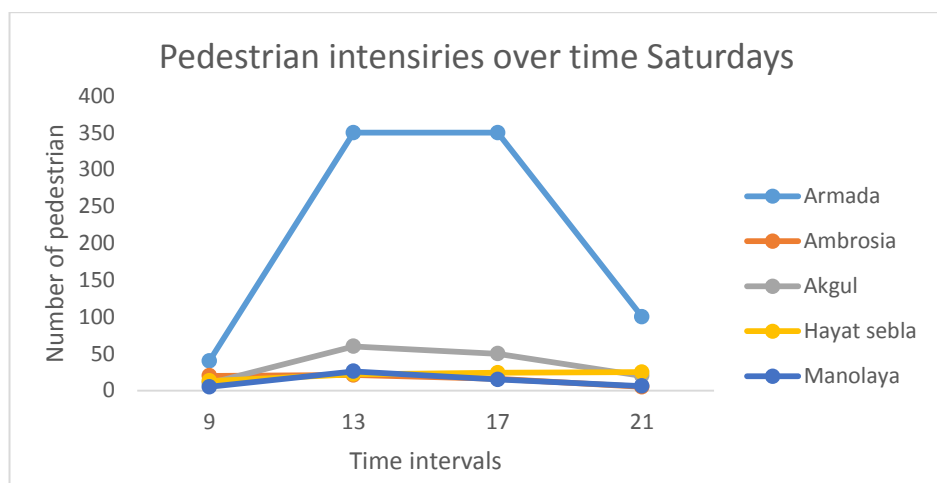


Chart 17: Pedestrian intensities over time intervals

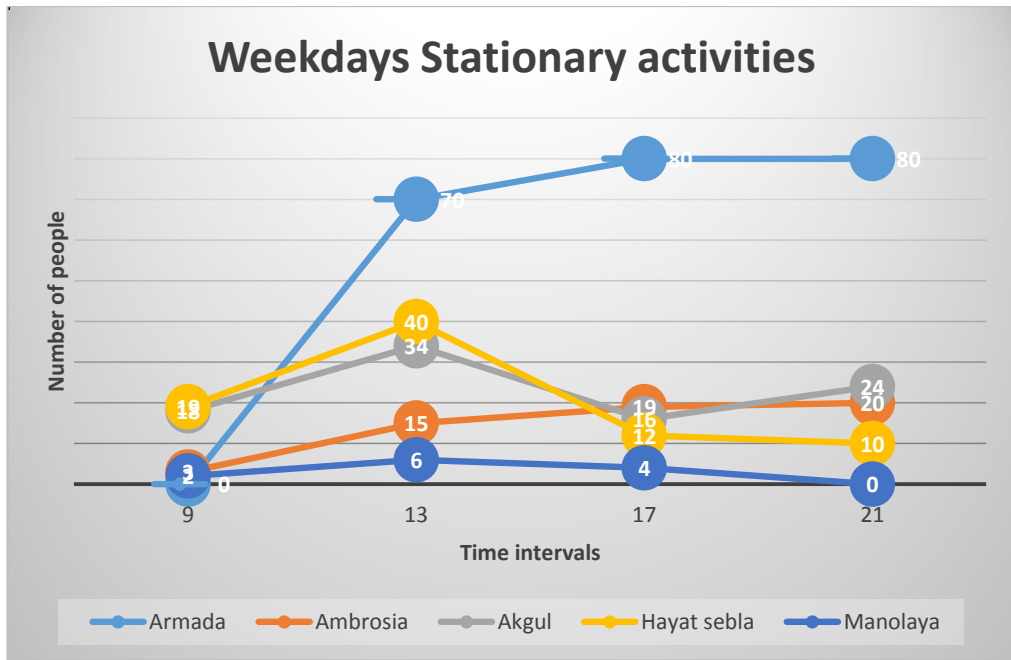


Chart 18: Stationary activities on weekdays over time intervals

In a case of stationary activities, turning now to the physical formation results, the experimental evidences are illustrated in chart 19.

Over the lunchtime (13Pm) on weekdays, the highest stationary activity is 19% higher than Saturdays. During the afternoon (17Pm) on weekdays, the highest stationary activity in Armada (Commercial) is 13% higher than Saturdays. While for the nighttime has almost the same outcomes.

The graphs show how the number of weekday users in lunchtime, increase up to 53% in the contrast of Saturdays over the ambrosia area. In the afternoon, the percentage of users continued dramatic increase at approximately 74%, whereas for the nighttime it becomes suddenly doubled.

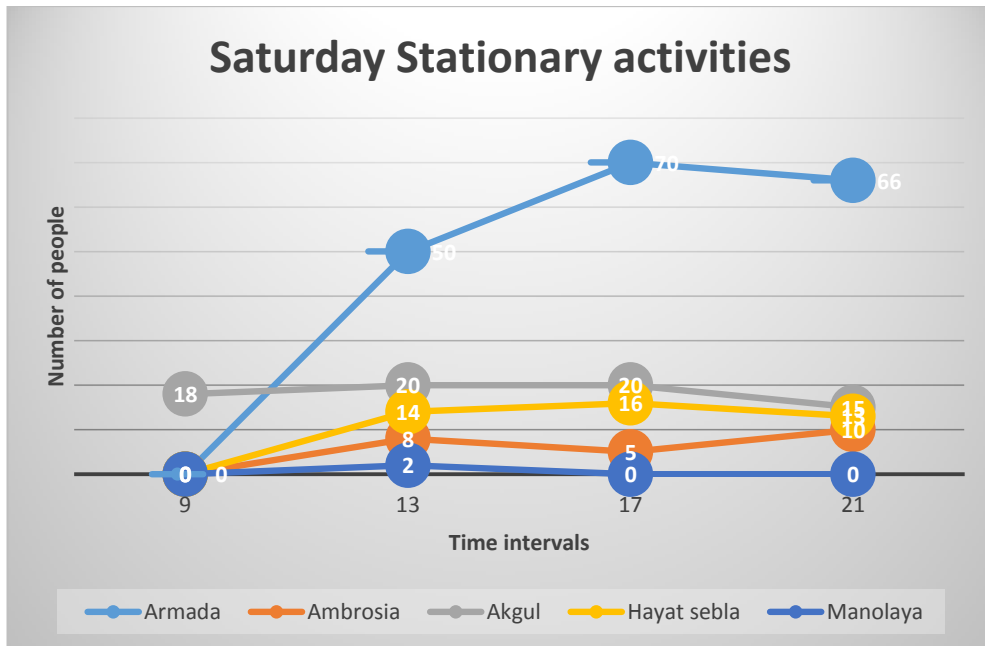


Chart 19: Stationary activities on Saturdays over time intervals

The percentage of users visiting Akğul were relatively stable during the morning, however, there is a significant increase of 58% on weekdays rather than Saturdays in lunchtime. The displays also exposed the population fell from 20 persons in weekdays to 16 ones in Saturdays afternoon. The same phenomena have happened in the night time, falling down 62% from weekdays to Saturdays.

Revealing the line charts of Hayat sebila, there has been no activity on Saturday morning while for the weekdays, 19 commercial activities have found so far. On weekdays, activity levels peak in lunchtime while on the Saturdays less activity amount is set up. In the afternoon, there has been a slight decrease in weekdays to the Saturdays. It then gently drops of 76% in the nighttime.

In a case of Manolaya apt through the entire Saturdays except at lunchtime, there has no activity at all. Then for the weekdays, it starts at 2 in the morning to 4 in the lunchtime and fell again to 2 at night.

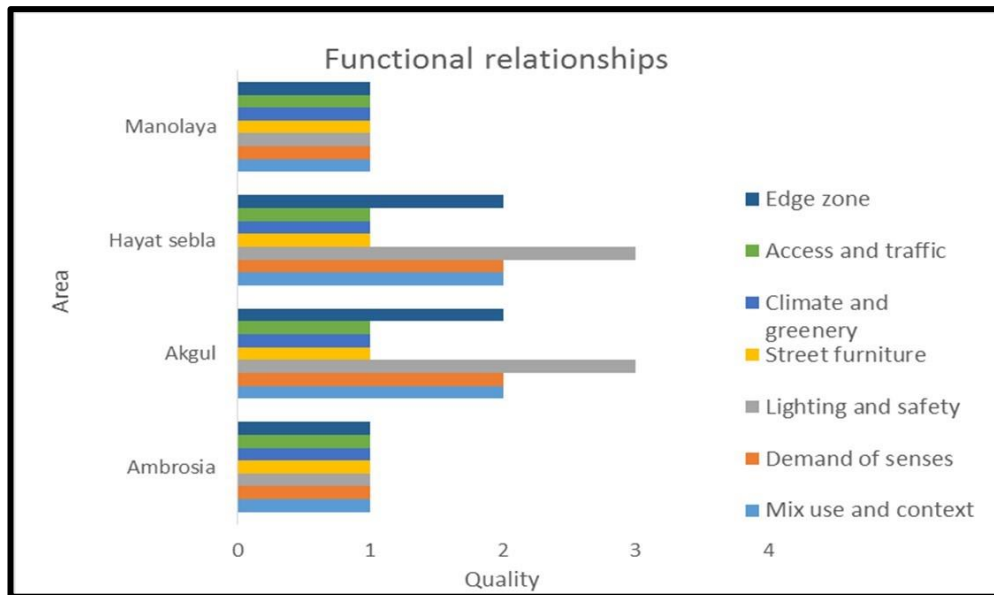


Chart 20: The overall functional quality of five study areas

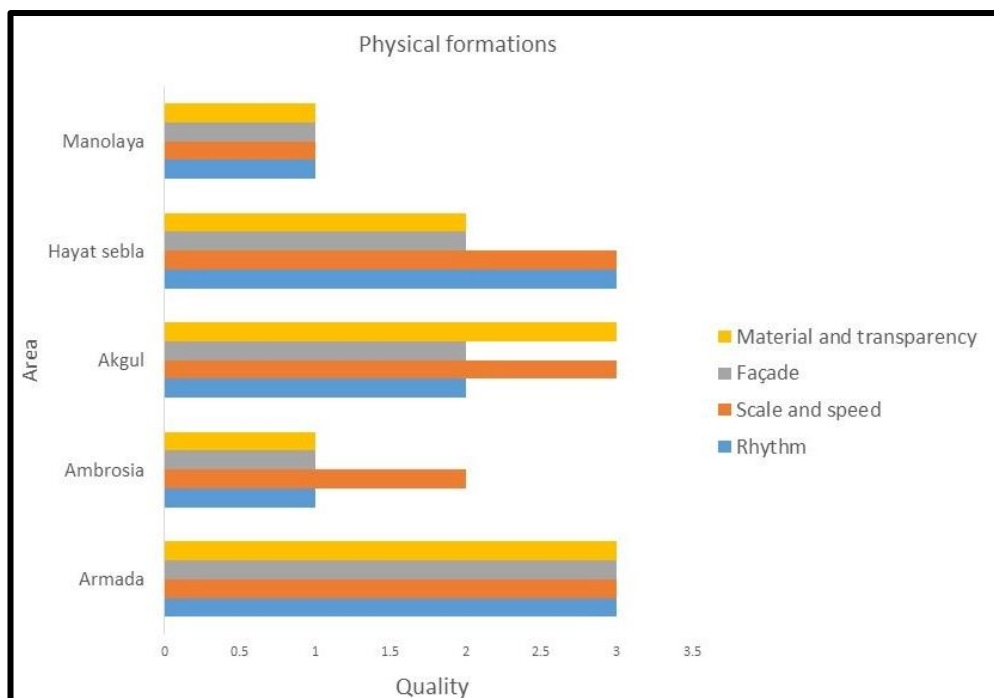


Chart 21: The overall Physical quality of study areas

From the above chart, it can be seen that by far the greatest physical quality is for Armada even though from these data, we can see that Study Ambrosia and Manolaya resulted in the lowest value of façade physical formations regarding the physical formation aspects, the table has been presented in more details.

5.5 Results of the Case Study

In general, buildings have been considering as solo urban units in the civic context since the dramatic development of cities and have failed to contribute to the adjacent public urban spaces. Such analytical matters mainly find in high-density new developed areas such as Çukurambar in Ankara, Turkey. This thesis has tries to eliminate this phenomenon by creating a bridge between a building and urban public space to make a more unified context. In that sense, five case studies with almost five different physical and functional conditions were selected. The observations donated data about functional relationships and physical formations of each study area in Çukurambar. The data analyzes an overall evaluation of the vibrant of the study areas and of the type of stationary activities public involved in within, in each area, during Saturdays and weekdays. Other information from surroundings data assessment indorsed for physical evaluation of each study area.

According to the comparative analysis of functional relationships and physical quality in study areas in Çukurambar, the research indicated that in Armada business and shopping center, the traffic intensity and pedestrian traffic has a biggest number both in Saturdays and weekdays, while Manolaya and Ambrosia own the least amounts among areas. Other observations delivered the proof of livability in Akgül and Hayat Sebla Evleri approximately at the same level. As it shown in chart 21, a proper mixed-use ground floor provides a better active edge which produced greater pedestrian intensity. The lightings are just about at the same level of quality, extend the active life into nighttime and improve the overall safety.

In case of physical quality and formations of setting of each study areas, the study presented that the more the surrounding details are, the greater the data achieved.

Armada gains the biggest and the most broad façade details between the areas while again Manolaya and Ambrosia attain the least. Further findings between Hayat sebla Evleri and Akgül showed that they are at the same level of façade details.

Chapter 6

CONCLUSION AND RECOMMANDATIONS

This thesis was set out to explore the idea of robustness in urban environment and has identified the functional and physical relationship between a building and urban space in Ankara, it focused on the importance of physical formations and functional relationships of public spaces and active buildings. The study also sought after to know if building robustness can result in dynamic and livable neighborhood, for the most part in high-rise mix use areas.

Almost all major findings and evidences in this study indicate that the buildings first layer of encounter is the ground level. As shown in literature review, the function of all layout of ground floors is the most important factor. Bringing the mix public uses to the ground floor, the building will be able to have more encounters, that means more commercial and recreational uses, more safety and better accessibility that contribute to the adjacent urban space.

Most of the well-designed urban spaces raise the occasion of having better and higher public activities that needs enhanced public facilities and urban amenities. The astonishing consequences led us have greater usability of an urban public space to the surroundings, buildings, etc.

Many of successful mix use buildings bring life to the public surroundings, as far as physical and functional quality of the encounters at eye level are supported by human-scale building and urban design. Those qualities need to be patterned and controlled to bring out the best in enhancement of the public urban life (Alexander, 1977; Bentley, 1985, Salingarous, 1999).

The evidence from this study suggests that one of the greatest implications is PLPS method which was held in Copenhagen as a revolutionary flag point of urban study (Gehl, 2013). As in the case of Çukurambar, no policies have been put forward to support the mentioned qualities. The study has used findings to indicate that the PLPS method is making the needed robustness for public buildings and urban spaces in Ankara, Turkey.

This study recommends that to address functional relationships regarding the pedestrian and stationary activities as well as visual improvements and physical quality

- We need to improve the public access to the ground level and the range of stationary activities and urban amenities over the surroundings.
- We need to provide a defined route connections form the ground level to the car parking or public transport stations.
- We need to expand the safety by applying proper lighting alongside the areas and improve visibility and appeal of sense by using enough transparent materials in façade.
- We need to improve visual qualities and physical formations to attract people by adding details to façade at the eye level.

The dimension of this discussion is somehow complex, we still need to seek up for more examples and case study areas to generate new urban patterns regarding the functional and physical building robustness.

A few limitations were identified and encountered during the study and data collection. The first limitation was that the observation would not have raid the public privacy at all. The second was that the owners did not gave permission for taking pictures from their inside properties.

Finally, the benefits of robustness as shown for both public buildings and public urban spaces, revealed that not only the physical dimensions are certainly comprehensive but also clearly indicated the importance of functional relationships as the most essential quality for a successful robust mixed-use building.

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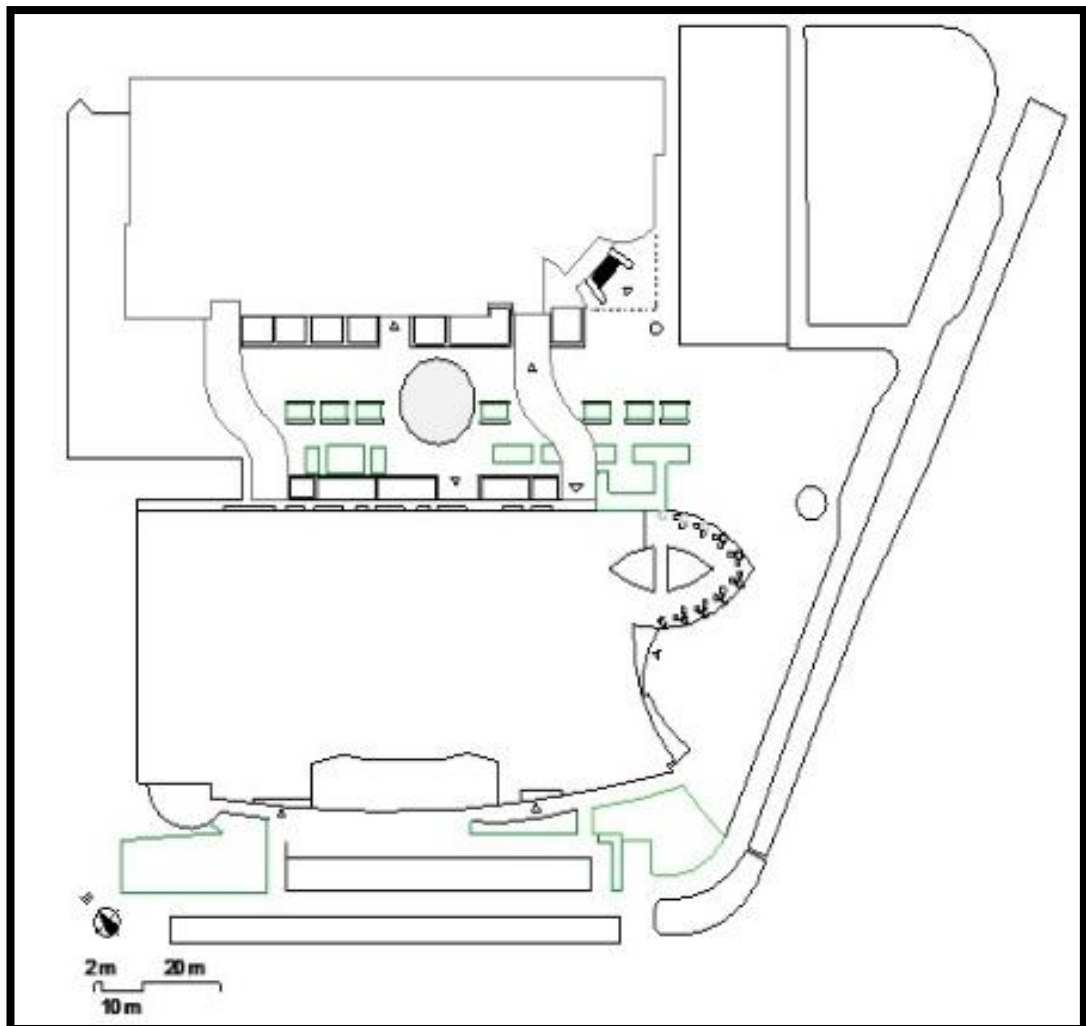
URL13, Accessed March 8, 2014 from:

[<https://www.google.com/maps/@41.158732,8.629877,3a,75y,280.32h,89.79t/data=!3m4!1e1!3m2!1symchwnb81MHqIUQoIhMELQ!2e0!6m1!1e1>]

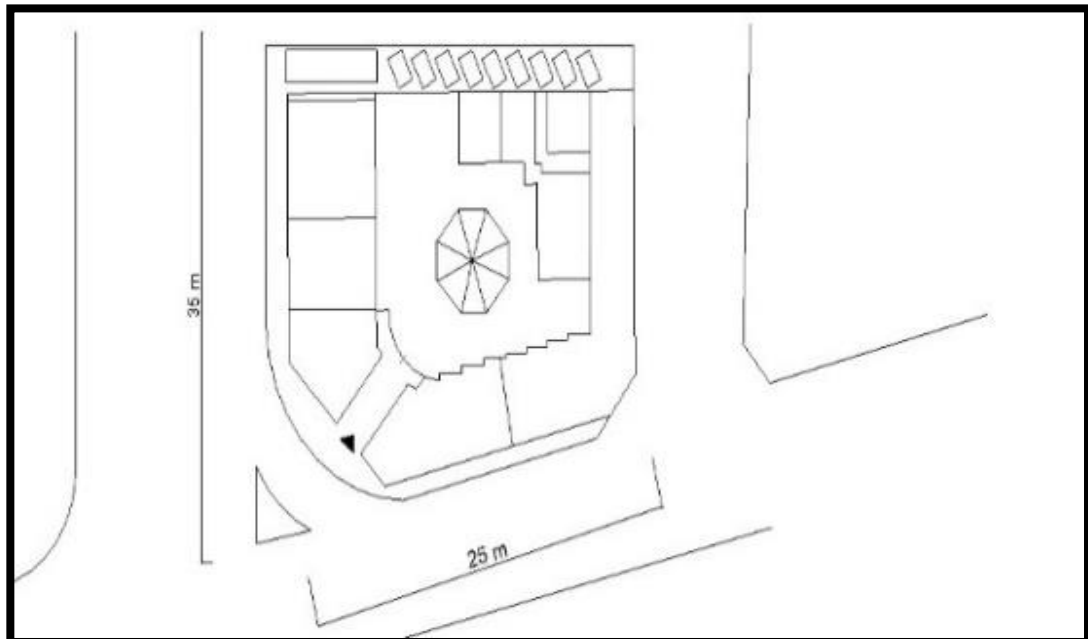
URL 14, Accessed July 18, 2014 from: [<http://www.arcspace.com/features/zaha-hadid-architects/phaeno-science-center-/>]

APPENDICES

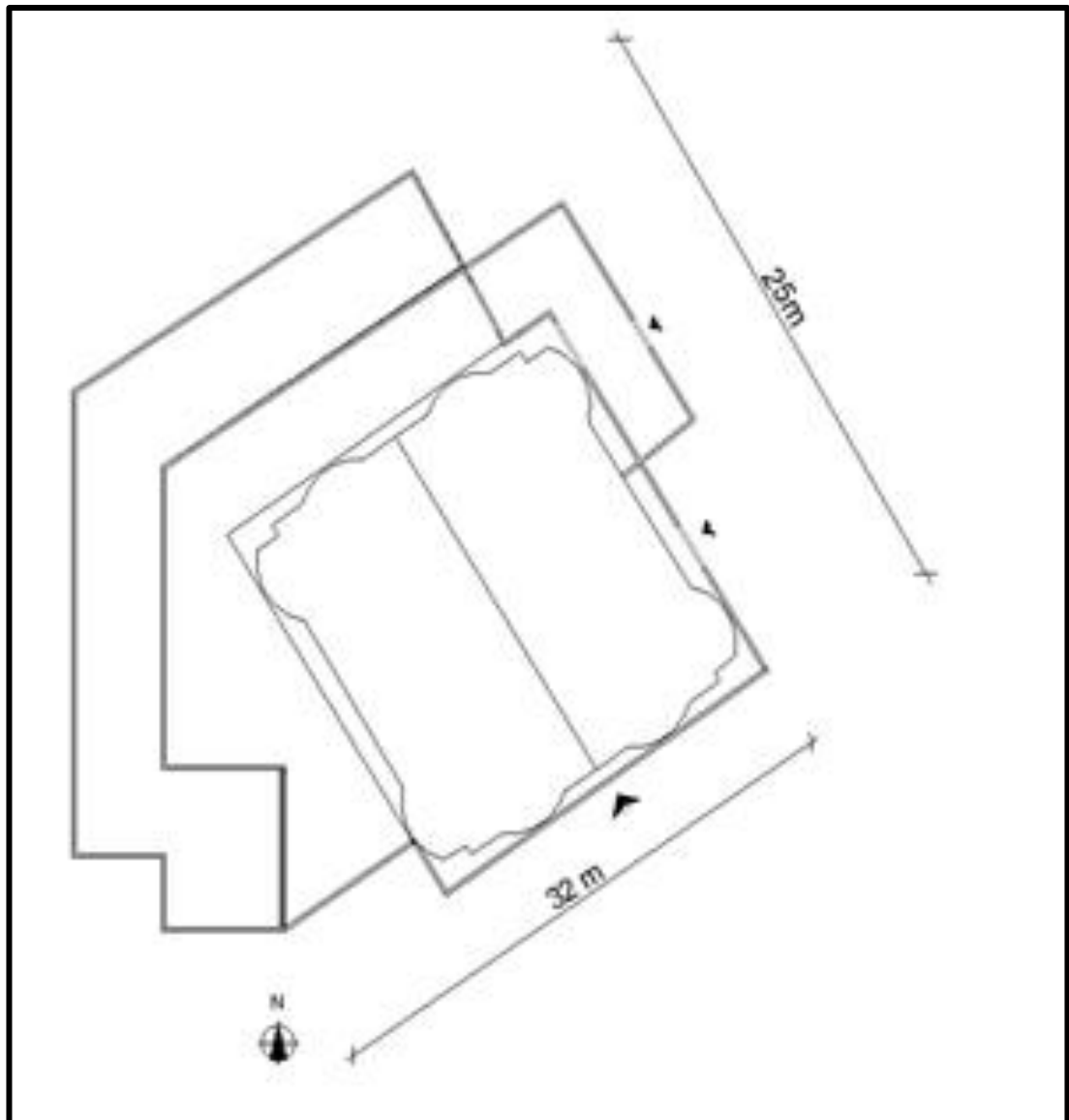
Appendix A: Armada Ground floor plan



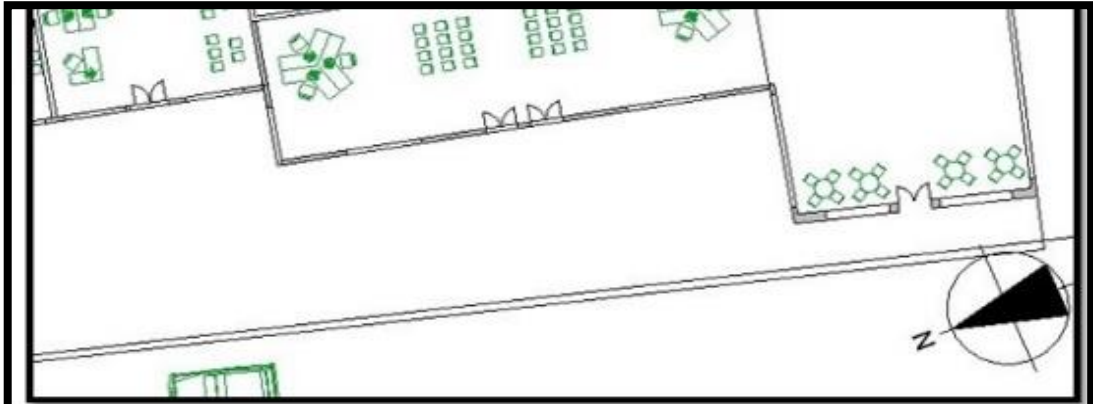
Appendix B: Ambrosia Ground floor plan



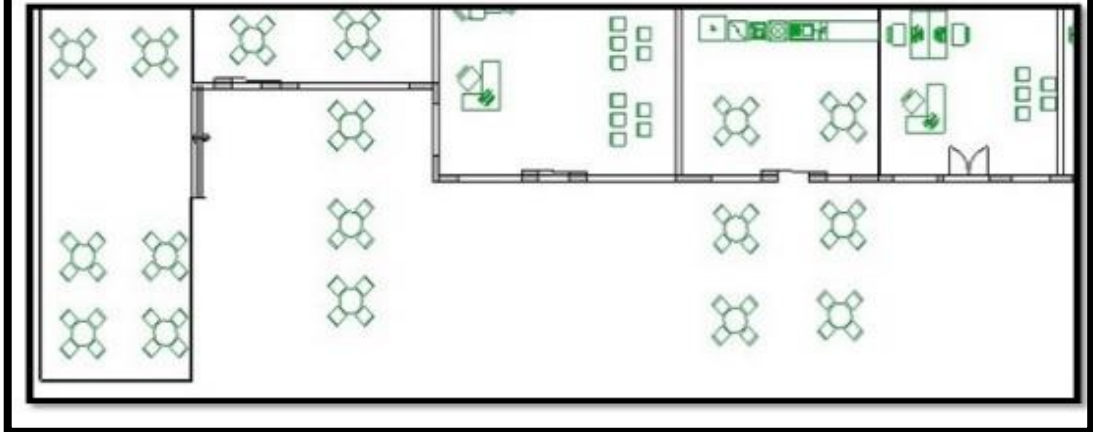
Appendix C: Ground floor plan, Akgül apt. No.1



Appendix D: Hayat Sebla Evleri, Ground floor plan



Appendix D, Ground floor plan, Hayat Sebla Evleri



Appendix E: Ground floor plan, Manolaya

