IMPROVING THE COMMON USE OF HOUSING BACKYARDS; THE CASE OF AYRANCI

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This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis fort he degree of Master of Science.

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ABSTRACT

IMPROVING THE COMMON USE OF HOUSING BACKYARDS;THE CASE OF AYRANCI

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The space is multi-dimensional and can not be thought separately from the life. Urban spaces however are the spaces where all types of human activities necessitated by the urban life are realized. This study covers spaces constituted as a result of gathering of the backyards of residence block shaped positioned as a result of the development rules.

The study is carried out by adopting the idea of constituting a method aiming the improvement of common use of these areas, as a principle. In this context, the definitions concerning the issue, the place of the area within the urban space concept, present utilization types, potentials, Development Law articles supporting the present utilization are discussed by observing the examples in the world. In the light of inputs collected in these studies, Ayrancı case study area is preferred because its building organization and the appropriateness of its land use pattern to the context of the study. A housing backyards arrangement study is performed in a residential block of

houses selected in Ayrancı area due to its various characteristics. In the light of study, a method is developed aiming of improvement of the common use housing backyards by taking into account the interest of residents.

As a result of all these studies, the questions such as, “the minimal use of housing backyards having a large potential as green areas in the city”, “the possibility of their utilization”, “the requirements and expectations of the users towards these areas” are studied in thesis.

Key Words: Housing backyards, urban outdoor, semi-public spaces, user, common use, activity, legal arrangements.

ÖZ

KONUT ARKA BAHÇELERİNİN ORTAK KULLANIMININ ARTTIRILMASI; AYRANCI ÖRNEĞİ

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Mekan çok boyutludur ve yaşamdan ayrı düşünülemez. Kentsel mekan ise kentsel yaşamın gerektirdiği insani faaliyetlerin gerçekleştiği mekandır. Bu çalışma bu çeşitlilik içerisinde bir yapı adasında imar kurallarının bir sonucu olarak konumlanmış apartman konutların arka bahçelerinin bir araya gelmesi sonucu oluşan mekanları ele almıştır.

Bu bağlamda çalışma, bu alanların ortak kullanımının arttırılmasına yönelik bir yöntem oluşturulmasını hedefleyerek ele alınmıştır. Bu konu ele alınırken konu ile ilgili tanımlar, alanın kentsel mekan kavramı içindeki yeri, mevcut kullanım şekli, potansiyelleri, alanın şekillenmesi ve mevcut kullanımını destekleyen imar kanunu maddeleri ve konuyla ilgili dünyadaki örnekler incelenerek tartışılmıştır. Tüm bu incelemeler sonucunda elde edilen veriler ışığında yapı düzeni ve arazi kullanımı verilerinin çalışma kapsamına uygunluğu nedeniyle tercih edilen Aşağı Ayrancı örneklem alanında çeşitli özellikleri nedeniyle seçilen bir ada üzerinde konut arka

bahçesi düzenlemesi çalışması gerçekleştirilmiştir. Bu çalışma sonucunda konut arka bahçelerinin adada bulunun apartman sakinleri tarafından ortak kullanımının arttırılmasına yönelik bir yöntem oluşturulmuştur.

Tüm bu çalışmalar sonucunda tezde kent bütünü içerisinde yeşil alan olarak büyük bir potansiyele sahip konut arka bahçelerinin neden kullanılmayan alanlar olduğu, kullanılmasının nasıl sağlanabileceği, kullanıcıların bu alanlara yönelik ihtiyaç ve beklentilerinin neler olduğu gibi sorular yanıtlanmaya çalışılmıştır.

Anahtar Kelimeler: Konut arka bahçeleri, kentsel dış mekan, yarı-kamusal mekan, kullanıcı, ortak kullanım, aktivite, yasal düzenlemeler.

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CHAPTER 1

INTRODUCTION

> Space is a common “entity”; it fills the universe and surrounds us all through our lives. It can widen up to a point, where we will lose our sense of dimension, or it can provide a meaningful, rich view through a three-dimensional arrangement. 3-D space has an easily distinguishable value, which enrichens our lives. It arouses a sense of comfort and security, and gives us sunlight and rehabilitation areas, which are essential for us to find pleasure in life. These criteria are essentials of a good design (Hedman&Jazsewski,1984).

The concept of space is multi-dimensional. Every human space; in order to be livable, has to be designed according to specific design criteria that will serve the purpose of the space. Among a variety of spaces; houses and their close surroundings are the ones where people spend most of their lives. *“Housing”* itself is a subject that has been studied in dept from different aspects; such as its form, inhabitants or groupings, but the surrounding of the housing has mostly been ignored.

The space formed around housing areas has different qualities and problems depending upon the type of the building arrangement in that particular urban block and the type of the building. At this point, it would be appropriate to point out that this survey conveys only housing areas formed by urban blocks made up of apartment housings.

In residential block containing apartment buildings in Turkey, parcellation system is used due to the requirements of the Turkish Development Code. In this system, on each lot, there is one building located according to the related law. As a result of this building arrangement, areas left outside the construction areas form housing yards. Ultimately, these left-over areas are owned and used only by appartment owners in the lots. Usually, frontyards are arranged as green areas, whereas backyards are just left-over spaces not suitable for any function mostly due to their limited sizes.

The backyard areas that constitute the subject of this study are supposed to have appropriate qualities to form a common space; suitable for public activities for the people living in that particular urban block. There are some studies suggesting the left-over spaces as public spaces. In this study housing backyards have been evaluated as semi-private spaces, since their ownership and utilization rights belong to the people living in the urban block.

Urban design concept has a critical role in forming defined urban spaces. Therefore, in this study, housing backyards are considered as an urban design problem. Urban design is one of the most important issues in the development of the quality of urban environments, thus providing urban life quality. Urban design determines the shape of urban space.

The principal goal of this study is to improve the common use of housing backyards. This potential has been neglected as an outcome of the legal gaps in Turkish Development Code and also the lack of design principles by the professionals. In this context, the main objective of this work is to study this problem with all its aspects and establish a solution-oriented method at the end of the analysis.

The subject of this study can be summarized as to develop method to enhance the utilization potential of backyards restricted by the buildings in

urban blocks. For this purpose, housing backyards are handled in scope of urban space and have been analyzed in relation with this context.

1.1 Objective

A person spends most of his/her time at home during his/her life time, thus one of the most important problems of a designer is to create livable and usable spaces in and around the housing. Nowadays, optimistic efforts have been set to create usable spaces and to improve the satisfaction of life. Housing backyards have not been taken into consideration, yet it is possible to transform these areas from left-over spaces into usable spaces adapting a different viewpoint about existing legal arragement. There are some factors affecting the quality of urban spaces, and therefore the quality of the housing backyards; such as natural structures, building height and façade characteristics. The quality of these components directly affect the design. For this purpose, there is a necessity for the formation of organization models on existing legal system, which will enable some methods in order to improve the living satisfaction in these spaces. Furthermore, the formation of the organizational schema is the most important base for the application of these projects.

Therefore, the main objective of this study is to improve the common use of housing backyards, whose public and private utilization is limited, and also to enhance their spatial qualities.

1.2 Scope

In this study, the notion of urban space is mostly studied in connection with housing backyards. In this context, the definitions related to urban design concept are analyzed in their broader lines and the housing backyards, which form the basis of this study are defined by considering it with their boundaries, components and functional scheme. After that, the factors affecting urban quality and the spatial quality are dealt with. The legal

arrangements, which play an active role in the formation of housing and their surroundings are studied in a detailed manner, first in the Turkish case, and then in some other countries case in order to draw a lesson from their positive and negative sides.

In the light of the obtained data, the subject is studied in detail on the urban blocks of Ankara, Aşağı Ayrancı district, containing mostly residential apartment buildings.

1.3 Method

The method of this study is explained under two different points of view handling system of the subject and reasoning system behind the decision of the study.

This study is formed of various basic chapters according to the various dimensions related to the subject. Although the study consists of seven structural chapters, it should be considered as made up of three main parts, which can be classified as;

*The definition of the problem with in the concept of urban space and the factors affecting its quality,
*Case-study ,
*Evaluation of solutions and proposition of a method for improving common use potential of housing backyards.

The first part consists of five structural chapters. In the first chapter, the objective, scope and the method of the study are explained. The next chapter, is basicly about the concept of urban space. In the third chapter, the physical and the economical factors affecting the quality of the urban space are examined. And also in this chapter, the effects of urban space on activities are examined. This chapter ends with a general discussion of the previous three chapters. Then in the next chapter, the status of housing

backyards as urban spaces are studied due to their definition, their existing ways of utilization, their potentials and perception. Fifth chapter includes the effects of the Turkish Development Code on the formation of housing backyards. In this chapter, problems deriving from some legal arrangements in Turkey are analyzed in comparison with some selected countries' (Germany, France, Japan) legal arrangements on the aforementioned subject. Also at the end of this chapter, some organization models are proposed in order to fill the legal gaps that limit the common using potential housing backyards.

The second part includes only one chapter, which includes the method of the study on the case-study area, the selection of the sample area and the reasoning behind it are considered.

The last part of this study also consists of one chapter, where the data obtained from the theoretical chapters and the ones obtained as a result of the analysis of the case-study area are compared in a chart. At the end of the study, a methodology for improving common use of housing backyards is proposed.

The flowchart, which shows the work method from the view point of this study can be seen in Figure 1.1.

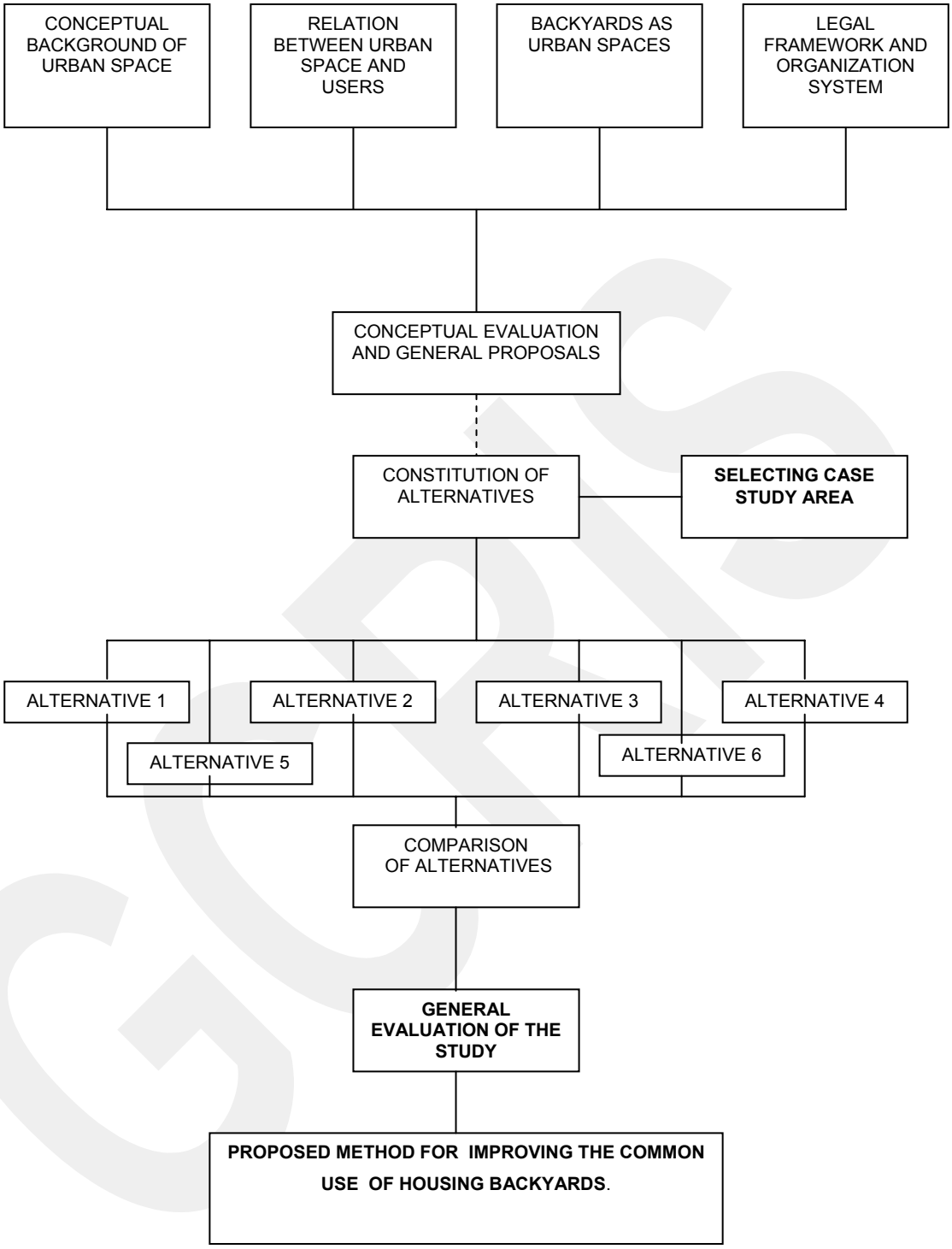


Figure 1.1 Flowchart of The Study

CHAPTER 2

THE CONCEPTUAL FRAMEWORK OF THE URBAN SPACE

> In the urban system, space is a whole, which is built up of buildings, perceived by the dwellers, and where all of the urban activities takes place. In other words, urban spaces are the areas, where all of the basic living activities are produced, such as working, rehabilitation, sheltering and transportation (Çubuk, 1999).

Space is multi-dimensional and it can not be perceived separately from life itself. According to Çubuk (1989) public space is basically functional and is a common result of human activities. It is a basis, which is reformed continuously by reproduction, and it includes all kinds of production relations. It can also be defined as a total of relations, in which the society moves by creating temporary balances.

A city is a whole made up of a lot of spaces which have specific functions, in connection with each other. In the urban system, the space is a functional area made up of buildings, where all urban activities relate to each other under the eyes of the inhabitants.

In this context, Çubuk et al. (1978) define the urban spaces shortly; as a result of life, a series of common and personal requirements come into existence, and under the influence of the kind of civilization, the degree of development, the cultural structure or administrative authorities, in cities,

built or non–built areas appear whose qualitive or quantitive levels vary in space and time in order to meet those needs. Specialized areas and organizations appears to meet some needs such as cultural – educational - health – commercial – sportive – administrative – transportational - public needs, which are natural results of urban public life. Functional areas and urban equipments, meeting those needs form the urban space. The main objective in the formation of urban space is to provide people the optimum comfort level as human is a social being. Roads, streets, public squares, empty areas can be mentioned as open outdoor spaces which may exist in non-built and built spaces.

Kevin Lynch (1969) explains the urban outdoor space as an open area arranged for human activities, which is open to public access.

Krier (1991) clarifies urban outdoor space concept as spaces including every kind of area between buildings. Thus urban space is limited with geometrically varied masses. The property that gives us the opportunity to perceive open space as an urban space is to being read its geometric characteristics and aesthetic qualities clearly. Closed and open spaces have similar rules not only on functional basis but also on formal basis. Interior space, which is protected from air conditions and the environmental effects, is an effective symbol of privacy; whereas outdoor space is seen as an uninterrupted clear area whether it is public, semi-public or private one.

In urban texture, urban spaces have a unifying and communicative role between building and the city. Buildings are meaningful only when they are evaluated within their urban environments. In the same way, urban space acquires different meanings in accordance with the quality of the buildings surrounding it. Briefly, building and urban space are in a constant interaction. A more restricted area, namely the housing surrounding, where people spend most of their lives, is one of the spaces where this interaction can be felt intensely. Especially, the housing backyards bounded by the buildings are the most concrete examples of this situation.

Cities we live in are constituted of many social and environmental factors and in time formed by them. Çelik (2000) mentions that inhabitants' will and consciousness affect the city besides the environmental factors. Namely, the city is a human production.

2.1 Varieties of Urban Space

Space is created by its boundaries. The earth, the sky, walls or buildings can contribute to the definition and determination of spaces. According to Susmuş (1999), a human being relates his/herself with the horizontal plane in a natural and architectural place that is in his/her close visual plane. The unifying element in space formation namely the horizontal plane supports the other elements by creating the floor surface. The vertical plane is the limit of the space perpendicular to earth surface, and it is also the most easily formed and controlled one.

The quality of the limiting elements and their relations with each other provides the emergence of different types of spaces that play the major role in perception. The formation of the limiting elements creates different geometries.

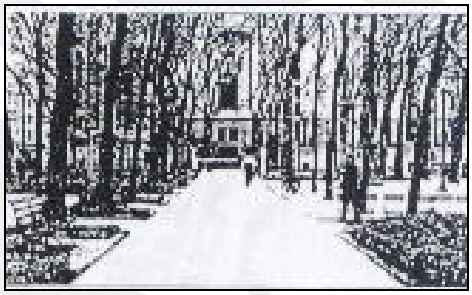
> The limiting elements, which form the space, can create natural, artificial or hybrid spaces with the assistance of their own characteristics. Natural spaces consist of natural elements, artificial ones are made up of built-up elements such as walls or buildings; whereas hybrid ones are formed by bringing together natural and artificial spaces (Susmuş, 1999).

Numerous categorizations have been made according to different characteristics of urban spaces. In this study, some of the related ones have been touched upon. However, categorization based on the user and ownership have been studied in a detailed manner as they shape the properties of the main subject.

According to Trancik (1986) urban outdoor space can be classified as soft or hard in accordance with the natural or artificial elements that built it up. *Soft space* is the kind of space, which is mostly formed by natural elements rather than artificial ones. These spaces have a relaxing effect on the person inside them with their natural features. Aesthetic order is obtained by soft transitions.

Frequent utilization of artificial elements ends up in the formation of *hard spaces.* These kind of spaces are usually surrounded by urban structures (Figure 2.1).

An urban square in New York



A park in New York

Figure 2.1 Hard and Soft Space Examples
(Trancik,1986)

Urban spaces, also need a certain amount of environmental density, which completes the formal quality. Therefore, spaces considered in this study, though they have some natural elements in them, should be supposed as hard spaces because of surrounding with walls and buildings.

Hard spaces can be examined as positive and negative ones according to their formal characteristics. *Positive space* is definite, clear, easily readable, human scaled and usable. *Negative spaces* do not have a definite form, they are more likely left-over areas. They are far from a clear definition, and people do not feel comfortable inside, and therefore they do not tend to use these spaces (Ashiara, 1970) (Figure 2.2).

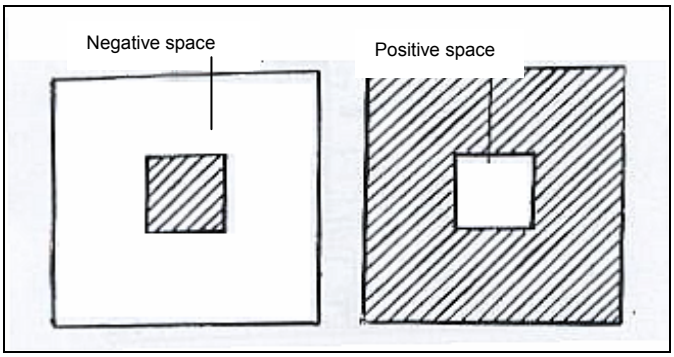
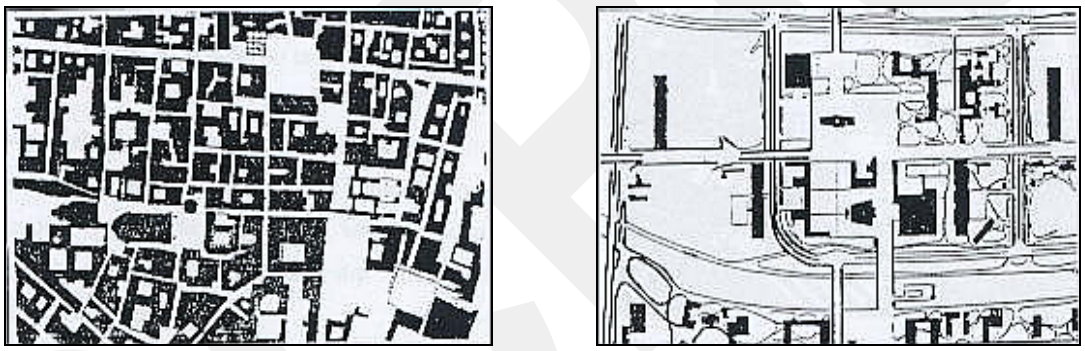


Figure 2.2 Symbolic Representation of Positive and Negative Spaces
(Ashiara,1970)

The most important difference between positive and negative spaces is their functions. When we look at the physical layout of a city, we can see that the distribution of positive and negative areas affect the spatial identity of that city (Figure 2.3).

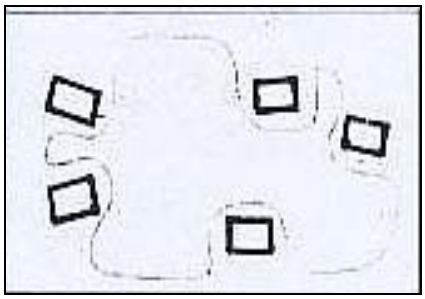


City example consisting of positive space

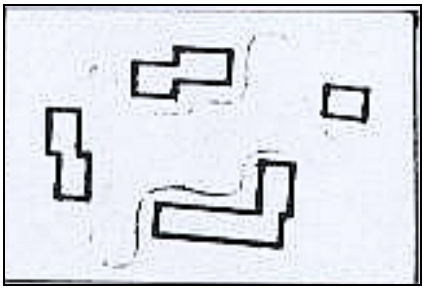
City example consisting of negative Space

Figure 2.3 City Examples Consisting of Positive or Negative Spaces
(Çınar,1996)

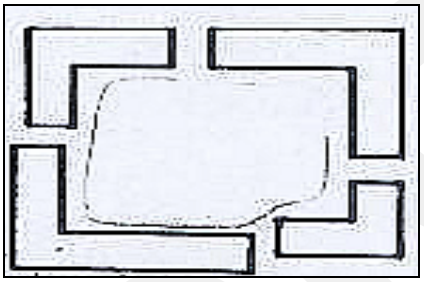
In the housing areas, the urban outdoor spaces, formed by the unification of housing backyards are positive spaces. However, the location of buildings that form the backyards is indeed very effective in defining that space. As Oktay (1984) mentiones that we can group these spaces as *weak spatial sense creating spaces, semi- spatial sense creating spaces and strong spatial sense creating ones* (Figure 2.4).



Weak spatial sense creating space



Semi- spatial sense creating space



Strong spatial sense creating space

Figure 2.4 Spaces According to Dispositions of Surrounding Buildings
(Oktay,1984)

Urban outdoor spaces are also classified according to the character of the activity taking place in that space. According to Oktay (1984) Spaces vary according to character of activity as *static* and *dynamic* spaces. This character is not conceived as three dimensional. It is related with ground area (Figure 2.5).

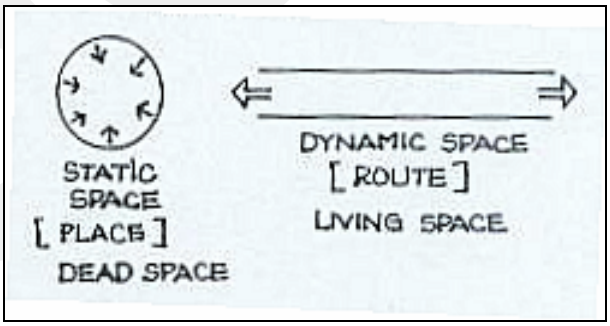


Figure 2.5 Static and Dynamic Space
(Oktay,1984)

A static space conveys a sense of rest and completeness by its form. It tends to be circular or square (courtyard) and associated with 'place'. But it is not sufficient having such forms to create static spaces. When the space is passed through, it loses the static character and tends to be a dynamic space although its courtyard form.

Erpi (1980) states that a space with *through traffic* is a living space. It is suitable for circulation, but unsuitable for other outdoor space uses (Figure 2.6).

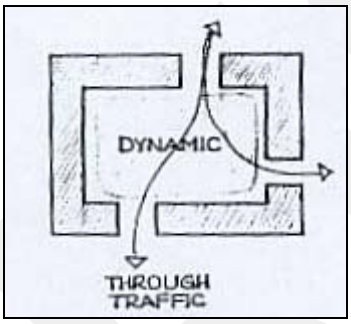


Figure 2.6 The Concept of 'Through Traffic'
(Erpi,1980)

A dynamic space symbolizes and reinforces movement. Oktay(1984) says that terraces are the best examples in which we feel dynamism. The space is linear like a corridor (Figure 2.7).

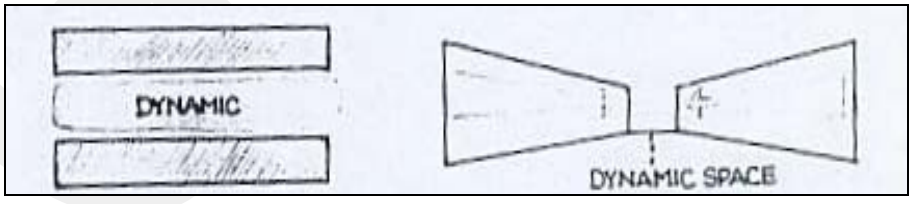


Figure 2.7 Dynamic Space
(Oktay,1984)

Konuk (1987) classified urban spaces in accordance with their users in four main categories;

- *private spaces*
- *public spaces*

which complete the two former ones; namely the

- *semi-private spaces*
- *semi-public spaces*.

However, in the scope of this study, these categories are intensified to three main groups;

- Public spaces
- Private spaces
- Semi- private spaces.

As semi-public and semi-private spaces have definite limits considering their functions, this basic feature is the same for both types of space. At this point, the existence of private users for both groups has been the reason for classifying them under the same heading. Also, these spaces are categorized as the built-up and non-built up ones in themselves. The non-built private and public spaces form the urban open spaces (Figure 2.8).

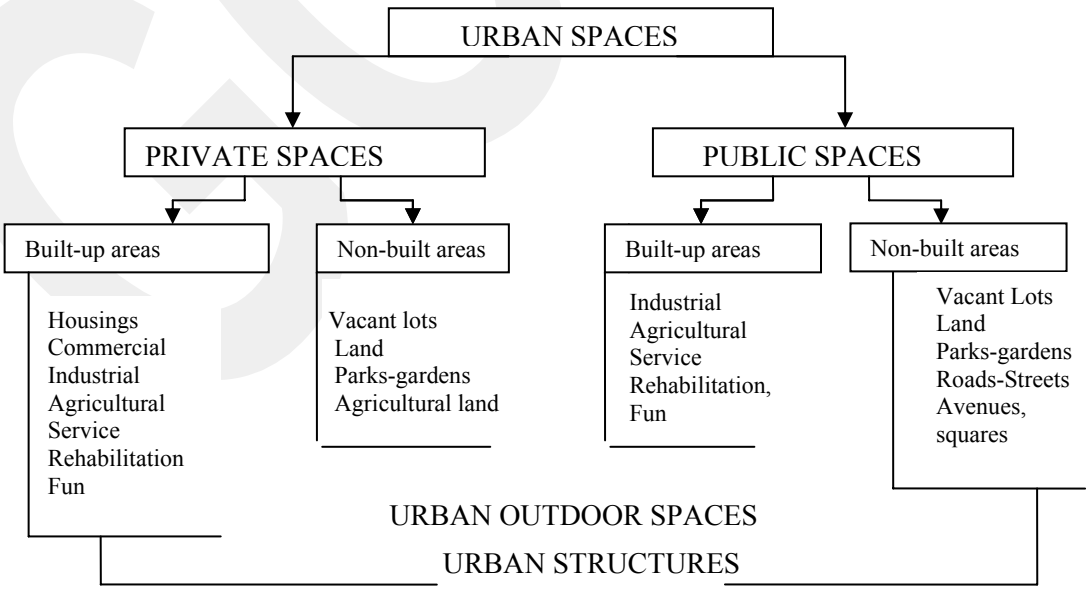


Figure 2.8 Categorization of Urban Spaces
(Çubuk et al., 1978)

“Urban outdoor spaces are all the areas between the settlement units in cities and these areas can be named as the roofless architecture”(Ashiara,1970) (Figure 2.9). This study deals with the urban outdoor space dimension of the urban space notion. Parks, courtyards, streets, private gardens, roads, car parks and common gardens are some of the spaces analysed under the urban outdoor space concept. In this context, the subject of this study is restricted with the variety of these spaces.

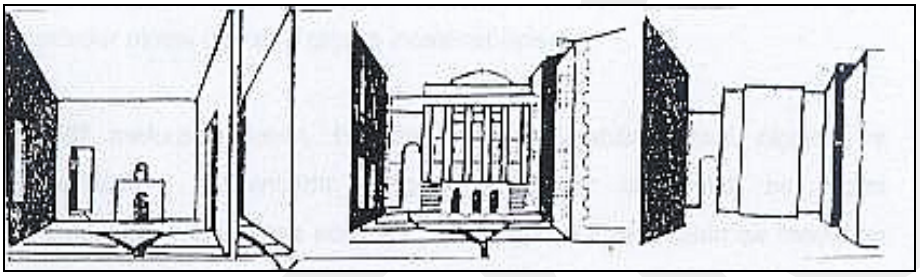


Figure 2.9 Ashiara’s Outdoor Space Definition
(Ashiara,1970)

In the light of this limitation, urban outdoor spaces in residential areas are grouped and studied according to the content, described in Figure 2.10.

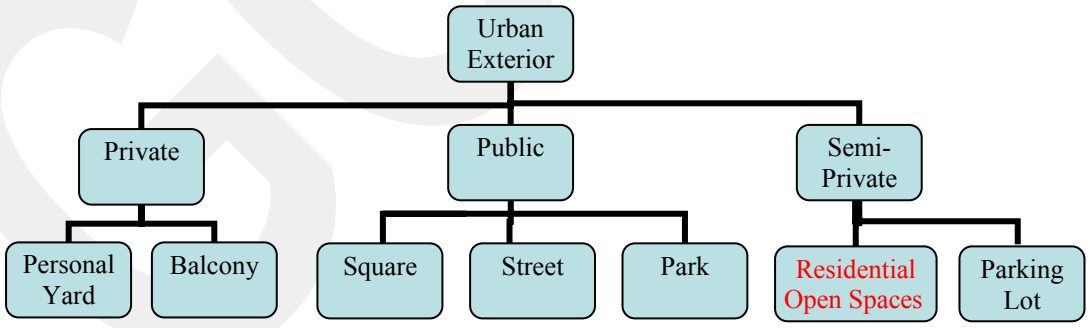
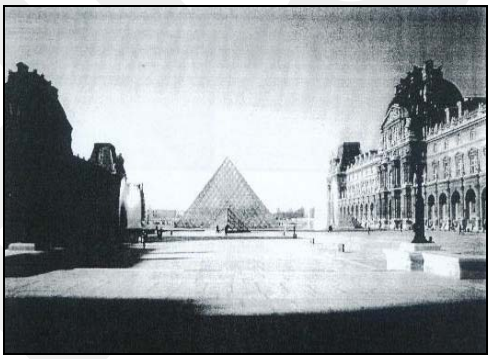


Figure 2.10 Categorization of Urban Outdoor Spaces

2.1.1 Public Outdoor Spaces

Public squares; according to Krier (1991) it is the first way of utilizing urban space that people discovered. It is formed by a group of buildings around an open space. This arrangement provides the control of the space inside the square. This feature of the squares was once useful to defend the city against the the outsiders' attacks. Square is a public focal point, which is defined by the buildings surrounding it. Courtyard is also a kind of square, and it has an important role in the formation process of square definition. In order to consider an area surrounded by buildings or structures as a public square; it must be used by the inhabitants of that city for a variety of purposes (Figure 2.11).

Baden Baden



The Square in Museum of Louvre, Paris

A Square in Shangai, China

Figure 2.11 Square Examples
(Lennard,1995)

Squares are the places where the inhabitants –the pedestrians- can be free, meet his friends, stroll about for leisure, sit, drink, talk and amuse himself.

As for the Turks, public squares are usually situated just on the borders of the city; and they are perceived as either wholly open or locally defined open areas. Squares named after some ancient sports such as Ok Square or Cirit Square, which do not have an architectural identitiy, survived until our present time. Squares defined and shaped by monumental buildings, such as Sultanahmet Square, are rarely found. According to an opoinion, this is the result of our late meeting with "square architecture" concept (Arredamento Dekorasyon Dergisi,1995).

Nowadays, spaces defined as public squares in Turkey are usually interrupted by traffic roads or crossroads, that dominate the pedestrian traffic (Figure 2.12).

Ankara Ulus Square
(www.ergir.com)

Ankara Kızılay Square
(www.gazeteankara.net)

Figure 2.12 Square Examples from Ankara

Streets; According to Krier (1991) streets are the products of the spreading of settlements after buildings are built on the most suitable areas around the central square. They build up the framework in land division, and provide transition into lots. Streets have a more functional character when compared to squares, which are more suitable to spend time due to their dimensions. The architectural form of streets are only perceived during transpassing.

In the past, streets are the spaces that have an important role in cities' socio-cultural life. Street was an important pedestrian space in ancient times, Middle Ages, Renaissance and Baroque epochs, and kept it's traditional character until the first half of 19th century. With the rapid growth of cities, street scales also changed and sometimes turned

into avenues with the emergence of car traffic. In this way, streets lost their former character, which allowed the people to stroll around the environment and perceive it, and even to sit down. In traffic, when pedestrians should be separated, solutions like wide pavements, arcades, different levels dedicated to pedestrians or streets only for pedestrian use become an issue (İnceoğlu, et al.,1989).

Trancik (1986) says that streets provide us with the essential freedom of movement on which city life depends. They make and reveal city. But apart from their function as connection arteries their other functions are ignored (Figure 2.13).

An Example of Old Street
(Trancik 1986)

An Example of New Street
(www.malmersbury-memories.co.uk)

Figure 2.13 Variation of Street Space

Streets reveal the life style of the people living in that space. The relationship between the pedestrians and the components that form the street affects the liveliness of that atmosphere. “Elements defining a ‘street space’ can also be very varied. A pedestrian way surrounded with buildings can be identified as street as well as a dock which has a wall on one side and water element on its other side can also express the idea of street” (İnceoğlu, et al.,1989).

Streets are one of the urban spaces; where the three dimensional spatial sense is felt strongly. The factors affecting perception of the space are the height of the surrounding buildings, wideness of the street and vegetation in that surrounding (Figure 2.14).

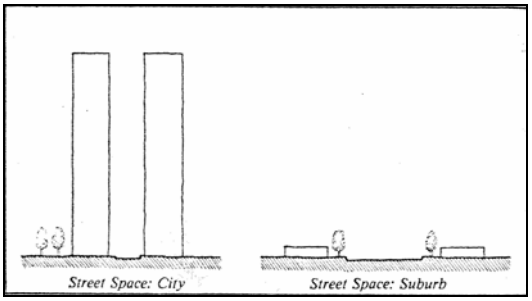
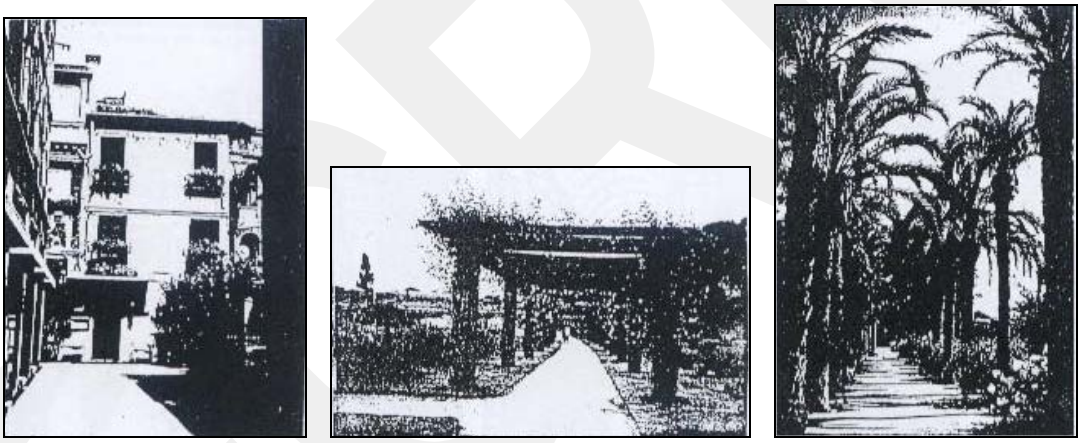


Figure 2.14 Diagram of Street Space Properties
(Trancik,1986)

Streets dedicated are only to pedestrian circuilation can be transformed into attractive resting spaces with the contribution of some natural and artificial elements (Figure 2.15).



Venice Londra, Kew Garden Barcelona, Miro Park

Figure 2.15 Pedestrian Roads
(Zeren,1989)

Trancik (1986) distinguishes two sort of streets; attractive and non-attractive ones. In this categorization façades of the buildings, wideness of the street and heights of buildings are effective. According to the writer, Rossi Prospect Street, which can be seen in Figure 2.16, is a non-attractive one as all of the façades on that street are the same and the street itself is too wide.

Figure 2.16 Rossi Prospect, Leningrad
(Trancik,1986)

Visby Main Street in Figure 2.17 on the other hand is an attractive space for Trancik, since it is at human scale and also the façade properties and building heights in that street are diversified.

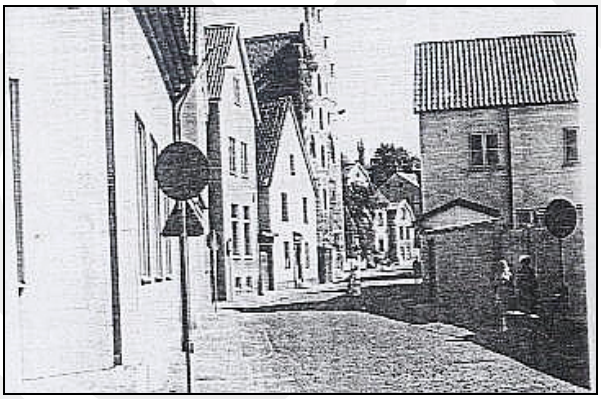


Figure 2.17 Visby, Sweden, Main Street
(Trancik,1986)

Urban Game-Sports Areas and Parks; are the breathing points of the city. These are also very frequently used areas. These open areas are arranged especially for different age groups for games, sports and rehabilition purposes. The sizes of these spaces vary according to the size of the user group.

Most of the apartment dwellers have no private gardens, and naturally their first demand on common space are places where children can play or where people can sit. Children play everywhere, but they must be given spaces where they can legitimately play and work off their energies if grass, shrubs and flowers are to survive. These places should be attractive and designed creatively to meet the needs of children of different ages. They should be located in spaces isolated from vehicular traffic (Figure 2.18).

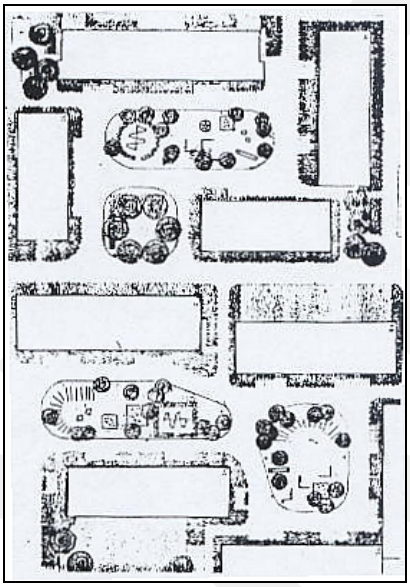
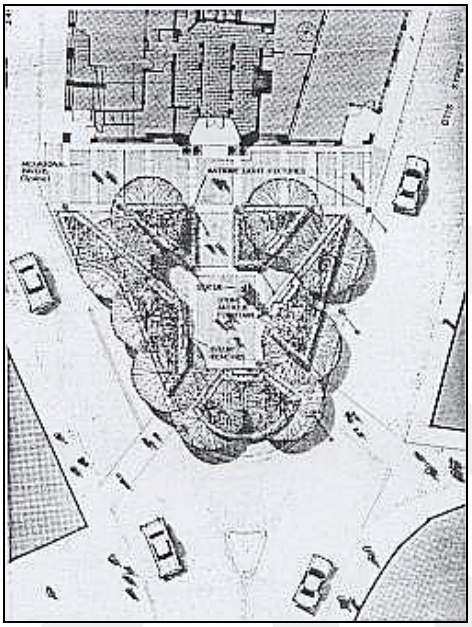


Figure 2.18 Play Spaces in Housing Settlement
(Oktay,1984)

Parks are one of the outdoor space arrangements merely reserved for recreation. These areas are one of the most important spaces, which increase the quality of the life in cities. They are also among the most suitable areas for social communication. It is also necessary to provide sitting places for housewives and old people who are at home during the day within the common area.

In all areas defined as parks, all kind of amusement and rehabilitation-oriented activities such as jogging, sitting, resting, sun bathing along with running, sports, listening to music can be done. In this part of the study the

concept of park has been taken as urban parks open to urban public use (Figure 2.19).



Boston, Massachusetts

Figure 2.19 Parks as Urban Public Spaces
(Zeren,1989)

2.1.2 Private Outdoor Spaces

Private spaces are the ones spared for personal use. In private space, the responsibility belongs to the users. Inspection is carried out with legal and physical measures. These spaces are identified as private space, but they also have an aspect which regards the public. Konuk (1987) explains this situation as follows; private spaces, although they belong to the resident owned by a person, can not be used in total freedom, because they can be seen from outside. Some examples of this kind of spaces are gardes of detached housings or balconies of apartment buildings.

Bentley et al. (1987)'s statement "if everywhere was accesible physically or visually there would be no privacy" adds another dimension to private space concept.

Balconies; may have additional functions, like resting and sun-bathing areas along with their other functions related to the structure. These spaces can gain an aesthetically relaxing appearance with various softscape arrangements; however, they are under public control though they are classified as private spaces.

Gardens of private housings; they are spaces around the private housing, these spaces are named as private yard. They are arranged according to the demands or needs of the property user. These spaces have some boundaries, tresholds and are made out of various elements. These gardens entirely belong to the property owner; however, here too, the effect of public inspection may be felt. But there is a strong fact that people want their house and especially the entrance area to be private areas. In the forecoming chapters, this issue will be dealt with in a more detailed way in relation with the concept of *housing backyard*.

Briefly public and private places are closely interrelated. Indeed, this interplay between public and private gives people another major source for variety and choice. “Public and private spaces, and the interfaces between them each have different implications for permeability” (Bentley,et al.,1987).

2.1.3 Semi-private Outdoor Spaces

They are common used areas, whose property is held by a certain group. The users are either the property owners or leaseholders, and the responsibility belongs to these common users. The control of these areas is made through physical, social and legal ways. “Common gardens between the buildings and open air car parks in a building lot can be classified in this group” (Konuk,1987). In this chapter, the main subject of the study, namely the housing backyard concept has only been briefly touched upon. The subject will be handled in detail in the next chapter.

Car parks; the car park concept mentioned in this part of the study includes only the car parks, which serve their own residential block. These car parks have a semi-private space character because they only serve the inhabitants of that specific residential block. These areas are planned according to some standards, their entrance and exits are constrained by specific security measures.

Residential open spaces; are the areas between the lot boundaries and building limits. The quality, user type and problems of these spaces vary according to the position of buildings in that residential block. For this reason, in the following chapters of this study, the issue is considered in detail; firstly the typologies of buildings location in residential blocks are considered, then the differentitiation of residential open spaces as front and backyard is made clear. The basic concept of this study has been clarified in this way.

2.2 Components of Urban Space

The void between buildings is not the only element that shapes the urban space. Space also creates its own surrounding. In the same way the surrounding creates the space. In brief, urban space has various components. An urban space becomes part of the city with the unique contributions of each component. "Urban part is a mosaic, which forms the whole. Formally, mostly it does not depend on axes, it repeats itself, it has a maintanable and identifable design quality, and finally its boundaries and threshold points can be shaped. The areas inside it are wowen with a texture" (Karaman,1989).

The components, which form an urban space can be classified as; buildings and their façades, materials used to create that space, natural elements (morphological elements, softcape material) and urban furnitures. The effects of these elements on the urban space concept are studied in the

further chapters. Yet, in this chapter, their status in urban space concept will be explained with the intention of making an introduction.

According to Karaman (1989), the *building* is one of the main physical elements, which build up the texture and unity of a city. It is a stable and repeating piece, which does not depend on modules. However, the building is an urban component which has its own dimension, its own scale and its flexibility combining with its surrounding. A building is by no means an independent element, on the other hand it is a diversified one, which surrounds and affects its environment. Buildings are not the core elements of urban spaces. They constitute the character of urban spaces together with other urban space components, which are more compound with each other (Figure 2.20).

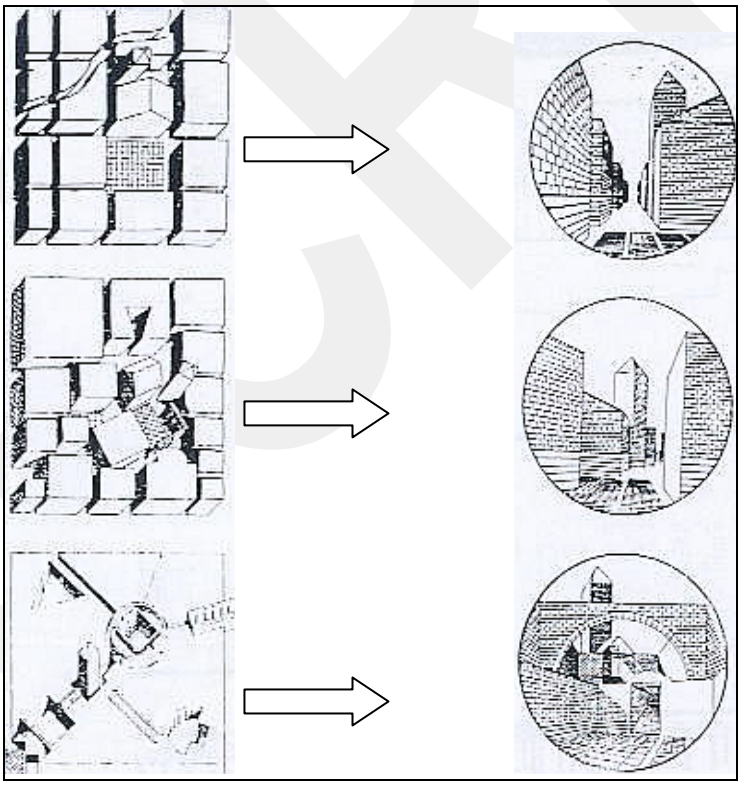


Figure 2.20 Example for Buildings as Urban Space Component (Krier,1988)

Karaman(1989) states that *façade* finds its character in the interface of the building surface and volume of the street. Façade can be perceived as a structural figure, which sets up the system of meaning of urban space. Up to the sense that it is perceived as a figure, it contributes to the sense of integrity, perceivability, consistency, and it provides the formation of scale balance.

Atabay (1989) explains *materials and technical constructions* of some elements like floor, decoration and roof structure, which intrude to the main shape of the space in different scales and forms, completes the general space composition.

Other important components of the space are *natural elements*. Susmuş (1999) defines these elements as other forms of land morphology such as water surfaces, rocks, stones. According to him, in areas, where these elements lack, such components can be used in order to maintain the same effect. Water surfaces, which arise calmness and a sense of refreshment, provide an increase in the effect of the landscape by reflecting whole environmental elements or part of them according to the effect of the sunlight. Plants, which are used as complementary element of space in designs, can also relate itself to the architectural elements and to other plant groupings, thus creating harmony and contrast by means of colour and texture.

Another component of urban spaces are *urban furnitures*. Urban furnitures are usually qualified as space defining and space completing elements. They can be varied as shelter-oriented, decoration-oriented, fun-game oriented and commercial oriented (Öztürk,1978).

2.3 Urban Space Design Principles

In urban space design, besides basic design principles, principles of urban space defining are also used. Şener et al.(1999) sum up these principles, which form a “textural language” specific to the city, hence which help to create a meaningful spatial and formal integrity in the city;

- Spatial enclosure
- Continuous borders
- Formation of visual axis and perspective
- Direction
- Continuous circulation
- Providing the functionality
- Spatial& textural continuity of the city
- Interpretation of regional properties
- Protection of environmental characteristics
- Capturing the human scale
- Alignment

All of these principles organize the pieces forming the urban space and their relations with each other. Among these principles, the effect of architectural principles of the buildings, which form the urban space can not be denied. It is a fact that an urban architectural product designed according to design principles that enrich the quality of urban space serves the public interest and this enriches urban spatial quality.

Lennard (1995), with a different point of view, defined the urban space design principles according to the properties of that space and the properties of the elements, which form that particular space, and studied these principles under three main headings. These principles are;

- Isolation from traffic (As Lennard (1995) mentiones that urban outdoor space should be oriented towards pedestrian usage. The priority should be to provide people a safety and comfortable public rehabilitational area.),

- To bear in mind architectural characteristics of the buildings, which surround the space (The architectural scale and proportions of the façades of surrounding buildings, their overall height, vertical and horizontal dimensions must be scaled to human proportions and human use. Windows and balconies must be designed to facilitate social interaction between inside and outside.),

- Definition of the size and position of urban space correctly (To define the size and position correctly is important in providing the safety and the control of that space.)

CHAPTER 3

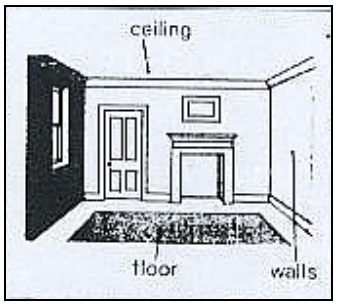
RELATION BETWEEN URBAN SPACE AND USERS

In the previous chapter of the study, various classifications of the urban space are given. As a result of these examinations;

- Because the components of the housing backyards are both natural and artificial elements within this space variety they are considered as the mixed spaces
- They are classified under the hard spaces because the limiters are dominantly artificial elements.
- Under group of positive spaces because the space is definite, evident, readable and in humane scale.
- They are also classified as strong spatial sence or semi-spatial sence space in accordance with the positioning of the limiting buildings
- Static spaces according to the usable activity variety.

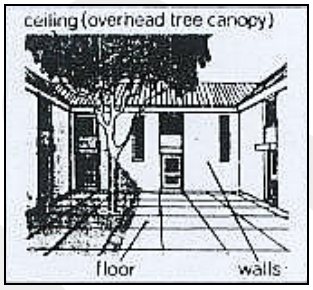
"The first step in backyard design; therefore is to analyse the layout of routes in the surrounding area; defining the access points on the site and pecularities of the space" (Shirvani,1985). Hence, in the design process of housing backyards, the properties of that area gain importance. In the scope of this work, the components affecting the quality of housing backyards are considered under the heading of factors affecting the quality of urban outdoor space, because the subject itself belongs to that category.

According to Oktay (1984), the concept of outdoor space is basically similar to indoor space. But the main difference lies in scale. A room is enclosed and defined out of which through windows and doors, one can see other rooms or the surroundings of a house (Figure 3.1). An outdoor space has a floor, walls and ceiling. The sky line becomes most important to the sense of enclosure as a ceiling (Figure 3.2).



Indoor

Figure 3.1



outdoor

Figure 3.2

(Oktay,1984)

3.1 The Affect of Components on Quality of Urban Spaces

3.1.1 Physical Components

The natural and artificial elements, which form housing backyards are the physical components affecting the quality of them. So in this study, these physical components are grouped as;

-natural factors
-artificial factors

In an urban area, the space is generally defined by man-made structures; this, definition is completed by basic natural materials; earth, rock, water and plant cover.

3.1.1.1 Natural Factors

> The natural surface, the boundary between earth and air, has particular implications for site development. Sometimes it determines the organization of the plan. The gradient of paths, the flow of utilities, the use of areas, the positions of buildings, the visual aspect, are all affected by it. The designer must grasp the characteristics of the land form as a whole and identify its key points for the purpose he has in mind. He must have a sense of its scale of the meaning of various slopes, and of the relation of its plan shape to its perspective shape. In most cases the existing topography has an underlying order brought about by the flow of surface water. Thus the basic modelling of the ground can often be analyzed by the construction of ridge and drainage lines (Oktay,1984).

The natural components affecting the housing yards' quality can be analyzed under three headings; topography, microclimate and vegetation.

Microclimate: No matter what the scale is the purpose of designing indoor or outdoor urban spaces is to provide the users to perform any activity without mental or physical constraints. Microclimate is one of the dimensions to be considered in priority in order to maintain the necessary standarts, because the comfort conditions of the subject area depends on the elements, which form the space as well as the natural microclimatic data. "Depending on the values of the variables of elements forming the urban outdoor space take, the effects of regional climatic elements change thus creating a microclimatic environment peculiar to that space" (Oktay,1984).

Important climatic factors from the viewpoint of urban space design are climatic needs, climatic elements, environmental conditions, form of the open space. Climatic needs are the necessary climatic conditions providing comfort conditions for people in that space.

> A human being only needs shadow in stagnant weather, with 21-28 C temperature in dry-bulb thermometer, and also when the relative humidity is between 27% – 80%. However, when these values are exceeded, absolute humidity and air movement will be necessary. The top limit of air movement is 5m/s, because on speeds above that value, walking gets difficult, and also people will not be able to rest (Penwarden,1974).

The climatic elements effective on space design are solar radiation, wind, air temperature and humidity on that area. These elements are affected by regional climatic condition. Another effective factor is the condition of the open space itself. According to these conditions, different microclimatic properties can be seen in the same vicinity. The close environmental conditions forming the open space are altitude, topographic order, slope, direction, large plant groups, the shapes and the sizes of the buildings, and other functional elements, which are situated in that area. ”Morover, the thermophysical characteristics of the building materials; such as heat absorbtion, reflection and permeability can be counted as close environmental conditions which form the open space”(Ok, 1988).

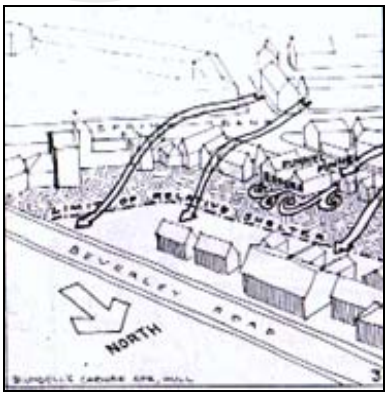
Briefly, activities, which could be performed in an urban outdoor space depend on the microclimatic characteristics of that space, mainly on windspeed and sun radiation.

“Wind speed is important partly because it affects temperature” (Tablo 3.1) (Bentley&Alcock,1987). Type of movement of wind is directly related to the geometric properties of the space in urban outdoor space scale. According to Ok (1989), between urban outdoor spaces periodic air movements occur due to the size, location and form of them just like the mountain and valley winds, which are formed in open rural areas. Winds can be hindered with softscape barriers or walls, whereas it is also possible to change its speed between these wind barriers.

Table 3.1 Windspeed and Its Effects
(Bentley&Alcock, 1987)

Situation	Windspeed m/s	Effect
Calm,light air	0-1,5	Calm,no noticeable wind
Light breeze	1,6-3,3	Wind felt on face
Gentle breeze	3,4-5,4	Wind extends light flag,hair is disturbed,clothing flaps.
Moderate breeze	5,5-7,9	Raises dust,dry soil,loose paper; hair dasarranged.
Fresh breeze	8,0-10,7	Force of wind felt on body, drifting snow becames airborne, limit of agreeable wind on land
Strong breeze	10,8-13,8	Umbrellas used with difficulty, hair blown straight, difficult to walk steadily,wind noise on ears unpleasant, windborne snow abovehead height.
Near gale	13,9-17,1	Inconvenience felt when walking
Gale	17,2-20,7	Generally impedes progress, great difficulty with balance in gusts.
Strong gale	20,8-24,4	People blown over by gusts

About the same subject, Bentley&Alcock (1987) argue that windspeed problem encountered in urban open spaces can be minimized by creating windtunnels (Figure 3.3).



Figrure 3.3 Wind-tunnels and Outdoor Place
(Bentley&Alcock,1987)

The open space around the building with respect to sun has a great importance. The altitude angles of the sun's rays change in accordance to urban space. At this point, the latitude number of the urban space is very important. Lencher (1990) says that when designing a complex of buildings or a whole development, then shadow pattern is more useful for achieving solar access to all the buildings. Because this data helps to design outdoor space comfortable.

The areas of sunlight and shade can be altered by design adjustments at various of scales; building mass, open space width, level changes, trees or other features within the space (Bentley&Alcock,1987).

"Solar radiation absorbtion ratios of some materials covering the open spaces' surfaces are for concrete, red brick, stone, galvanized sheet, and dark coloured paint are 0.85-0.98, whereas it is between 0.13 and 0.50 for fair colured paint, lime paint and aliminium"(Dreyfus,1960). Ok (1988) states that functional elements which form and/or compose urban outdoor space depending on their form and size, geometric properties may prevent the solar radiation's direct component of 0.30 level, and changes the quantity of total solar radiation. This situation is another effect of the shading area size created on the space, hence is effective on the choice of function for that specific area.

Topography: Topography, as far as it does not affect life comfort conditions is a natural property, which provides the designer with various possibilities in urban open space design. Mostly, with topography, some variations in urban space design become possible. However, the fact that topography is usually a factor that increases the investment cost of the project to be applied should be kept in mind.

Oktay (1984) explains that steep slopes and drops are usually difficult to handle within regular organized space; it is a safe rule to take up such vertical differences in the approach to, or between, important openings.

Level changes may be used to define space by themselves, and they add many additional visual possibilities, whether of view, silhouette, truncation, or dynamic movement.

Topography is sometimes a restraining factor for the designer. As mentioned before depending on the slope, the construction cost of varies. Moreover, for an urban space designer, topography is an input in the design of some particular spaces, such as pedestrian roads. Function to be chosen for that area is determined according to the slope values, because there is a certain slope standart for each kind of activity.

Moreover, according to Mertyürek (2000), it has an absolute determining influence on the sense of settlement. Its determining role applies both for those that are outside the settlement in perceiving the silhouette of the environment, and also for those that are inside, mastering and experiencing the environment.

Vegetation: Vegetation plays an important role in forming of urban outdoor spaces. Usually, in the design process, positioning of the buildings, roads and urban furniture comes prior to vegetation. But site planning is the organization of a system of outdoor space, in which only one of the several materials that may be used is the plant cover.

In the choice of plants for an urban outdoor space effective criteria are their appropriateness for the design, their relationship with the shape of the buildings and their suitability to the microclimatic structure of the environment. Shirvani (1985) states that plants must be used to clarify the shape of ground. Alternatively, where topography or man made structure has an awkward form, then plants may be used to mask or subdue those faults, whether by covering or shading them, by the blurring of outlines or by diverting the of attention.

In design of urban outdoor spaces, plants are multi-functional elements. The purposes for their use can be gathered under four main headings. Vegetation can be used as barrier elements for buildings and urban spaces, where as they can also be used as ornaments. They might be used in order to create soft lines which would contrast the geometric characteristics of the buildings. And finally, vegetation can be used as a semi-permeable border element to limit the perception of the space from outside. This latter type of use is the most common application in our country.

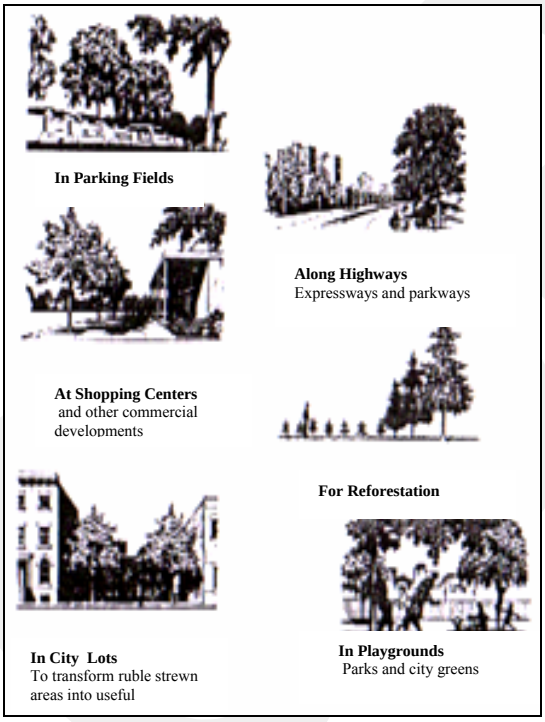
Oktay (1984) states that trees and shrubs are by their nature halfway between solid and void. They are three dimensional solids which occupy space rather than fill it. One can see through the branches of a tree and yet by their presence one becomes aware of the quality and reality of the space between them. They define space without blanketing it out; they can extend the personality of the building into the spaces around; they can be used to divide different columns of space or to lead the eye in a particular direction; they can be used to frame a view and also to hide it or partially veil it; they can be a summit to a view or a dominant in a composition, and as with furnishings they can do much to emphasize the character of a townscape.

Vegetation elements, which could be used in housing backyards can be grouped as trees, shrubs and grasses. However, it should not be forgotten that none of these elements can be seperated from the others. In open space design, a single vegetation element is not effective enough to create the aimed effect.

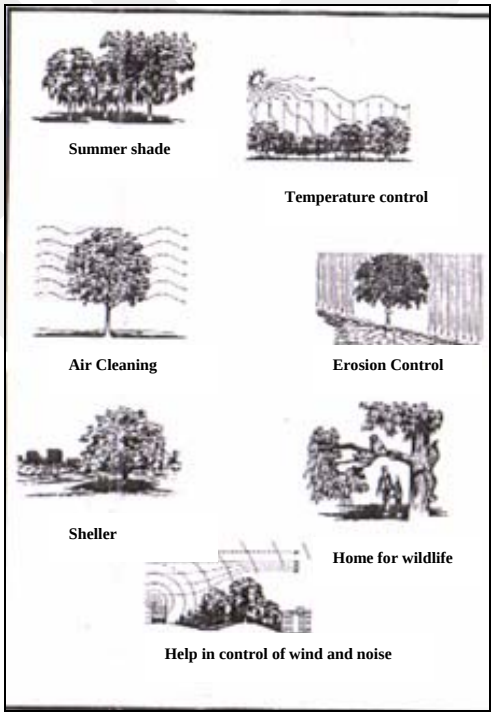
Trees are one of the most important elements for urban space design. In urban space design, the preservation of old trees of that specific area should be one of the prior goals. Martin& March (1972) stated that size of the trees are also effective on the design. According to this, if there are no large trees on a site, it may be worth while to plant trees 6 to 7.5 meters high or even higher, for immediate effect. Large trees which are properly prepared and planted will be fine and will be less vulnerable to casual

damage than smaller trees. Trees should be considered as they will appear in three dimensions, to their height and size, and not as abstract circles on the plan. The appearance of the arrangement must be imagined at the beginings as well as at maturity, in winter as well as in summer. At planting, they should be set far enough apart from each other and from structures to prevent inference and distortion of shape, unless such a distorted shape is desired.

Briefly, locating and growth of elements, such as trees, fences, grass and shrubs, which are the basics of vegetation should be controlled. Vegetation should not be used as camouflage for buildings or undesired vistas. Trees' contribution to urban outdoor spaces can be seen in Figure 3.4.



Benefits from trees in urban areas



Examples of environmental advantages provided by Trees

Figure 3.4 Contribution of Trees to Urban Outdoor Spaces
(Shirvani, 1985)

The factor of colour is also effective in vegetation. But bright seasonal color may also be furnished by summer planting of annual bedding plants.

3.1.1.2 Artificial Factors

In this part of the study, the factors affecting the housing backyard's quality will be dwelled upon using two groups of inputs; one group is obtained from the land and the nature, and the other obtained from the buildings creating that space, and also under the second group exists the inputs derived from the characteristics of urban furniture and their relationship with each other. These inputs gathered under the heading of artificial factors are analyzed as information related with buildings and the effects immediate surrounding.

Inputs related to buildings: "The geometrical properties of building development forms directly influence the magnitude, proportion and quality of the open spaces formed by them" (Ford,2000).

The subject is held within the scope of housing backyards in detached building order as they are the main subject of this study. *"Flat"* as in the sense of appartment housing is defined by Oktay (1984) like this:

"A flat may be described as a dwelling divided horizontally from another dwelling; it is the horizontal division between one flat and another, the floor, which distinguishes it from the house, in which the sub-division is always by a party wall, a vertical division."

Positions of the buildings forming urban outdoor space is important by means of determining the required size for the functions predicted for that area, the necessary lighting conditions and the effects of the space on human psychology. These effects are argued by Deilmann and Bickenbach (1977) under these headings;

- Very narrow enclosed open spaces between high buildings with heavy shadows on the open space are rejected by the inhabitants. Restricted spaces should only be planned if there are also 'open' ones in the immediate neighborhood.

- Too large open spaces cause a sense of anonymity. They may become a kind of *'no-man's land'* provoking vandalism.

- Smaller limited open spaces belonging to a certain group of building will, on the other hand, promote the feeling of identification of the inhabitants with *'their open space'* stimulating their activities.

- Sufficient distances between the buildings, both in the case of high-rise and low–rise building types are very important for the living quality of building. The minimum distance in the case of high-rise buildings with windows facing one another should not be under 20-30 meters. Otherwise there will be intence disturbances of use of social control through opposite views.

The buildings examined in study are the ones positioned on an urban lot according to the development code, and the outdoor spaces examined in the study are meant to be areas restricted with the positioning of these buildings. These spaces show that, when considered in three dimension, spaces formed by buildings of different heights have different implications on people.

> The maximum distance apart of the buildings is generally taken as three times the height, which gives an angle of light to the head of the ground floor windows of about fifteen degrees. When the number of floor is four and eight the distances between the buildings may be wider than the critical 20 meters. Generally, the problems of long building fronts opposite one another at short intervals still remain (Püskülcü,2001).

The negative effect created on housing backyards due to building heights can be minimized with some design methods. Zarakolu (1993) states that standing between short blocks one has little sense of spatial enclosure due to the wide open ends, and unless there is an interesting view or buildings on the adjacent site, some tree planting is desirable.

In Turkey, though usually built as mass housings, tall buildings cause different kinds of effects on housing backyards when they are located in individual limited sized lots. Oktay (1984) explains these effects as such: with tall blocks, say eight floors, it is possible to plant large trees and break the view from one flat to another, but with the more closely spaced three-storey block this is not possible because of the less distance; and when the blocks are very long, there is a tendency towards a tunnel effect and the flats near the centre of the blocks give one a feeling of being shut in. Therefore, when the distance apart is such that the space can not be broken up, the length of the blocks should be restricted, thus preventing the tunnel effect inside the space and enabling the flats to have diagonal views past the ends of opposite blocks.

Briefly, spaces formed by buildings of very different heights differ from each other, and thereby show different characteristics. These spaces of different volumes enable the application of various functions.

Housing backyards formed by angular-shaped buildings are more defined spaces. Oktay (1984) explains that the permutations and combinations to be obtained by joining straight blocks into 'L' block is generally planned so that the access is confined to the North and East sides, so that the rooms on the sunny side may look out immediately on a garden. The slab-like quality of the block is apparent when looking at the corner and positive space character is dominant. But, from the opposite direction, there is an effect of a rectangular mass and negative space is conceived.

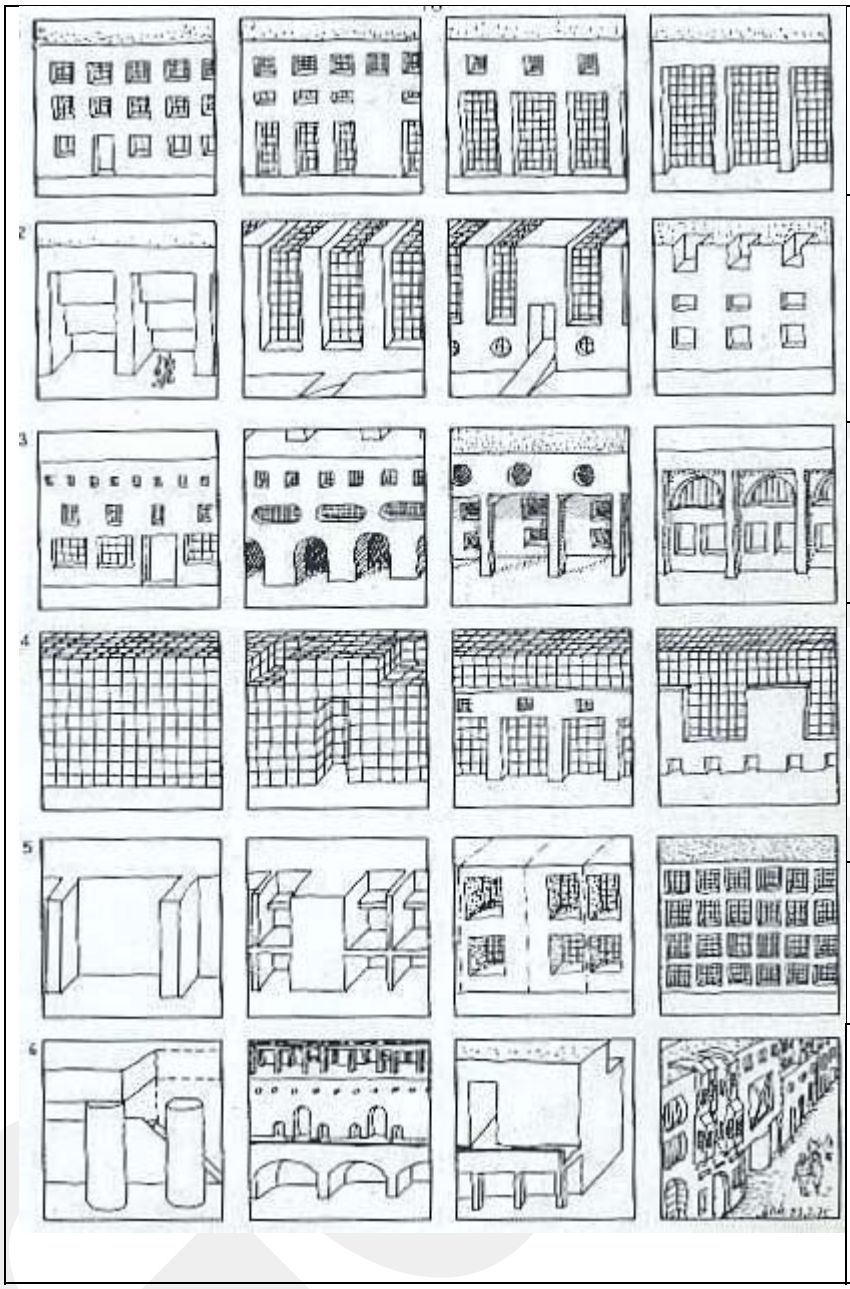
Another input affecting the quality of urban outdoor space design is façade characteristics. Order of one space is closely related to the obtainement of visual unity from the viewpoint of urban design. That's why, façades, which create the border of the space in third dimension are important components of space order in urban design. In other words, in urban structure, buildings end up with façades as well as urban spaces. This opposition leads to the

formation of an *"interface"* (Konuk,1989). Thereby, in urban design, the façades should create an order.

Horizontal and vertical rhythmes, locations of windows and doors, their size and qualities of walls, such as material and colour are elements which form the façade, therefore they affect the quality of space directly. For example, if the façades lack interesting details –niches, holes, gateways, stairs and so on- it can be very difficult to find places to stop or if we put it another way; good cities for staying out in have irregular façades and a variety of supports in their outdoor space" (Gehl, 1996).

The evaluation of façade characteristics on an example can be seen in Appendix A.

The sketches reproduced by Krier (1979) can only give some idea of the inexhaustible design possibilities. As Krier (1979) mentioned, each of these structures influences building structure and urban space in a particular way (Figure 3.5).



1	Pierced façade; the lowest level is more generously glazed in each sketch, reducing the solid area to a simple load-bearing structure.
2	The glazed area within the load-bearing structure can be modified according to taste. The following three pictures show a reverse of the design process portrayed in 1. A solid base forces the glazed area upward.
3	The window type can be modified horizontally and vertically according to the imagination of the designer.
4	Faceless modular facade as a theorical way in which the building might be enclosed. The modular facade can be adapted to all variations in the shape of the building. Solid sections of the building can be combined with the grid.
5	Windowless buildings; Windows are placed in niches etc. And the process starts again from the beginning.
6	Explration of different geometies; a thematic interpretation of the elevation: lowest level=heavy; middle section=smooth with various perforations;upper part=light,transparent. Arcades placed in front of houses, different architectural styles juxtaposed.

Figure 3.5 Facade Types of Krier
(Krier,1979)

Artificial inputs other than buildings: The artificial input that formes the urban space apart from the construction is the urban furniture. “In built or non-built urban public areas, which are open to everyone and in responsibility of the public, urban furnitures are usually elements which define and complete the space” (Öztürk,1989).

Urban furnitures can serve to many different needs and functions; such as protection, ornamentation, fun-game or commercial ones.

Some of these may be fixed in permanent positions, others are movable, depending upon their particular function and type of design. The materials used for their manufacture are equally wide in range and include timber, concrete, steel, aluminium, asbestos, cement, plastic, etc. , often two or more materials being used in combination. Urban furnitures are effective on the design of urban outdoor space design, in the identification of that space, and even in the use of it. These elements may be cited as urban furniture are lighting fixtures, seating units, trash cans, information and advertisement boards, plant containers and children's playground fittings.

- Lighting Fixtures: A proper lighting fixture is one of the most important factors which affects the quality of housing backyards. Beneath their aesthetic value, these elements are effective in maintaining the security of the space. The lighting feature used in the space;
  -should be located according to the application plan,
  -should be manufactured from a durable material, and
  -stairs and passages should be illuminated by low-leveled lighting elements, whereas vehicle areas should be high-leveled ones (Türkoğlu,1989).

- Seating: These elements are directly related to people. According to Marlowe to achieve its purpose a seat must be comfortable, stable and situated away from draughts and cold spots. Seats set in public places are often objects of abuse and, if vandalism is to be deterred, their construction must be robust and durable. Materials used in their manufacture include concrete, timber, metal or plastic or a combination of two or more.

Besides the construction material, the sizes of benches are important. There are certain standart sizes of benches suitable for human dimensions (Figure 3.6), and a pre-determined way of positioning (Appendix B).

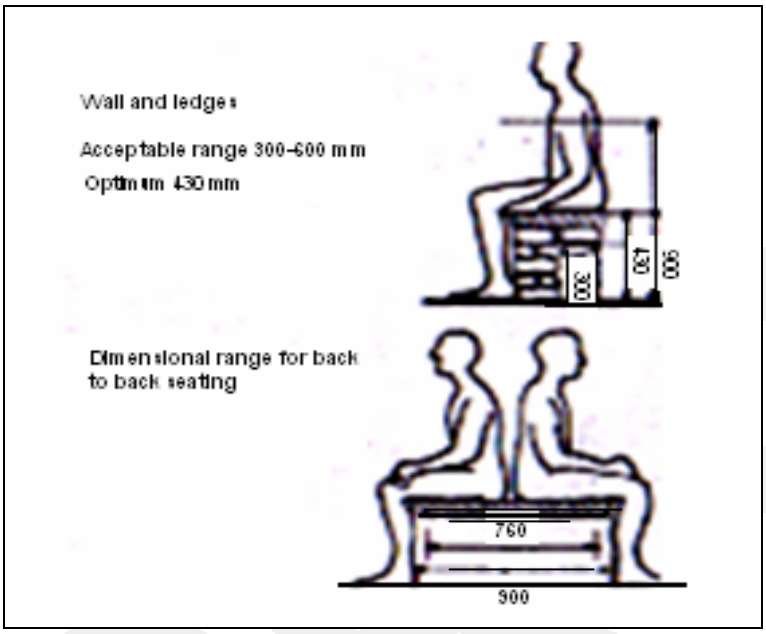


Figure 3.6 Standards for Seatings
(Bentley&Alcock,1987)

- Trash cans: Within urban furniture group, these are elements, whose functionality is a priority compared to their other properties. However, the visual quality and positions of these elements also affect the quality of the space.

- Plant Containers: A wide range of sizes and shapes is manufactured in a variety of materials like; stone, concrete, asbestos cement and glassfibre. As Marlowe (1977) says, selecting of planting-bowls depends upon the following factors; function, floorscape pattern, sitting and planting.

- Information and advertising panels: Street panels should be situated at places where they can be easily seen and distinguished, but hardly

reached. “The ones lighted from inside should be preferred. In information panel choice the way of lighting, it’s colour and material are the important critera (Türkoğlu,1989).

- Children’s playground equipments: The materials should be durable, strong but at the same time have some value, which would enable the children to develop their creative senses and to enrichen their *“dream worlds”.* “In order to prevent injury of the children in case of falling, safe surface covers, cellular rubber surfaces or else slightly graveled sand at 30 cm lower level are ideal materials. Sand, as a natural material resistant to air conditions, both reduces the energy of the children and prevents any injury after falling” (Türkoğlu,1989). Equipment in children’s playgrounds vary immensely. Marlowe (1977) covered these elements in two groups; as static and swinging-rotation ones. According to this grouping:

Static play equipment: The two principal types of structure in this group are climbing frames etc. and slides.

Swinging or rotating play equipment: Three principal means of motivation comprise this group of structures. These are pendulum swinging apparatus, rotating equipments and balancing equipments. Space requirements for play swings can be seen Appendix C.

3.1.2 Social Components

The behaviors can be conceptualized as a dynamic sequence of adjustments and readjustments to our physical and social environment. We may not always be aware of these coping responses, but the sun and moon, wind and rain, and terrain and characteristics of the land all affect our lives and require us to predict and cope with their effect. When we consider our built environment, our offices and homes, shops and highways, city streets and parks, the consequences for experience and behavior are just as important, but even less evident (Baum, Valins,1997).

One of the factors effective in the formation of spaces is socio-economical components. The expectations of people using a space vary according to some personal properties such as the life styles and cultural structures. The perception of space of various socio economic groups vary as do their expectations on various spaces. Hence, in this part of the study, the effects of human oriented properties such as age-gender, cultural structure and economic structure, are analyzed.

The differences in spatial expectations according to age and gender:

The age group, to which the person using a particular space belongs to is the most personal component effective in space formation. Because with age, area of interests, perspective of life, responsibilities, etc. changes. A person‘s physical appearance changes with the ages and this causes a change in the type of activity to be assigned to that area. At this point, it should not be forgotten that space is accepted as a dynamic milleu.

> Children’s special demands on the outdoor environment are considered along with those of other age groups. The following discussion emphasizes quality demands in general and additionally, the demands of adults and the elderly outdoor spaces. This order of priority is based on an urgent need to examine the outdoor activities and requirements of these groups. Furthermore, support of the outdoor activities of adults and the elderly is in itself considered the best conceivable support for children’s activities and the environment in which they grow up (Gehl,1996).

The feelings and key elements that run through all the interviews on childhood memories have strong similarities. Barnerjee&Southwort (1996) states that children were sharply aware of lawns and floor surfaces; they were delighted in foliage, woods and green. There is a strong and pleasant memory for hills and for water in the landscape. Even in childhood, perception is strongly colored by associations of social status; by niceness by cleanliness, by upkeep, and by money. The child wants variety with a chance for some adventure; he has a strong need to act upon the physical

environment, to be stimulated by it, and to realize his imaginative fantasies through it.

The age group defined as adults perceives outdoor areas as places, which would provide opportunity for rehabilitation and physical activity. For this age group sports is important. Morover, this group has a more professional angle of view at communication. Accordingly, their spatial needs differ from the other groups' needs.

Old people's needs change due to physical properties, as physical activities for the people in this group are limited. They see the outdoor space as a place merely for jogging, rehabilitation and communication.

The physical properties of different age groups also changes the horizontal and vertical oriented movements in location. This situation affects the formation of spaces. Oktay (1984) explains the differentiation in vertical and horizontal movement briefly in Figure 3.7.

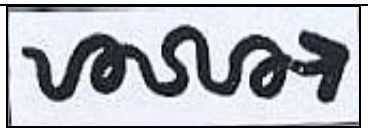
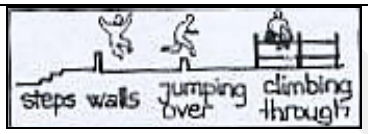
The individual-horizontal movement;		
Children		meandering, as objects on the way catch their interest.
Adults		likely to be more direct, purposeful
Old People		less purposeful, slower, stopping to rest
Levels-vertical movement;		
Children		up and down and through
Adults		up and down steps
Old People		disabled, mothers with prams, children on bicycles, skate boards etc.

Figure 3.7 The Individual-Horizantal Movement for Different Age Group (Oktay,1984)

The gender difference is another component effective in the differentiation of expectations from a space, because the requirements of men and women in outdoor spaces are mostly different from each other.

> Anthropology is one of the first diciplines that suggests gender and space relations defined through power which examines the differing spaces men and women are allocated culturally and particular role space has in symbolizing, maintaining and reinforcing gender relations (Rendell, 2000).

Worpole(1992) states that through these power relations, the public sphere in the city is associated with men and private and domestic spheres are associated as proper and preserve places for women. Gender and environment have altered in the process of interaction. MacKenzie (1989) explained that women as well as men have always organized to extend the

resources available for their work. But, as gender has always been a criterion for differential allocations of resources, women's and men's organization has generally taken different forms within this human endeavor. The difference has been on the functions of the kinds of the environments in which women and men lived and worked. This difference is effective on the expectations from the outdoor space.

The differences in spatial expectation according to cultural and social structure:

Different cultures may well have different design requirements concerning the promotion of social relations- for example the concern with privacy around the unit itself. This situation changes people's spatial expectations. The perspective of life, priorities and needs also change in accordance with the cultural background.

"Families in similar life stages tend to interact with and might prefer to reside near families of their own type" (Oktay,1984). Organization of housing environment is related to the nature of man. Therefore, an understanding of behavior and perception will be helpful to the process. In order to realize this the human related properties should be well defined. At this point, the research on the educational level and life style gains importance in defining the cultural background of the users.

Another factor effective in the determination of user's life styles is economic components. The economical structure treated here includes both the economical situation of the users and the source provided for the application of the project.

The economic profile of the user is important. Because the life styles of people belonging to different income groups and relatedly their expactations from housing outdoor spaces differ along with their priorities.

The source provided for the application of the project is also determinative in the formation of outdoor space because the material quality and variation of materials used in the space is related with it. The material variation creates various diversifications for the users including the perception of space. Different visions can be maintained when the same place is designed with different materials. Thus, in the determination of the proposed function for the space, the source reserved for the project becomes important once more. Again, the maintenance of the space, thus the life-span of space is bound to the budget spared for that project. In unattained and not maintained spaces, usually some security problems such as vandalism occur. This condition affects the intensity of use of space, thereby resulting with disused spaces in time.

3.2 The Affect of Quality of Urban Spaces on Use

> Just as it is possible through choice of materials and colors to create a certain palette in a city, it is equally possible through planning decisions to influence patterns of activities, to create better or worse conditions for outdoor events, and to create lively or lifeless cities (Gehl,1996).

Both for indoor and outdoor spaces, the physical properties of space are effective in the use of that space. Therefore, usage ways of a space, namely the activities bound to that space, are affected by physical properties of space. Also, the profile of users, such as age group, gender, etc. shows changes in relation with the physical shape of the space. So, it would be appropriate to analyse outdoor activities firstly.

The outdoor activities can be classified as walking, standing, seeing, hearing, talking, etc. However, it would be useful to gather these activities under certain groups according to some properties.

There are many studies on the outdoor activities in literature. However, in this study, the subject is considered in activity-physical space context. The study refers Gehl (1996) who he has also dealt with the subject in the same

context. Gehl analysed the activities, which take place in open spaces in three groups, namely the necessary activities, the optional activities and the social ones. Gehl considered the relation between physical space and activity in connection with this categarization.

Necessary activities include those that are more or less compulsary -going to school or to work, shopping waiting for a bus or a person, running errands, distributing mail- in other words, all activities in which those involved are to a greater or lesser degree required to participate. In general, every task and pastimes belong to this group. Among other activities, this group includes the great majority of those related walking,

Optional activities that is, those pursuits that are participated in if there is a wish to do so and if time and place make it possible are appropriate. This category includes such activities as taking a walk to get a breath of fresh air, standing around enjoying life, or sitting and sunbating.

Social activities are all activities that depend on the presence of others in public spaces. Social activities include children at play, greetings and conservations, communal activities of various kinds, and finally -as the most widespread social activity-passive contacts, that is simply seeing, hearing other people.

Activities to take place in urban outdoor spaces are being affected by some physical properties, such as the size of the space, its location and the characteristics of its natural or artificial components, which have been mentioned in previous chapters. According to Gehl(1996) this effect realized in the differentiation of the assigned activities, in the formation of density of that space's use, and the period of use of that space. Hence, the subject is dealt with under three headings.

3.2.1 The Affect of the Quality of Outdoor Space on the Activity Type

Activities taking place in a space differ directly related to the physical properties of that space. Gehl (1996) considered spaces, where the aforementioned activities take place, under these three headings.

- Spaces where necessary activities take place: These activities will take place throughout the year, under nearly all conditions, and are more or less independent of the exterior environment. The participants have no choice.

- Spaces where optional activities take place: These activities take place only when exterior conditions are optimal, when weather and place invite them. This relationship is particulary important in connection with physical planning because most of the recreational activities that are especially pleasant to pursue outdoors are found precisely in this category of activities. These activities are especially dependent on exterior physical conditions.

- Spaces where social activities take place: Different kinds of social activities occur in many places; in dwellings. However, in this grouping, activities that occur in publicy accessible spaces are examined by Gehl (1996). These activities could also be termed *'resultant'* activities because in nearly all instances they evolve from activities linked to the other two activity categories. They develop in connection with the other activities, because people are in the same space, meet, pass by one another, or are merely within view. They occur spontaneously, as a direct consequence of people moving about and being in the same spaces. This implies that social activities are indirectly supported whenever necessary and optimal activities are given better conditions in public spaces.

Gehl (1996) briefly explains the relation between the physical quality of the space and the activity as such:

> When outdoor areas are of poor quality, only strictly necessary activities occur. When outdoor areas are of high quality, necessary activities take place with approximately the same frequency -through they clearly tend to take a longer time, because the physical conditions are better. In addition, however, a wide range of optional activities will also occur because place and situation now invite people to stop, sit, eat, play and so on. In streets and city spaces of poor quality, only the bare minimum activity takes place. People hurry home. In a good environment, a completely different, broad spectrum of human activities is possible (Gehl,1996) (Figure 3.8).

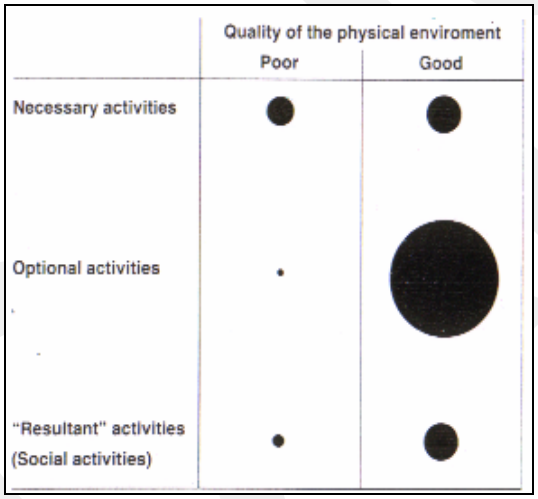


Figure 3.8 Relationship Between the Quality of Outdoor Spaces and the Frequency of Occurence of Outdoor Activities
(Gehl,1996)

3.2.2 The Affect of the Quality of Outdoor Space on Density and Period of Utilization of the Space

The physical properties, such as the construction materials and the geometric shapes of the components, which form the outdoor space affect the number of people who perform an activity at that space, and therefore the density of use of that area. Gehl (1969) explained that improved physical conditions have resulted in a doubling of the number of pedestrians.

As an example for that situation, Pressmann's (1985) plan, where he displayed the change in design of New York Office building, has been considered (Figure 3.9).

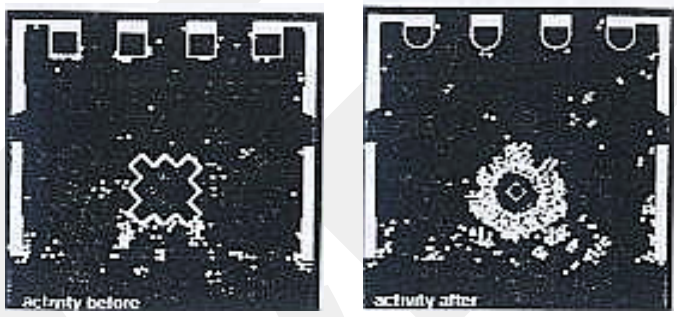


Figure 3.9 Entrance Area to New York Office Building Before and after Quality Improvement
(The Project for Public Spaces, 1976)

As seen in the plans, the improvement project for the space has affected the number of people using that space. The circular shaped geometric objects used in the design increased density of utilization of that space. Moreover, in itself, the zones, where the utilization is more dense have been differentiated from each other, because the geometric structure of the objects, which form the space, affects human behaviour. Whyte (1980) says that shortly there is a close connection between the qualities of outdoor space and outdoor activities and documents how often quite simple physical alterations can improve the use of space noticeably.

This kind of differentiation can also be seen as a result of a vegetation project on a space.

The factors that affect the quality of space were examined in detail in previous chapter. At this part of the study, the emphasis is on how the quality of space affects the number of people participating in the activity. This influence was explained by students of architecture from the University of Melbourne and the Royal Melbourne Institute of Technology. They found a direct connection between the quality of the street and the taking place on the street. An experimental increase in the number of seats by 100 percent on a pedestrian street in Melbourne resulted in an 88 percent in seated activities (Gehl,1969).

Apart from the *number of people* utilizing a space for a certain activity *how long* these people use that space is also an important variable. People tend to spend more time in the places where they feel content. The duree of utilization is also related to the concept of *security* that was not mentioned before apart from the physical components. In a non-secure environment users can only spend a limited amount of time. These kind of spaces can not be used by the public exceptt for certain hours of the day.

Visual inputs are also important for feeling secure and comfortable in a space. A person feels secure, where he/she can see thoroughly. Consequently, the lighting of a space is also an important factor improving the quality of a space, which eventually affects the duration of an activity at that space. So, the utilization period of a space, where people feel safe is longer. These kind of spaces can also be used at night.

Some spaces, although they are secured are not used or used for a limited time, because of the physical properties of its components.

3.3 An Overall Categarization of Urban Spaces

The space that is defined as the backyards of housing is the backyards of apartment builidings that form a housing unit; thus this space is outdoor space that is surrounded by buildings. There are many components constituting this space. Understanding these components thoroughly is the first step in the design of this space.

These components have been examined under three headings that are physical components, social components and interaction of them.

The physical components are divided into natural and artificial inputs. Both groups have important influences on the structure of space the characteristics of the space. The purpose of design is providing quality of life. At this point microclimate and topogaphy are effective. These inputs have some standard values in providing analizing and contentment of life. Space is designed by taking these inputs into consideration. Artificial components are inputs about construction but are outside the construction. Naturally buildings and constructions have lots of influences on the perception of space. In relation to this, buildings, distance between, solid-void ratio on the façade, color and materials all affect human psychology and the utilization of space. In this sense the features of buildings are grouped and their effects on human psychology are examined. The inputs apart from the buildings are urban furnitures. There are many components like seating, lighting etc. under the heading of urban furniture. All these have to have some standards as well.

The social components are about the features of people that utilize the space. People with different ages, gender, cultural background and economic welfare have different expectations, priorities and point of views. Being aware of these expectations and designing spaces accordingly will end up with having urban spaces that are efficiently utilizied.

Activities that are formed as a result of the interaction between the physical and social components are also among the inputs shaping the spaces. At this point this study is carried paralel to Gehl(1996)'s studies and activities are examined as necessary, optional and social. The type of activity, the number of people involved in the activity and the duration of the activity result from the physical and social qualities of space.

In the following chapters the housing backyards are defined under the light of the above inputs. In this context, the backyards that are examined within the case study area are discussed and compared using these components. Using these inputs, the appropriate activities for these spaces were determined and proposals were made on the development and improvement of the public quality of these spaces.

CHAPTER 4

BACKYARDS AS URBAN SPACE

> The interface between buildings and the spaces adjoining or immediately around them have always constituted a very important dimension of public and private life (Ford, 2000).

The status and importance of urban outdoor space in city context has been dwelled upon in the previous chapter. This chapter details what type of properties of housing backyard concept is handled in urban space concept. As mentioned in the previous chapters, this study mainly deals with the categorization of urban outdoor space concept according to ownership and utility features and main theme of the study has been considered in this context (Figure 4.1).

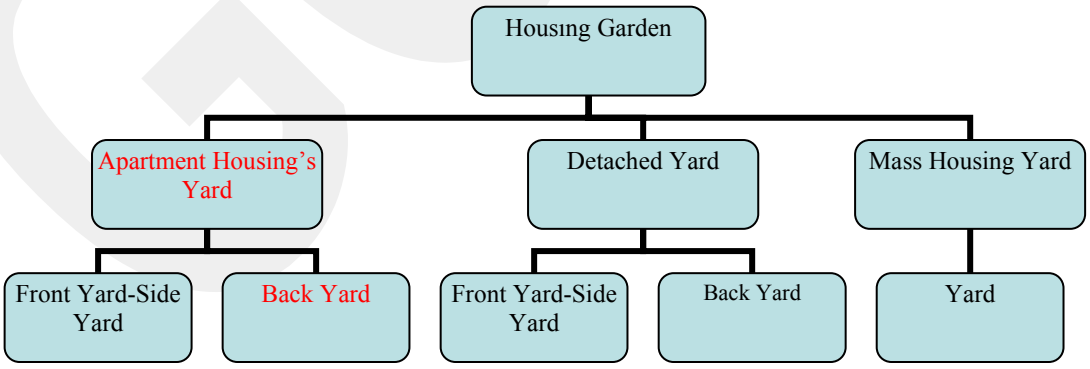


Figure 4.1
Categorization of Housing Garden

As seen in the figure, spaces that are the concern of this study are considered under the housing garden/lot heading, which is contained by semi-private space concept (Figure 4.2).

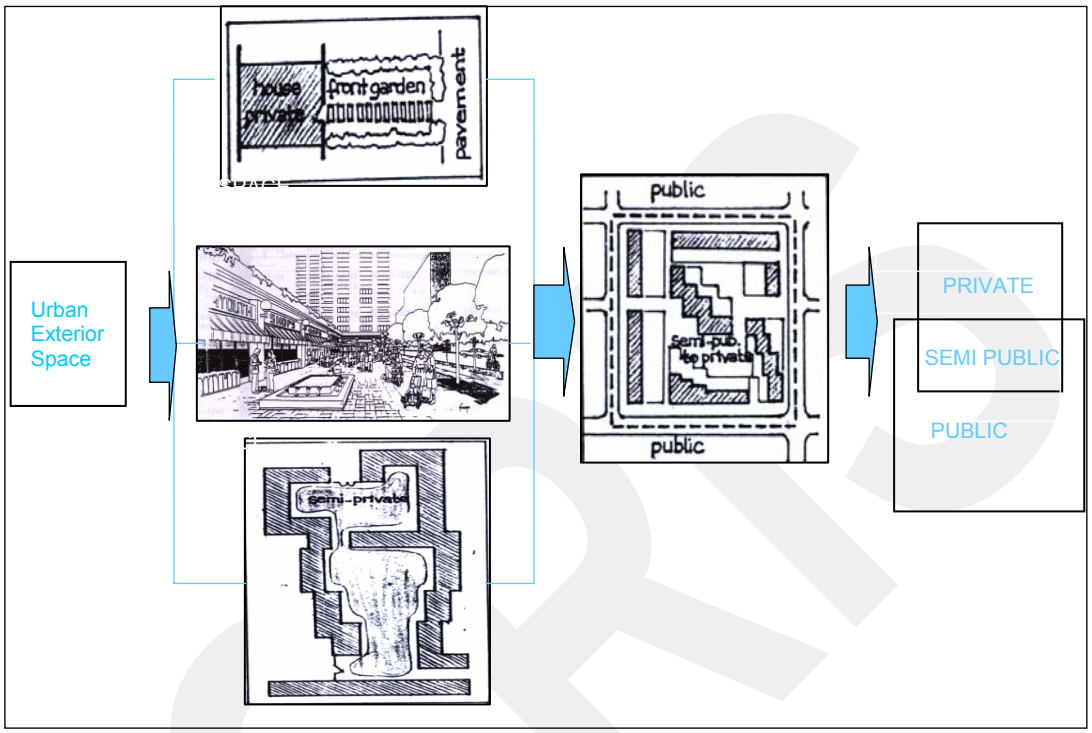


Figure 4.2 Private- Public- Semi Private Space
(Oktay,1984)

At this point, it can be observed that the functions and meanings related with the housing garden also changes according to the variation of the building order. According to this point of view building groups are classified in 3 groups according to building order;

- Detached housing
- Mass housing
- Apartment housing

- *Detached housing* are houses which belong to one person in a lot, which are usually dwelled by a single family. In this building

arrangement, the housing garden is considered as semi-private space type and seen by public and in a sense controlled by the public. In this arrangement, gardens are considered as front, side and backyards. According to Oktay (1984) especially, the front gardens are the parts in front of houses and they need to secure adequate daylight and privacy by not being occupied by carriageway or foot-path. In this type of building order, housing lots are secluded from other gardens by walls, fences or railings. In short, they are semi-public part of the street and they should be treated from the stand points of both the public and private. One dweller who refuses to cultivate his individual front garden can spoil the appearance of a whole road.

Backyards have quite different functions; they may be *'totally private'* and capable of being used exactly as their owners wish to, short of downright unneighborly behaviour. In brief, the owners are fully responsible of these spaces' usage. They are the spaces, where the *"totally private*" type of usage can be felt most strongly within the boundaries of semi-private space concept. In spite of this, most of these spaces can be seen by the public, and therefore they are under the inspection of public though this effect is very limited (Figure 4.3).

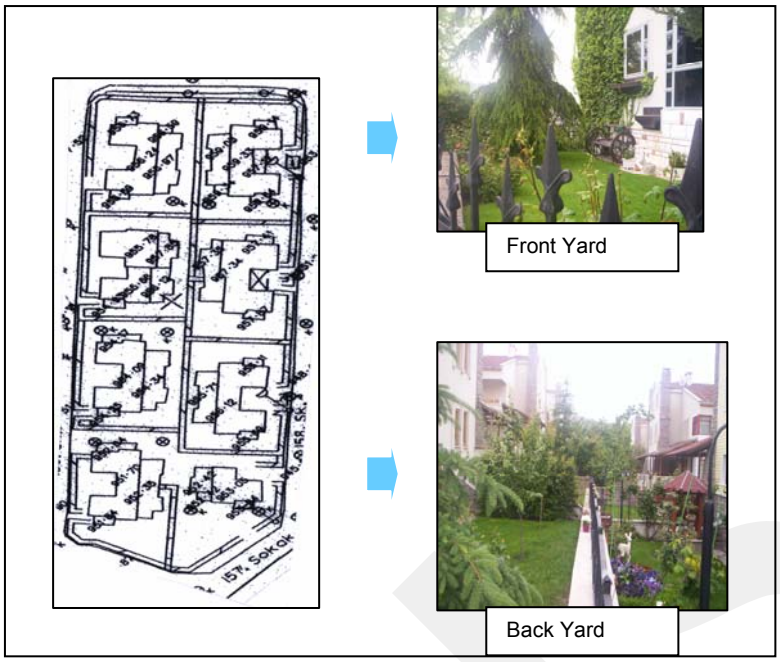


Figure 4.3 Front and Back Yard at Detached Housings

- *Mass housings* are building groups, which are made up of residents more than one in number, which are usually far from downtown and built on a big lot. These housing groups form lots designed as an entity with their surroundings. Spaces formed around these buildings are particularly designed and programmed for public use. The maintenance is performed with the participation of housing estate dwellers. It will not be an appropriate attitude to divide these spaces as back and frontyards because they are designed as a whole. For this reason, these spaces are considered as one single space at this level of the research.

  When designed properly, these housing areas shelter spaces, where many environmental physical needs are met. For example; pedestrian-vehicle differentiation, solving car park problem, etc.. Beneath these physical needs, there are social requirements which need special attention in high density housing the prospect from the flats, places to play and sit, private gardens. All these make living in this kind of housing very pleasant. These kinds of spaces are the

ones which help the enhancement of social communication between people. In our country, this type of housing areas are the only ones which are built by taking into consideration the areas in between buildings and where buildings are positioned according to their functions (Figure 4.4).

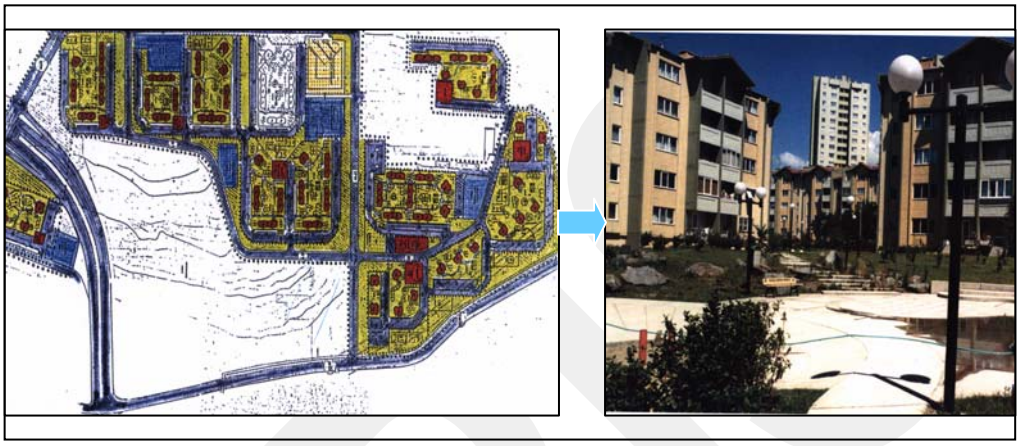


Figure 4.4 Front and Back Yard of Mass Housings in İstanbul (TOKİ, 2000)

- *Apartment housings* are the sort of housing, which are built on detached lots. On these lots, open areas are left-over due to the positioning of the building form the front, side and backyards of the structure. Their geometric form is mostly determined according to the buildings positioned by the rules and regulations of the development code. Their responsibility belongs to the apartment dwellers. These areas formed by the buildings positioned on each lot of a residential block have limited sizes. In each lot, area between the building and the road is defined as the frontyard. These landscaped frontyards are designed to define the entrance and exit of the building to the street, which also reflect the opening façade. Most of these frontyards are landscaped without a proper plan, but it is possible to come across some well designed ones. In many countries, " housing spaces are usually designed with regard to their front façades and frontyards" (Ford,2000). Because of this, there is a mere focus on the design of

frontyards, and these spaces appear as the more possessed and used ones because of their positions (Figure 4.5).

Figure 4.5 Housing Frontyards

Side yards are also mostly formed in apartment housing areas in Turkey, because the buildings are usually in detached order not adjacent on sides.

4.1 Properties of the Housing Backyards

The housing backyards dealt within this study are limited areas formed in the back of each building positioned on a lot and they are among the spaces which have been defined as lost spaces by Trancik (1986).

On a lot, the residual area from the construction area determined by the development code belongs to the dwellers of that building. Yet, for each lot, these areas usually have limited sizes. For this reason, functions which could be attached to the spaces are restricted which causes these spaces to stay idle, which can not be used in any way (Figure 4.6). Also, the fact that these spaces are perceived as both semi-private and private ones avoid the feeling of possession.

Figure 4.6 Housing Backyards

Spaces created in the back of appartment houses are usually hard spaces, as they are defined and limited by buildings. Out yards (at the same time) include also natural components. In this study, this kind of spaces are handled within residential block, and housing backyards are accepted as areas, which are formed by the unification of each backyard in that residential block.

These limited areas, which are appropriate for a lot of functions when joined together are important urban components, which can improve the urban living standarts. The most important factor which introduces the utility of these areas is legal arrangements. In order to clarify the definition of these spaces, it would be appropriate to touch upon the process to accept these areas as areas of urban architecture in the world.

The industrial revolution and the following movements of modernizm and postmodernizm have altered the urban centers to alter. This modification has brought along with it new approaches to space and urban outdoor space. Lost spaces within the city became gained important new potential for new urban spaces. In this process first, the public urban outdoor spaces were dealt with and the buildings and façades surrounding these spaces and the natural and artificial elements within these spaces were approached to with aesthetic and functional concerns. In time the housing areas gained

importance. The spaces formed by the buildings in these areas were thought to have a potential with the formation of the *'yard'* concept.

> The breaks of row house blocks exposed the backs as well as the sides of structures. Often, untidy jerry-built back additions became visible along with the backyard. The term *'yard'* comes from the world of work -shipyard, lumberyard, brickyard- and, true to form, backyards contained the houses, laundry facilities, trash containers and piles of building materials. It was anything but a garden. In the early industrial cities of Britain, such yards were often walled, but in American cities, this was rarely case. So as buildings were removed, the littered landscape of backyards set the aesthetic tone in many neighbourhoods. The backs of houses became even visible with the advent of service alleys. During the nineteenth and twentieth centuries, the messy functions started to move to the alleys. So the alleys and backyards of houses gained importance in the residential areas (Ford,2000).

Despide of the lack of resources about this subject, the formation of the notion *"yard"* is taken as an effective criterion in the perception of housing backyard as a space, and the subject is considered in this context.

Oktay (1984) argues that these spaces are important because of their potential features which could meet the needs of housing dwellers, and explains that there is a need for smaller and more private kinds of common space shared by few groups of families apart from the public parks at the neighborhood level. This common land forms the heart and soul of any housing group. The space which can meet this need is the one, which is between the apartments on an residential block since it is a well defined, safe space and has a semi-private ownership structure.

4.2 Perception of the Backyard

> We may walk through and past the building, and as corner is turned an unexpected building is suddenly revealed. We may be surprised, even astonished (a recreation generated by the composition of the group and not by the individual building). Again, suppose that the buildings have been put together in a group so that one can get inside the group, then the space created between the buildings is seen to have a life of its own over and above the buildings which create it and one's reaction is to say ' I am inside IT' OR ' I am entering IT' (Cullen, 1961).

As much as the proper design of a space, that a person should feel psychologically comfortable in that space is important in the utility of the space. Gehl (1996) mentions the effect of human perception on a design as; familiarity with human senses -the way they function and the areas in which they function- is an important prerequisite for designing and dimensioning all forms of outdoor spaces and building layouts. It has been formerly mentioned, that in this study housing backyards are considered within the context of urban space concept. Therefore, we can assume that perception of housing backyard is in a wider sense the perception of an urban space.

Places affect us directly through our senses. The sensuous quality of a place is a consequence of form and how and by whom it is perceived. Its requirements may not coincide with technical demands but can not be seperated from them in designing or judging, nor are they 'imprical' or merely decorative. In essence, the sensuous experience of place is spatial, a perception of the volume of air that surrounds the observer, appreciated principally but not entirely through the eyes, the ears and the skin.

> Human movement is by nature limited to predominantly horizontal motion at a speed of approximately 5 kilometers per hour, and the sensory apparatus is finely adapted to this condition. The senses are essentially frontally oriented, and one of the best developed and most useful senses, the sense of sight, is distinctly horizontal. The horizontal visual field is considerably wider than the vertical. If one looks straight ahead, it is possible to glimpse what is going on to both sides within a horizantal circle almost ninety degrees to each side (Gehl,1996).

Most people understand this when arranging an living room inside, but will ignore it in the arrangement of an outdoor space. On the other hand, it is as important to consider the layout and positioning of dwellings to create enclosed spaces as it is to design the rooms within the homes themselves. Oktay (1984) says that the concept of outdoor space is basically similar to indoor space.

In the perception of space and communication between people, the distances between the elements, which build up the space, are important. Hall (1966) defines a number of social distances, that is to say, customary distances for different forms of communication in Western European and American cultural sphere;

- Initial distance (0-45 centimeters) is the distance at which intense feeling are expressed; tenderness, comport, love and also strong anger.
- Personal distance (0,45-1,30 meters) is the conversation distance between close friends and family. An example is the distance between people at the family diner table.
- Social distance (1,30-3.75 meters) is the distance for ordinary conversation among friends, acquaintances, neighbors, co-worker and so on, the sofa group with armchairs and a coffee table is a physical expression of this social distance.
- Public distance (greater than 3,75 meters) is defined as the distance used in more formal situations – around public figures or in teaching situations with one way communication or when someone wants to hear or see an event, but does not wish to became involved.

In the perception of space in general, the distances and sizes are important. Functions and design elements including these functions should be positioned in space by taking these data into consideration. In this positioning, two different situations, isolation or contact occur in the perception of the space. These situations arise by means of five different

ways for each element, which build up the space. Gehl (1996) summarized this grouping as seen in the table below;

Table 4.1 Isolation and Contact
(Gehl,1996)

Isolation	**Contact**
Walls	No walls
Long distances	Short distances
High speed	Low speed
Multiple levels	One level
Orientation away from others	Orientation towards others

4.3 Existing Utilization Types

As mentioned in the previous chapters, the area defined as housing backyards is considered in residential blocks where appartment buildings are situated. In this kind of residential blocks, housing backyards in each lot are undefined and small spaces. These areas are generally seen to be left-over areas around the residential block, because they are not considered as a whole with that residential block, consequently ending up with limitations of functions intended for these areas (Figure 4.7).

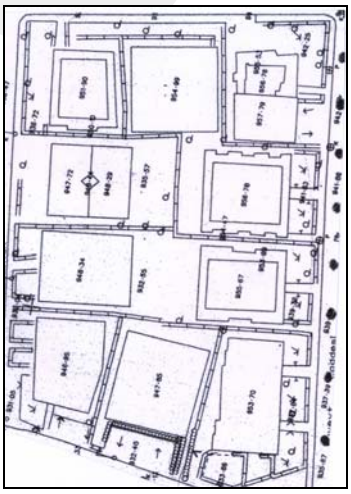


Figure 4.7 Housing Backyard in an Residential Block Made up of Residutial Buildings

Especially in big cities, housing backyards are used as car parks depending on their size and geometry. This kind of usage appears especially in housing areas where old housing fabric is observed intensely. However, also in new ones, because of their limited sizes, in these areas users are confronted with various utility problems. The foremost of these problems can be listed as;

- that these car parks do not fit the standarts
- that they can not serve to all of the dwellers (Figure 4.8)

Figure 4.8 Use of Housing Backyards as Car Parks

Another utility method of these housing backyards is as depots or storage areas. This unaesthetic and un-hygenic method appears in some backyards, which have not been found worthy of designing due to their small area (Figure 4.9).

Figure 4.9 Use of Housing Backyards as Storage Areas

Most of these areas are used as green areas made up of various wild plants and some planted elements. These areas are formed due to the efforts of the dwellers of that apartment building in order to increase the security and quality of view of their back façade rooms. This kind of usage can be seen as a signal of a need for outdoor spaces expressed by the urban dwellers (Figure 4.10).

Figure 4.10 Use of Housing Backyards as Green Areas

Also, housing backyards occur as left-over areas not used for any specific function. Especially, the topography conditions and their limited size makes this situation a must. As a result, these potential areas, which can be turned into recreational areas can not be used within such a dense housing fabric. (Figure 4.11)

Figure 4.11 Unused Housing Backyards

As seen in sample pictures and plans, functions intended for these areas vary with size and geometry. However, the common point of all of these uses is that they end up in undefined, unidentified, non-possessed, and visually low qualified spaces. Mostly, they are organically formed areas, which definitely are not results of a design process.

In the existing development order, the only way of building, which enables the design of housing backyards of that particular residential block is mass housing. The owners of houses see those areas as their common property and possess them. For this reason, they appear as secure areas, which help people to communicate. These areas, where multiple functions are carried out according to their sizes and the needs of the users, provide improvement in urban life quality (Figure 4.12).

Figure 4.12 Housing Yards in Mass Housing Areas
(TOKİ,2000)

4.4. Potential Ways of Utilization

Housing backyards are restricted in size in and usually are idle when considered for each lot. However, as mentioned beforehand, these areas are considered as a whole in the scope of this study. In this way, when the property boundaries are neglected, it can be seen that these areas are big enough to house various functions.

It is possible to mention two important social functions, which can be carried out in these areas. First, the land makes it possible for people to feel comfortable of their buildings and their private land, and therefore allows them to feel connected to the larger social system. These areas are the places for neighbors to meet and communicate. Relation with neighborhood is less important in modern society than it was in the traditional society. Oktay (1984) says that because of that people meet friends at work, at school, at meetings of interest groups and therefore no longer rely exclusively on neighbors for friendship. To some extent this may be true, the common land between houses might be less important than it used to be as a meeting ground for friendship. However the common land between buildings may have a deeper psychological function, which remains important, even when people have no relation to their neighbors. Consequently, a building without common land around it may be cosidered as isolated from society as if it had just a chasm there. However, like Aral's (2003) study, several approaches propose to design these spaces as pedestrian precincts that combine each other.

Another function of housing backyards may be housing public activities for dwellers. These areas can provide enough space for activities from which the dwellers can benefit. At this point, the size of the particular housing backyard and the density of the dwellers gain importance. Alexander et al.(1977) suggests that the amount of common land needed for a housing is on the order of 25 percent of the land held privately. In this study, four main groups related to the size and dweller density ratio are formed in order to dwell upon the various functions, which can be performed in these areas. These groups are;

- car park
- children's playground
- park
- sports fields

Generally car park is not prefered by dwellers because of their view. But nowa days it is the most important need for housing lots.

Children's play spaces need not be unsightly, but should been so that children can not run out of them into a carrier way.

> A typical suburban subdivision with private lots opening of street almost confines children to their houses. Parents afraid of traffic or of their neighbors, keep their small children indoor or in their own gardens. But it is essential to a healthy emotional development of a child to form the child with other same-age children (Keeble,1959).

For this reason, it is reasonable to think that housing dwellers need a children's playground positioned nearby their houses.

A park is an example of an urban outdoor space, which includes some elements in order to provide various activities. Parks are spaces, where the user range is vast. The concept of park usually brings into one's mind spaces devoted entirely to public use, whose maintenance is provided by public authorities. This kind of spaces can also house some functions, which require enormous areas. The inclination towards the use of this kind of spaces grows bigger everyday. However, because these spaces are open to public and used by many people, in these areas people do not feel themselves comfortable by means of safety and communication. Yet, a park space nearby the housing areas, where everybody knows each other can be idealized as a space, where people can feel safe and free to communicate with others. For this reason, in a residential block a park, where some functions, such as jogging, rehabilitation, reading etc. can be carried out, seems to meet all those needs properly. Functional variation in these areas will change according to the size of the space and the user density.

In this study, areas defined as passive play fields are considered to have suitable properties of sports areas. Usually play fields in housing areas are arranged according to some sort of sports, which acquire small areas but

conserve the maximum amount of people. Some examples of these sports sorts are basketball, volleyball and football. Sports activities, which can be performed on these play fields vary with the size of the area, density of the use and user profile. Generally, these areas are public, which are situated in such a way, that it would be open to the use of the whole neighborhood. From the point of view of safety, these spaces should be situated near the housing areas and should be rather used by a certain housing group. That is why, within the scope of this study, this kind of use is determined as a possible function for housing backyards.

CHAPTER 5

THE IMPACT OF THE LEGAL FRAMEWORK ON THE DESIGN OF RESIDENTIAL BACKYARDS

> Buildings existing together in a group and the perception formed by the space in the midst of them is different from the oneness of the buildings (Cullen,1975).

The purpose of the designer is not only to create positive solids, but he/she is also responsible for the positive voids, which mostly are formed as leftovers. In contemporary cities attention is paid to independent buildings where as quality and organization of spaces between the buildings are usually uncontrolled. These spaces, with their fortuitous locations and forms are potential places, which could help to raise the life quality of city-dwellers.

A discouraging, even hindering factor against the conceptional description of urban spaces and their realization are legal regulations. Development plans and related laws have important effects on the forms of residential blocks. This study is based on the problems and the laws which are effective in their realization. Previous chapter detailed the definition, boundaries and existing usage types of the housing backyards. This chapter discusses the related parts of the Development Law, that have an impact on the design and usage of these spaces, are discussed.

The examination of the laws in force in the context of urban design is very or important for the scope of this study. Thus, the limits of the study should be determined by means of legal arrangements (regulations) and urban design scale. As Çubukçu (1997) mentiones, urban design concept is an ordering tool applicable in different scales, which may begin from big project works in national scale and stretches out to micro form such as sub-scaled detailed plans.

The spaces investigated in this study are not city-scaled urban squares, urban parks, urban streets and other urban public areas. The scope is restricted with the scale of the daily life environment, namely urban spaces in residential areas. Another restriction that needs to be clarified is the choice of legal restrictions dwelling on the development laws. Today, the main part of the development laws related to the subject, is the Development Code. Development Law number 3194 in Turkish legislation, which has been effective on the urban space, the regulations prepared according to the 44. article of that law, development plans which are prepared in conditions projected by the 8. and 9. articles and lastly the Condominium Law number 634, which have been effective in the emergence of these plans will be considered here.

After dwelling on the positive and negative sides of the regulations in Turkey, in order to abolish any drawback, legal arrangements of some countries (such as Germany, France, Japan) as relevant examples are studied. Some proposals are formed with sample area method for various building lots.

Although there are a lot of legal codes monitoring for the development of cities, the Development Law number 3194 and Condominium Law due to its role in the shaping of the Development Law are the most effective ones.

“Development Law is a whole containing all of the regulations, which arrange the characteristics of the structure including all the different

functions of official and private nature to do on an immovable property according to their form and aims" (Elder,1988).

5.1 Development Law Number 3194 and Its Scope

The Development Law number 3194 comprises seven chapters including; general provisions which aim the formation of settlement areas and the structuring in these places according to plan, science, health and environmental conditions, *fundamental principles related to Development Law, allotment and joinder procedures, fundamental principles related to buildings and roads, various provisions*, and finally *operative effect and law enforcement with provisional articles*. The realization of development plans is based on this law. It would be convenient to briefly analyse this law's content and defects before dealing with the legal arrangements which directly influence urban space formation.

In the first chapter of the Development Law, general provisions have been settled upon. In article 5 general definitions, which would pass in the law have been given, however the concept of urban design has not been mentioned. This is an indicator of the neglect about this concept beginning from theory and stretching out to legal arrangements. It is a serious drawback that outdoor spaces were not involved in the general concepts defined in the law, whereas terms about parcellation and buildings were detailed. This approach is an indicator that the legislators perceive urban space as a natural outcome of parcels and buildings. "Yet, when examined with scientific criteria, it can be realized that the solids bring the voids a positive character" (Bala,2001).

In the second part of the law, fundamental principles related to the Development Plan has been considered at length. The realization and application of the development plans is a vital and complex subject, because of its effects on the lives of the inhabitants resulting from the definitive role on the development of a city and it's formation.

Then, in the third part of the Development Law the legal arrangements in the scope of allotment and joinder procedures are examined. However, the compherensive design concept, which is inevitable for urban spaces' formation, comes across some obstacles because of the parcellation method (Figure 5.1).

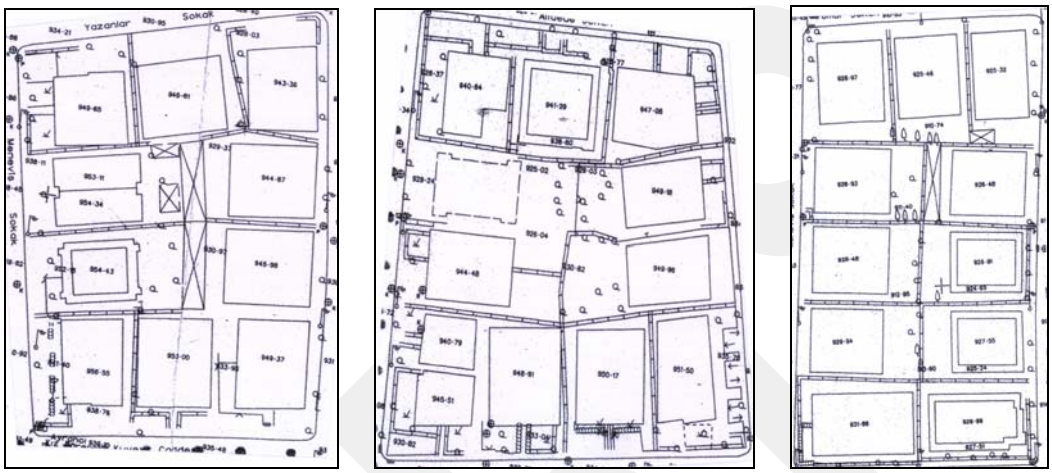


Figure 5.1 Parcellation Organization and Structuring Examples
(Aşağı Ayrancı 1/1000 halihazır)

> Today, actually parcel organization is a highly determining factor in the formation of urban spaces in the close environment of buildings. In what way this system, which is generally preferred for its functional use in bringing clarification to the ownership issues, effects the structural environment. As a matter of fact, relevant to the rapid urbanization, it is obvious that the multiple storey system, which became a necessity in our contemporary time, can not reconcile clarity with the ownership with the aforementioned parcel system, or satisfaction with the property feeling on the building plot (Evyapan,1980).

Parcels owned by different people cause a lot of trouble for a compherensive design approach. In these fragmented areas, the quality of space decreases, and also the utility of them becomes a difficult issue. As Gök (1981) mentions, the fact that every property owner can not move in accordance with others, makes the compherensive design approach imposible. Most of the time, buildings built by small entrepreneurs of *"private*

contructurel" mentality on the base of condominium have a collective ownership within the limits of the parcel. Therefore, they can meet their needs by building up independent sections or common places in accordance with the rights gained from the base of condominium. But, the building built within its property boundaries should meet all of its needs again within the same boundaries. Thus, buildings matching the number of parcels within building blocks are located and lined up side by side on their spot determined by the Development Law. Users can not meet their needs neither from their own yards nor from their neighbor's. In other words, as a pattern, cities mostly consist of parcels and small buildings within them.

Furthermore, in order to achieve higher profits from a building, the construction permits are used to their limits. The front, side and backyards stretching along the building, which are left from the parcels filled with buildings until the last cm² given the right by development regulations, don't show any characteristic of neither playground for children, nor garden for the adolescents or a resting area for grown-ups (Figure 5.2).

Figure 5.2 Layout of Residents on the Parcel and the Spaces They Form

Spaces formed in this way can not be designed properly because of the concept of ownership. Güzer (1985) mentions that a building block is a group of parcels on which buildings rise and it is made up of a lot of left-over areas insufficient by themselves. A lot of parcels with left-over areas being side by side does not have a meaning; this area surrounded by roads will not give a meaningful whole. In this way unqualified cities are being

formed; and the existent Development Law does not give way to another formation. This situation constricts the area on which the architect would create his design, and also causes the streets retain very different façades due to the concerns about becoming identical, creating chaos in the end. This kind of a texture is the one which is inharmonious with the urban aesthetics.

In fact, in constitution of 19th article which specifies parcellation, the development plan has neglected the arrangement of building of more than one building on one parcel or establishment without allotment and this brought into effect of Condominium Law provisions. However, this flexibility is only used by the sector which produces mass housing (Figure 5.3).

Figure 5.3 Spatial Arrangements in Mass Housing Areas
(TOKİ,2000)

However, the areas which come up in this study are situated exist in the residential fabric. This mentioned flexibility of the law should also be used in the design of the spaces formed as the residential backyards. A second way, except for the flexibility mentioned in article 19 is "to overcome the mostly applied philosophy of *one parcel, one building* by offering a development amendment" (Tekeli,1982). However, it should be realized that today due to less of ethical assets, this kind of an offer would be

rejected for being a loss of time and money. This proposal aims to cover the any gaps in the graduation of plans, which develop from macro scale to micro, and the production of plans in every grade.
Another important article which takes place in this part of the law is application of article 18 (Land Readjustment). This part includes the transformation process of unstructured environment into a structured one or structured environment again into a structured one. Again this part contains the part of the law which arranges the derivation of the areas which would provide the possibility of urban space design. This article has an important role in formation of urban space.

In the 4th part of the Development Law, *the fundamental principles related to buildings and roads* have been stated. In this part, the subjects of the Development Law which are concerned with other subdivisions than urban design such as the conditions and terms of receiving a permit are mentioned.

In the next chapter of the law, subjects related to the application of present maps, development plans and building projects are dealt with. Bala (2001) says that development plans are concrete examples of the physical environment created by laws and regulations. No matter in what type and scale they are, plans are legal documents which determine the formation and development of the city. In the process of design, different plans in every scale and specific for purposes are prepared. Among these, application development plans are the legal documents which indicate how to make use of the urban land, and how to form physical spaces. Conditions such as road width, type, area usage, storey-height, building intensity are determined with this document. Allotment and joinder procedures are performed according to this plan, which defines the urban physical plan. After determining roads, green areas and social areas, building lots are allocated into parcels by cartography engineers. The structuring conditions upon these parcels are again determined with application development plan and development regulations. In this way, the

contribution of the architect is reduced to one on the parcel level, even to the façade of the parcel facing to the road. By the design of a building according to the development plan provisions, development regulations and the conditions set over the parcel, unsuccesful urban spaces occur. The definitive role of the architect stays limited to that specific building, as the legal arrangements, even if the architect is concerned with the urban design, do not provide the neccesary opportunity for him/her to work upon it.

In the 6th part of the law, arrangements relating to Bosphorus, which has a unique texture are included. In the following chapter, provisionary articles related to the law are examined.

Approach to urban design, the graduation of development plans, qualities of designers, the ways the development plans are prepared, the necessity of corporation among disciplines in production process of development plans are very important issues in the formation of urban spaces. However, with the regulations prepared in the light of general laws, the possible arrangements for these areas are restricted and limited. This situation caused the formation of unqualified residential backyards.

5.2 Legal Arrangements Affecting the Formation of Urban Spaces Directly

The legislation rules are more closely related to the formation of urban spaces than the development plan and the rules which appear in Development Law and related regulations. In this context, this part (of the study) will discuss *Municipality Type Development Regulation out of the extent of law number 3030*, which was prepared on the base of article no 3193 of Development Law and which is executed in areas having a development plan in every town's municipality's contiguous area limits; and the Regulations about the fundamental principles related to land and plot organization according to the 18th article of the Development Law, which explains in detail the land organization subject will be discussed.

5.2.1 Municipality Development Prototype Regulation and its Defects

The provisions included in this regulation are used frequently. "The rules which affect urban space formation of this regulation can be analysed in two groups: rules which affect the planning as a matter of land and rules which affect the planning as a matter of building" (Bala,2001). Information concerning the urban space will be taken out of present articles due to lack of definitions about the urban design concept in the overall legislation.

Urban space has three components:

a) The distance between the buildings (definitions about parcel and garden distances, minimum dimensions for the width and depth of parcels, dimensions of garden distances)

b) Building heights (dimensions for building heights)

c) Positions of buildings according to each other (definitions about arrangement systems) (Bala,2001).

In the residential areas of the city, it is a general principle that the building lots are formed after the arrangement of traffic roads and arteries (Figure 5.4). Residential blocks are divided into parcels, which are the smallest sections in the application (Figure 5.5). "Housing types and building systems in parcels display the outdoor space understanding which derives from the nature of the legislation" (Bala,1998) (Figure 5.6).

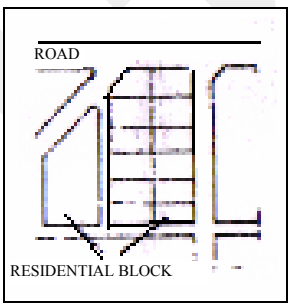


Figure 5.4
Structuring Lot Formed with Planning

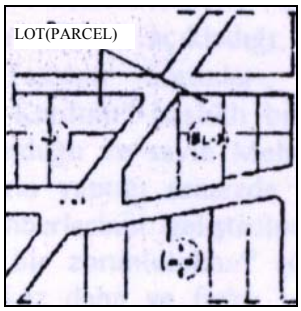


Figure 5.5
Parcel Formed with Planning

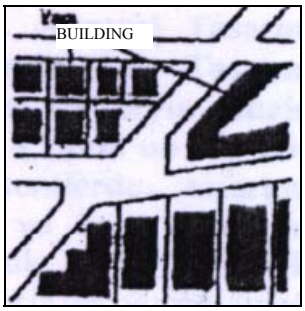


Figure 5.6
Urban Space Formed with Planning

(Bala,1998)

The garden dimensions mentioned in the article 18 of the regulation determines the outdoor spaces formed around the urban residential areas. These spaces are left-over as a natural result of the building's location. For this reason, in residential areas frequently detached building is seen (Figure 5.7). Detailed content of this article is as such:

Article 18: Garden distances:

1) Front yard distances: the distances of frontyard and frontyards on the road side of the buildings to be built in settlement areas is at minimum (5.00) m.
2) Side garden distances are (3.00) m's to 4 storeys (including 4 storey buildings). For each storey above 4, the garden distances should be increased (0.50) m (TAU, 1996).

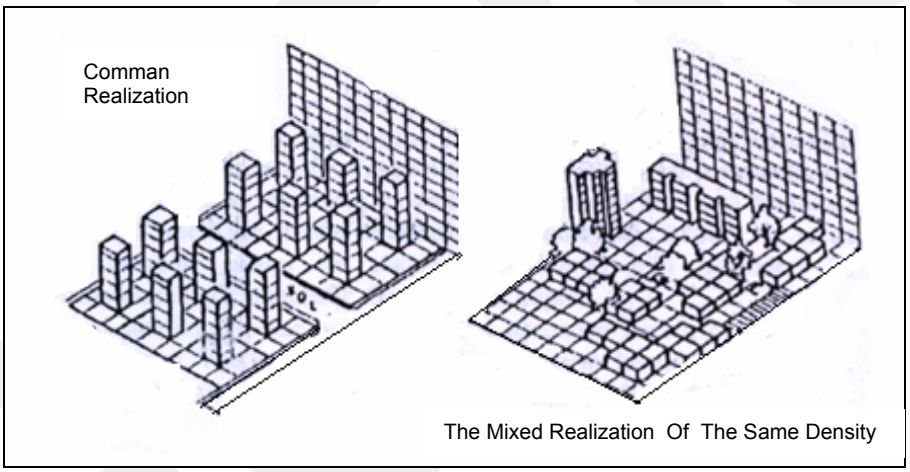


Figure 5.7 Hypothetical Space Formation Evaluation About the Garden Distance Increase Relations Mentioned in the Article 18 of the Type Development Regulation In Detached Order
(Bala,1998)

The result obtained through the mathematical evaluation of the relation between garden distances and height increase is that setback distance in other words the distance between the buildings does not increase with the same ratio as storey height. It is impossible to talk about a high-quality space with the height increase because the determination of parcel size is an abstract thought based on the width and depth of the building (Bala,1998).

What should be done is to increase the side garden distances at the same ratio with the height. This requirement brings about the necessity of formation of bigger sized parcels. Evyapan (1980) says that in detached order, the main goal is to benefit from light, air and sun to the maximum extent. Yet, in the present format of side garden distance, the buildings get very close to each other. Thus, the ratio of the distance between buildings to the height drops to 0,3 (Figure 5.8). There is a kind of closeness which would cause claustrophobia. "The loss of intimacy and territorial areas in this area which gives a sense of narrowness and closeness brings about the abandonment of outdoor spaces which are extremely shadowed as a natural result of closeness" (Bala, 1998).

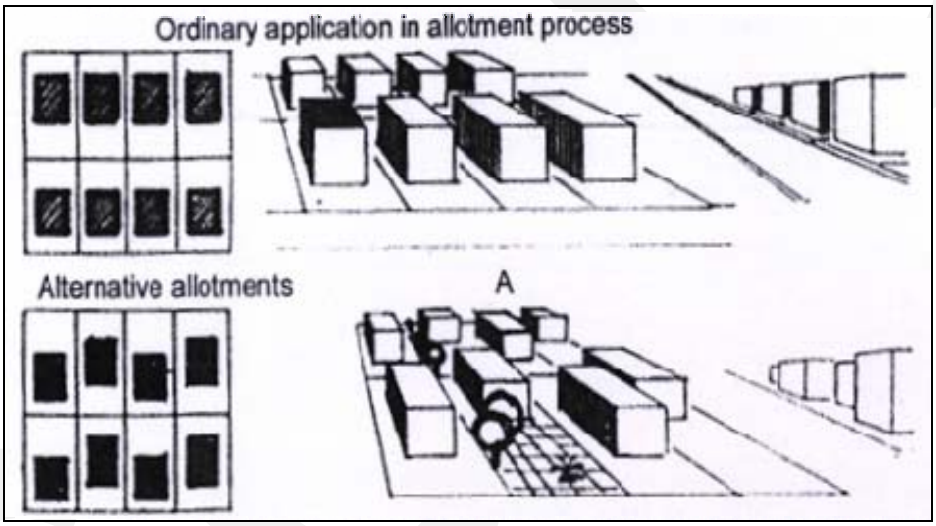


Figure 5.8 Examples of Outdoor Space Formation According to the Development Code (Akkoyunlu, 1999)

In order to be able to make a situational analysis, the gap between the building parcels should be determined. Evyapan(1980) says that in attached order, minimum parcel width is at the same time minimum building width. And urban space is defined with the building blocks which come side by side. If there is a proportional road, square, avenue or park; this situation would be more positive when compared to the detached order (Figure 5.9).

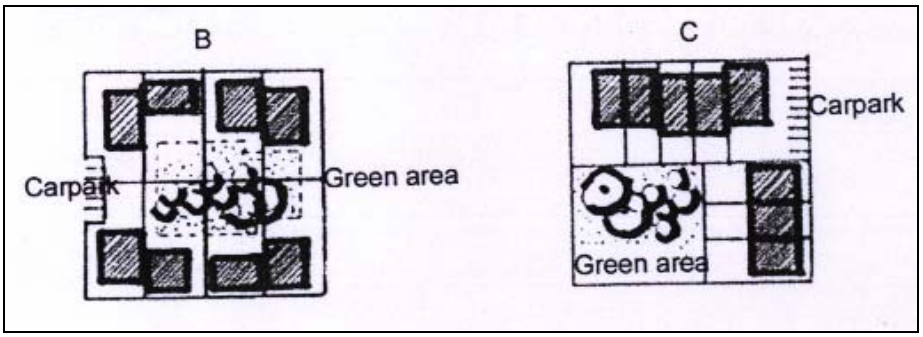


Figure 5.9 Urban Space Formation Around Residences in Attached Order
(Gök, 1981)

In brief, if the distance between the building blocks set according to the development code is small related to height, blocked and disused areas will result (Figure 5.10).

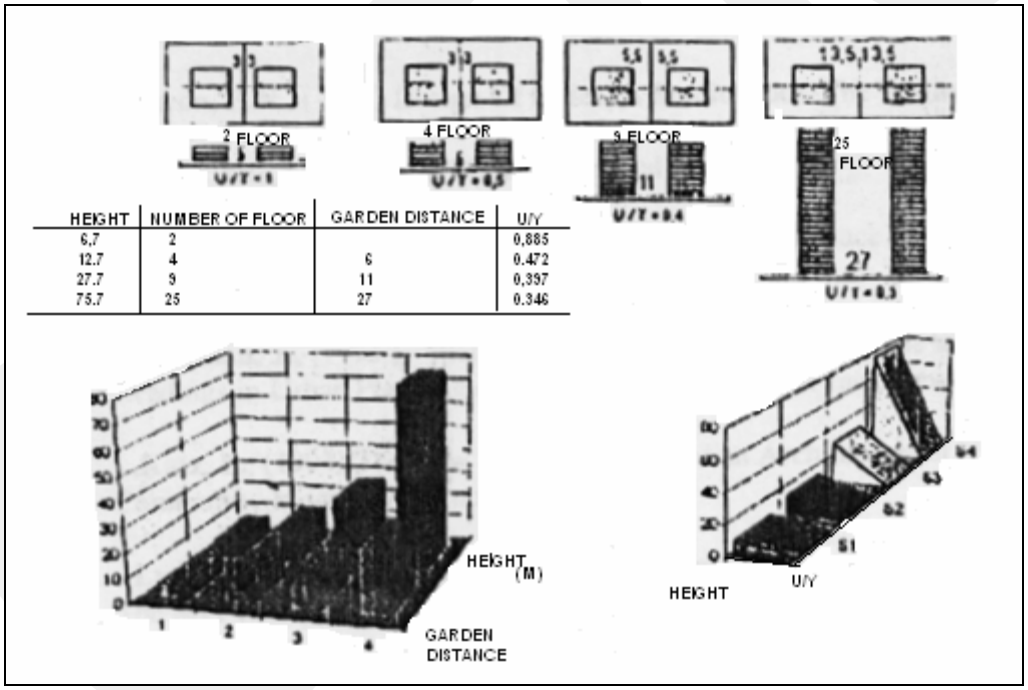


Figure 5.10 Height-Garden Distance Relation
(Bala,1998)

5.2.2 The Regulations About the Fundamental Principles Related to Land and Plot Organization According to the 18th Article of the Development Law

Land Re-adjustment Act was passed in Turkey in 1985 with the hope that with this act the implementation of zoning plans could be operated more effectively in the expanding areas. Since then it has found numerous applications (Yomralıoğlu,1996).

In Turkey, urban spaces come out as a result of development regulations. Development planning is basically established on two-dimensional land allotment, thereby passing from the cadastral property order into land rearrangement and development order. During this process, due to the lack of efforts to create semi-private urban spaces, 18th article is only used as a guide in the formation of urban common spaces. Therefore, semi-private public spaces are again neglected.

The definition of article 18 in the Law is as follows;

> Within the development boundaries, the municipalities have the power of consolidating the land-with or without a building on it- with other parcels, with road left-overs and with lands that belong to public institutions or municipalities; re-subdividing these land into blocks and parcels in accordance with the development plan; re-allocating the parcels to the shareholders depending on the basis of independent, shared or flat ownership and to directly (re'sen) conduct the registration procedures without taking the consent of related landowners and shareholders. If these lands are out of the municipal or development boundary, the above- mentioned power is utilised by goverment (TAU,1996).

As Gür and Koçhan (1999) mentioned the basic principles of the Act is that the local goverment has complete authority to apply the zoning plans within their district without the consent of the landowners. The main statement of Act is that landowners that have any parcel in a land readjustment project area have to give up 35% of their land for public use. The percentage

depends on the required common facilities. The basic idea of this method is to plan the sites for the landowners and to re-allocate the area to them. Eventually, the landowners are given their land registry certificates.

Briefly, cadastral property structure divided by the application of 18th article is transformed into a structure divided for a second time for the public interest, namely development parcel. Consequently, spatial organization is limited with only the allotment of the land creating non-aesthetic, non-creative and non-flexible, uniform and banal urban spaces.

Beneath these law articles effective on the urban space formation, condominium law is one factor effecting these articles directly because it is a property right connected with the land share outside the building and common places of the main building. "In condominium law the owner has got the share of the land and independent flat or apartments equivalent with this share, and also has the right to benefit from the common places with other shareholders" (Erdoğan,1972). So, while making an arrangement about a residential environment in building parcels with of apartment housing, the Condominium Law (Kat Mülkiyeti) principles should be beared in mind.

5.3 Legal Arrangement Examples for Residential Areas from Different Countries

In this part of the study, the legal arrangements for the design of residential areas and the nearby environment are analysed. Countries selected for this purpose are: Germany, France and Japan.

5.3.1 Germany

Komae (1986) states that, Flächennutzungs Plan (F-Plan) and Bebauungs Plan (B- Plan) forms the German planning system. F-Plan refers to the general land use plan and its preperation is the responsibility of all

municipalities while B-Plan is the detailed one at district level. B-Plan designates district facilities, land use, floor area, ratio, lot size, height and/or the number of stories, building location, shape and form, landscaping and others. Land readjustment, border adjustment, acquisition, demolition orders and others are also the implementation methods of B- Plan .

“The land readjustment process in Germany is called ‘umlegung’. Rural land consolidation methods have been adapted to urban conditions” (Akkoyunlu,1999).

Larsson (1997) explains the process which is the responsibility of local authorities, from initiative to planning and implementation phases. After land has been reallocated to suit a new development, previous owners stil have a property in the area. Final exploitation is also left to the owners (Figure 5.11). “With a detailed building plan that has been approved, municipalility can start the process of umlegung. Appointed committe or the proper cadastral or consolidation authority can be the executor” (Akkoyunlu,1999).

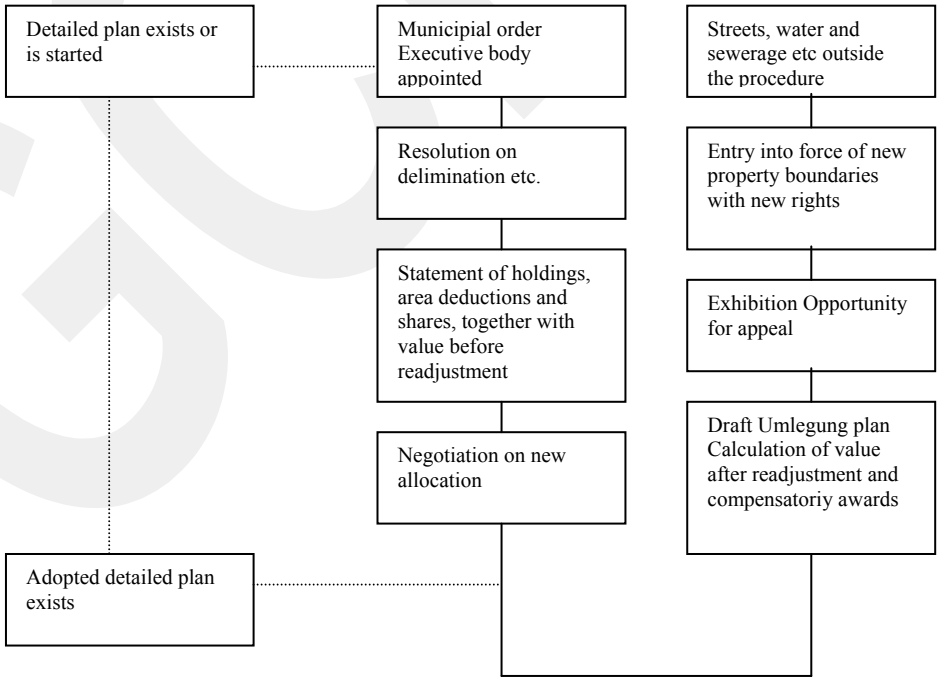


Figure 5.11 The Umlegung Procedure

(Larsson,1993)

Larsson (1997) says that in the process the initial decision is defining the extent of the area in which all landowners are included. There is no possibility of leaving the programme. Initially, owners, parcels and buildings are determined. Following this, parcel sizes in the defined area are calculated to find the total readjustment area. Then, common share for streets, green places and other public areas is reduced from the total area. Everyone gets a share from the left total area in proportion to either the area or the value of his included land. As a contribution to the cost, municipality can take further land.

> A new allotment plan, based on the distrubition of shares is adapted to the approved building plan and this last scheme is discussed by the individual owners. Last revisions are made and the allotment plan is displayed in the locality detailing the period of time for appeal (Larsson,1997).
>
> Further, practical measures concerning roads, water supply and sewerage, parks etc. fall outside the scope of the Umlegung procedure. Normally these are municipial responsibilities. The landowners, however can also be required to construct foothpaths or roads within a precinct. Cost apportionment is uneffected by an Umblegung procedure. Instead it is decided on conventional grounds (with reference to building rights, plot size and street frontage) (Larsson, 1993).

The German land rearrangement conforms with the land rearrangement rules of the Turkish Development Law in broader lines. Land rearrangement process is the same. In both systems the authority is mainly in the hands of municipalities. However, there are differences by means of the quality of the development plans made. In German system a traditionalist structure is point of issue. Building features such as distances from lot boundaries, colour of the buildings, coverings are determined according to the local typology. In the B-Plan made after F-Plan, aesthetic concerns have been one of the major determinators of the formation of space, and this fact hindered in wide scope the emergence of unqualified spaces in the residential texture. Besides, in German system building has been related to its surroundings in plans, and landscape arrangements for gardens have been included, which have not been mentioned at all in Turkish

Development System. These arrangements in the German system are some of the missing issues in the Turkish system.

5.3.2 France

Komae (1996) explains that the planning system in France has two tiers, Shema Directeur(SD) as the master plan and Plan d'Occupation des Sols (POS) as the general land use plan.

The whole process of land readjustment is under the responsibility of the land owners.

> Implementation is conducted by the land owners and the economic gains are under their control. Initiator may be the municipality or voluntary assocation of private interest holders and the assocation can function only the case of agreement (Akkoyunlu,1999).

Larsson (1997) says that the further step is to establish an authorised association, 'fonciere urbanie autorisee' (AFU).

"First,a pre-project must be worked out by the authorities regarding the boundary proposals of the area, the draft record of owners and parcels affected from the project in order to form the basis of the future decisions" (Akkoyunlu,1999). This first step includes the main lines of the project, benefits and estimated costs. "For the pre-project normally a consultant is assigned which is often a private surveyor" (Larsson,1997). It is also possible to get public support for this procedure. In this step existing land use plans of the municipality must be taken.

Prefectorial authority exhibits the Project and receives objections against it. If 2/3 of the land owners agrees on the project and at the same time at least 2/3 of the total area belongs to these owners, the project is accepted. The prefectorial authority can authorise an association of owners within the area

that has the power of implementing the project and recovering the costs from members. Each owner has the right of giving up his property if he announces this in one-month period. The price is determined with agreement or according to the rules of expropriation (Larsson,1997).

Proposed blocks, sites, streets and other constructions are displayed in the readjustment plan. The area that is necessary for the public use is subtracted and remaining land is distributed to owners. As Larsson (1993) states the new value covers at least the previous value of the land. Land can be exchanged for cash. Some of the owners voluntarily prefer to give extra surrender from their land instead of covering the costs with cash money. Following this, the assocation finishes the construction works and

final account of costs and indemnities is prepared before the dissolving of the assocation. The sequence of a French AFU precedure is seen Figure 5.12.

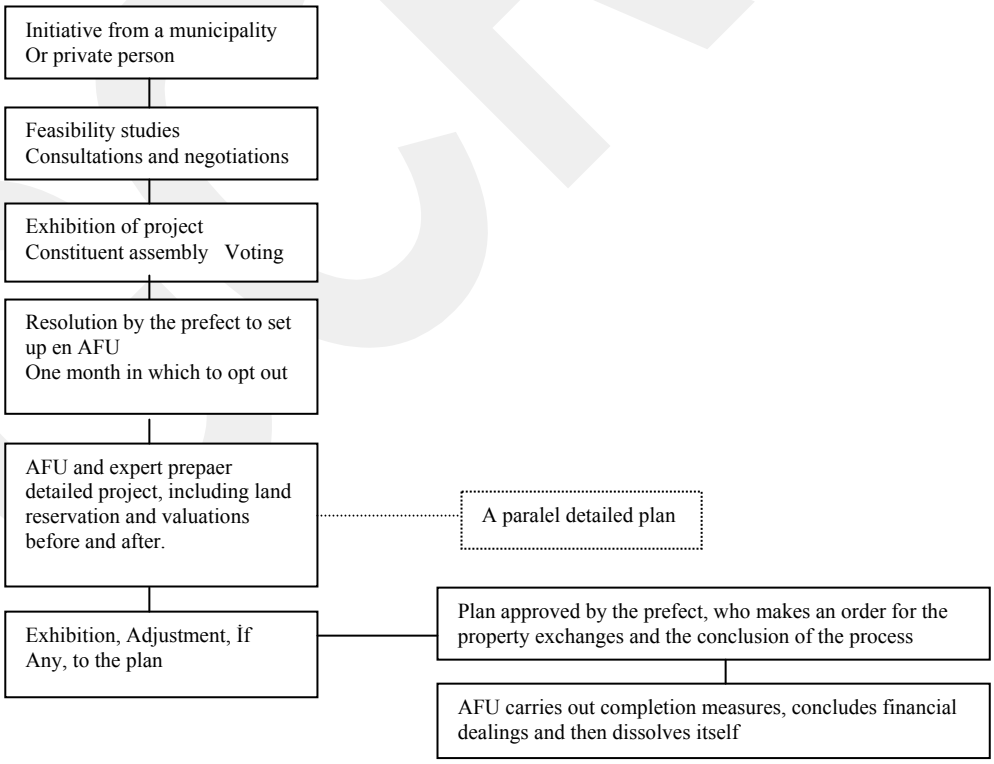


Figure 5.12
Sequence of a French AFU Procedure
(Larsson,1993)

AFUs, then, are much less widespread than Umlegung. There are also considerable differences in the formalities attaching to the two procedures. Where as Umblegung is entirely conducted by the municipality concerned - in principle on the basis of a complete detailed plan- responsibility for the AFU is entirely vested in the landowners, the task of public sector being primaly to supervise proceedings and, to some extent, to encourage them. Planning support varies and, at most there is usually only a structure plan to be consulted at the beginning of the process. These conditions naturally call for a great deal of preparatory discussion and pre-planning, with some risk of the initiators having to defray the cost which this involves. The French procedure is also said to be rather unwieldy and time-consuming, partly because of the provision which has to be made for the rights and participation of individuals.

French system based on public participation, differs from both German and Turkish systems. One of the most important defects of the Turkish system is the insufficiency of public participation, which is one of the major instruments in the planning process. However, in the French system the effect of the municipalities has dissappeared to a great extent. This situation has destroyed public control. For this reason to find a balance in this issue and to obtain the public participation without disturbing the public gains importance.

5.3.3 Japan

City Planning Law of 1968 forms the legal framework of Japan's urban planning practices.

As Komae (1996) mentions land is subdivided into small lots in Japan which makes the development difficult. It cannot be sufficiently achieved if the process relies upon the intents of landowners. The public sector is thus vested with functions to carry out development regardless the landowner's will.

There is land use zoning in Japan which aims to regulate the use, density and form of buildings and which guides the development. Land use zoning is classified as *land use district, special land use zone* and *efficient land utilisation zones, fire protection district, etc.* (Komae,1996).

The zoning decisions are generally taken by the municipality. As Larsson (1993) states the cooperation between landowners has played a very important role in planned development in Japan. Land readjustment process in Japan is called *Kukaku-Seiri (KS).* Unlike the German and French procedures- land readjustment is not solely designed either for the public or the private sector. ”Local authorities, public enterprises, big private entrepreneurs and ordinary land owners can take the initiative and implement the readjustment” (OECD,1986). Larsson(1997) states that half of the projects are developed by private initiatives of individuals or land readjustment associations and the other half are promoted by the public sector of municipalities, prefectures and public corporations. The projects that are developed by the private sector generally have a size of about 20 hectares while the public sector projects are larger than 150 hectares and they are more complex (Figure 5.13).

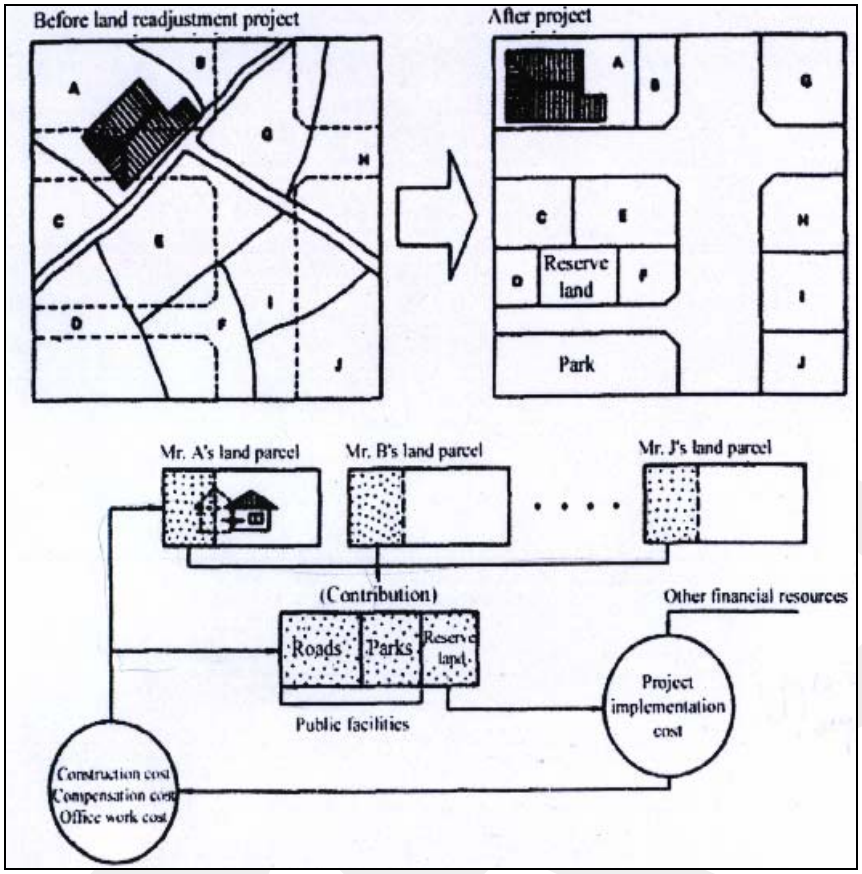


Figure 5.13 Diagram to Illustrate the Basic KS Model
(Larsson,1993)

As Akkoyunlu(1999) states the characteristics of the methodology can be summarised;

- A uniform area or value deduction for all landowners, ofset by the appreciation occuring
- Exchange of land to adapt boundaries to the planned use of the land.
- Complete or partial cost coverage through collective sale of part of the land surrendered.

If the project is carried out by the private sector, it must be supported by at least 2/3 of both owners and leaseholders in terms of number and size of the area. Superior authority must supervise the project, irrespective of the initiator. An extensive pre-planning process including goals, preconditions, planned results and construction, estimated costs and gains must be prepared. The plans are displayed for two weeks

> after which the objections are evaluated and their corrections are made. The authories can approve the pre-plan and its proceeding regulations and establish an authorised association of owners and leaseholders (Larsson,1997).

Generally speaking, planning and plan implementation in Japan involve a great deal of allowance for the interests of individual landowners and lessees. Larsson(1997) notes the criticism about Japanese land readjustment method. One of these criticisms is that the readjustment plan is not always combined with a formal building plan. Therefore, within the same block, the height of buildings can vary. Another one is that the process does not fix the final date of the development. For speculative or other reasons, the actual construction according to the plan can be spared out over a long period of time.

OECD (1986) states that urban redevelopment projects are founded on the principles of owner participation and there is more intensive use of land and title conversion system (Figure 5.14). The system is explained as;

> The system entitles each owner or title holder to co-ownership of the reallocated land and, after demolition and higher density rebuilding to a pro rata share of the floor space in the new building. The system makes it easier to build co-operative blocks of flats and condominiums and promotes community stability by allowing residents to remain in the same area (OECD,1986).

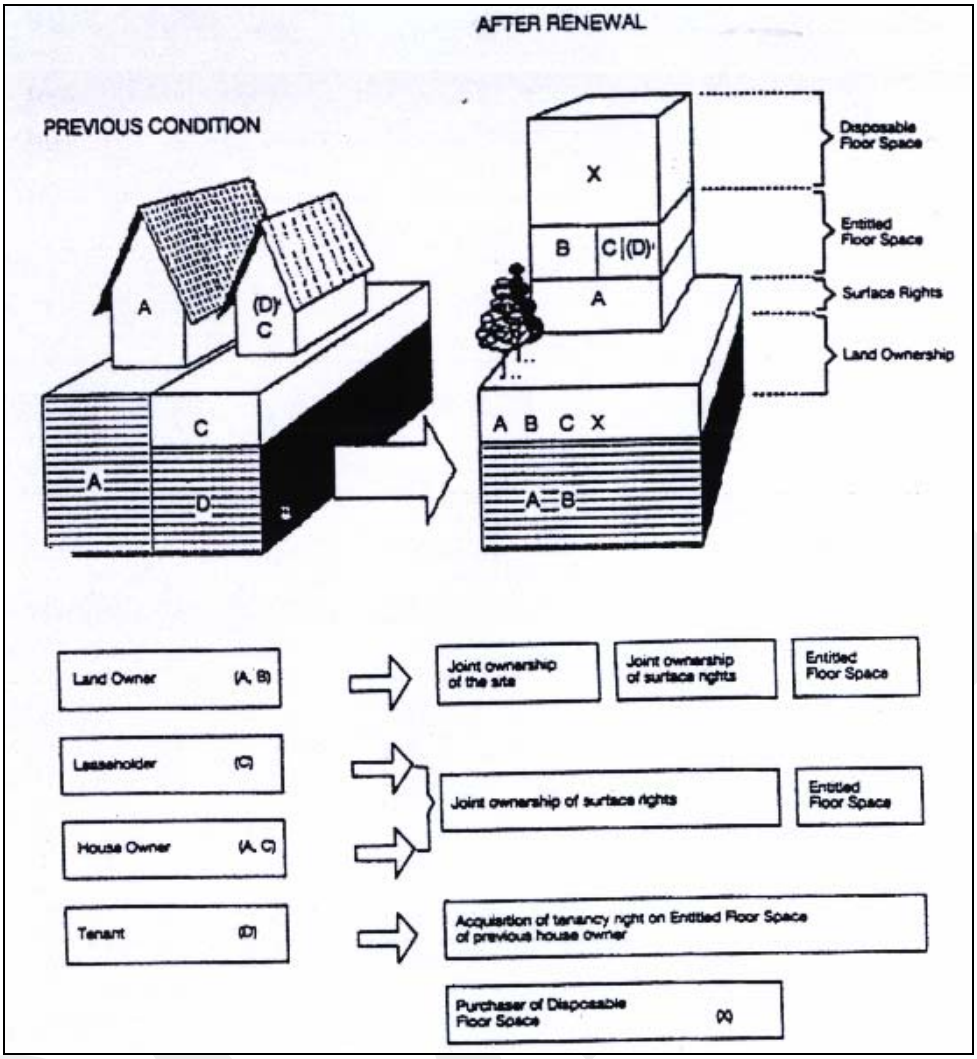


Figure 5.14 Title Conversion System in Japan
(OECD,1986)

"The equivalent exchange system is developed based on tax legislation in order to provide the agreement between a landowner and a private developer" (Akkoyunlu,1999) (Figure 5.15). OECD (1986) mentions that this system is closely related to the title conversion system and designed to achieve the same ends.

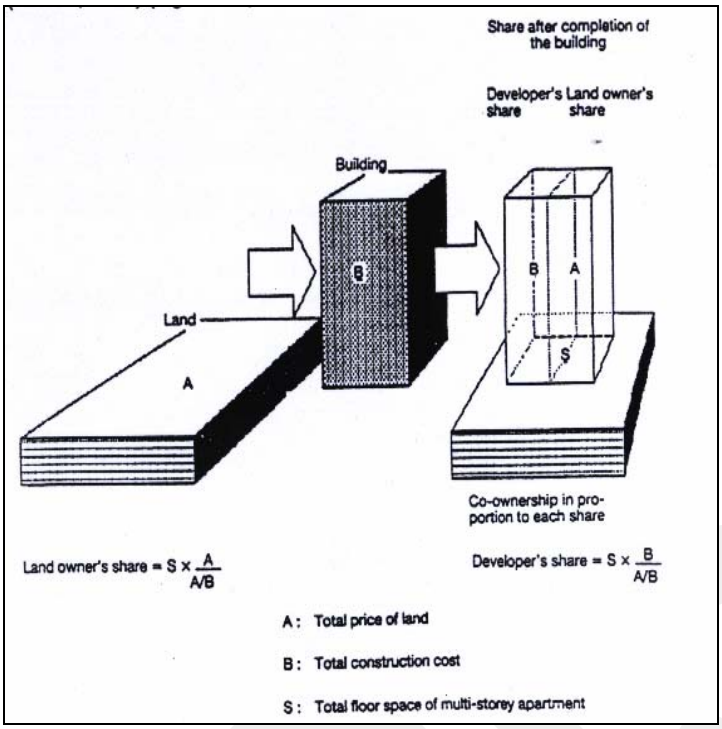


Figure 5.15 Equivalent Exchange System in Japan
(OECD,1986)

"Regulations on building control, building coverage, floor area ratio, shade restriction, height control, set back from boundary of building site etc. are included in the land use of Land Use Districts" (Komae,1996)(Figure 5.16).

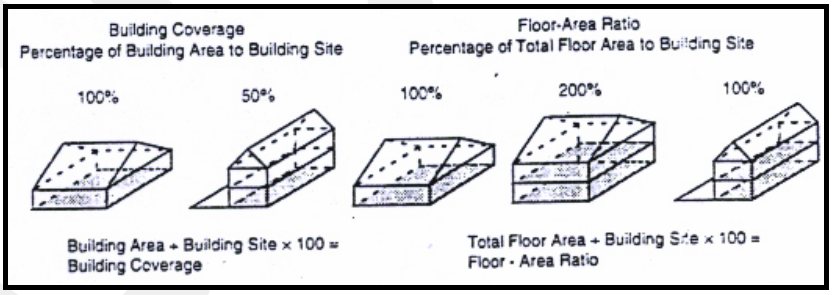


Figure 5.16 Concept of Building Coverage and Floor-Area Ratio
(Komae,1996)

KS, appears to be favourably regarded in Japan even as a future method. It provides a means of urban development based on economic partnership between the private and public sector. Because of these, Japanese system differs from German and French systems. In the Japanese system, the

necessary balance has been reached between private sector and the public both in financial and property right issues. Moreover, the Japanese system is concerned with the environmental order, and therefore obtain better planning solutions. The different side of this system from the French and German ones is that the buildings are generally high-rise and they cause the coming together of buildings of different heights. This situation ends in the detachment of cities from human scale. Japon land rearrangement system is a system which can be taken as an example in public-private accession and obtainment of financial sources.

5.4 General Evaluation of the Legal Framework on the Design of Residental Backyards

In this section of the study, the legal arrangements in Turkey related with the subject are examined, problematic issues are determined, and solutions are suggested. It was seen that spaces in housing areas were formed in accordance with the Development Law with no concern for aesthetic values. This formation, which is also a result of piecemeal the parcellation system prevents a comprehensive planning attitude housing backyards appear as small size left over spaces.

To suggest law changes in order to solve these problems with the light of these examinations is out of the scope of the thesis. For this reason, the thesis is undertaken within today's legal conjuncture and the attempt is to solve, the legal problems with organization and finance models.

In order to realize a design of an area, it is not enough to develop an urban design plan by a designer. In order to realize a plan, it is also necessary to activate the mechanisms related with the application. The first of these mechanisms is the physical planning tool. If the forces shaping the urban structuring are well-defined and used in a way that they support each other then effective tools in order to realize the required transfromation can be

obtained. In addition to these created physical possibilities, a management and organization model inspecting the formation of development under the anticipated speed and discipline, a finance model that will facilitate the activation of capital to support the created physical drives and a transformation model to provide the transformation of the present property structure into a property structure appropriate with the plan should be planned and should be put in circuit with coordination (Elker,2004).

CHAPTER 6

CASE STUDY

In the previous chapter the impact of Development Law on the design of the space was investigated. An organizational and financial model was proposed to fill the legal gaps of the law. In this chapter, it is assumed that the proposed model will be in force at the case study area. After the selection of the best alternative for the area, a more universal method is proposed to improve the common use of the housing backyards.

Under the general scope of the study, the housing backyards are identified with their various aspects, and other factors, which they are in interaction, are attempted to be explained. Making various design decisions for improving the common use of the housing backyards are essential to provide the transition of all the acquired knowledge to space design, because the purpose is to find out clues for implementation in the light of obtained data. Hence, this study aims building up a method that will facilitate making physical decisions to improve the common use of the housing backyards. At this point, it will be convenient to explain the method with case study. For this purpose, in the light of the obtained data various studies are made on the case study area eligible for the scope of the study, and the method is tested with its various aspects.

The case study is implemented in three steps. The first step is the data collection which is undertaken in two parts. The first part is about the physical structure of the space including the data acquired through the investigation of the plan and the land. As mentioned before, the physical components that are effective on design of the space like slope, height of surrounding buildings, size of the backyards and the visual assessment of the backyard, current use of backyards were examined in this part of the study. The second part of the first step can be implemented by collecting data about space users that is driven from the questionaire. This questionnaire contains questions about social information of the users, usage frequency of backyards, dweller's needs, evaluation of the current use and evaluation of the study.

The second step is the development of compatible alternatives on the sample field after overlapping the data collected. These alternatives were prepared by using functional assortment. As mentioned in the previous parts of the study, these functions for the backyard are determined as park, children's playground, sports field and car park in terms of location, usage potential and feasibility.

The last step is the selection of the eligible design implementation after the evaluation of those alternatives based on the multi-criteria evaluation method. In this method, the objectives and criteria were defined. And measurements were made. And these measurment results were compared in same scale with standardization. At the end of this method, the most eligible design was determined.

6.1 Selection of the Case Study Area

In the study, the subject is constrained with the housing backyards comprised of detached apartment houses, which is the most important criterion influencing the selection of case study area. Furthermore, it is essential to select an area in where the factors influencing the formation of

suggestions for space diversify and different situations can be observed. Aşağı Ayrancı is very close to the center of Ankara; Kızılay. For this reason, Aşağı Ayrancı is selected as the case study are among the settlements with these characteristics (Figure 6.1).

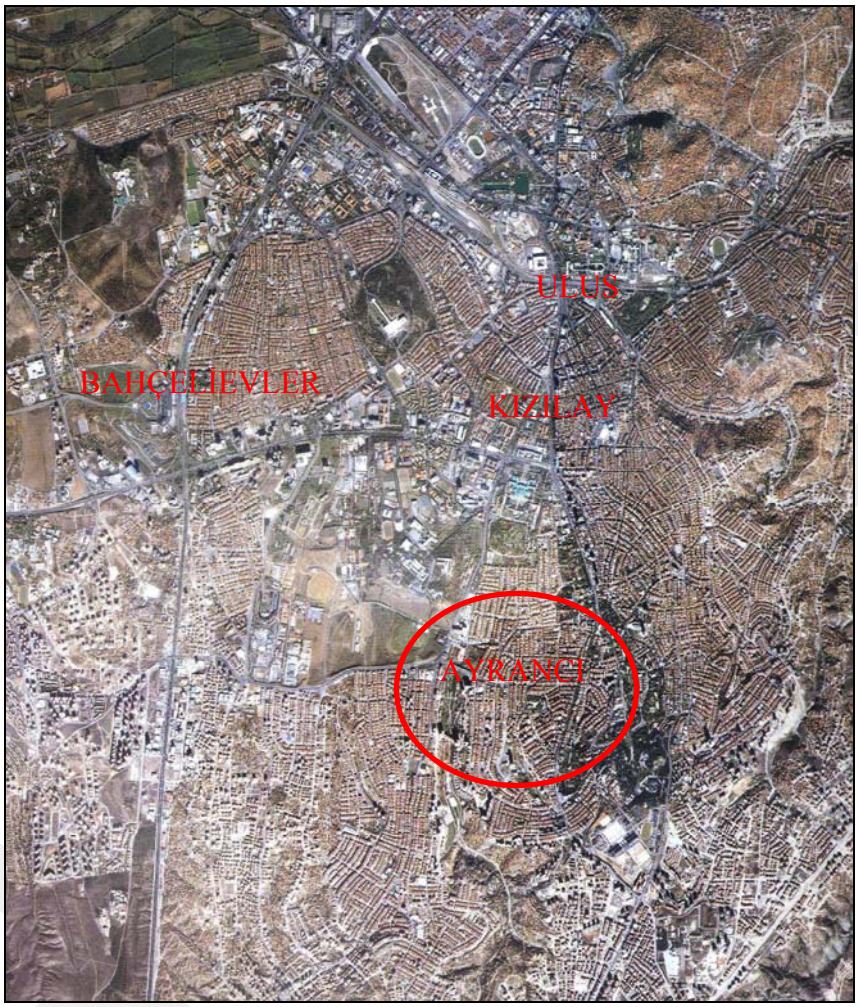


Figure 6.1 Location of the Case Study Area in Ankara
(Intra Spark 2004)

The slope values and land use of this settlement covering a fairly extensive field are examined and then an optimal sample field enabling the study is determined. The case study area is surrounded by Kuveyt Street in the north, Gerede Street and Güvenlik Street in the east, Ömür Street in the south, and Hoşdere Street and Kuzgun Street in the west (Figure 6.2). In the case study area composed of 13 residential blocks, a land use figure

can be seen where the use of space for residential purposes is widespread, though it is possible to encounter with trade under the residences (konut altı ticaret) in some districts.

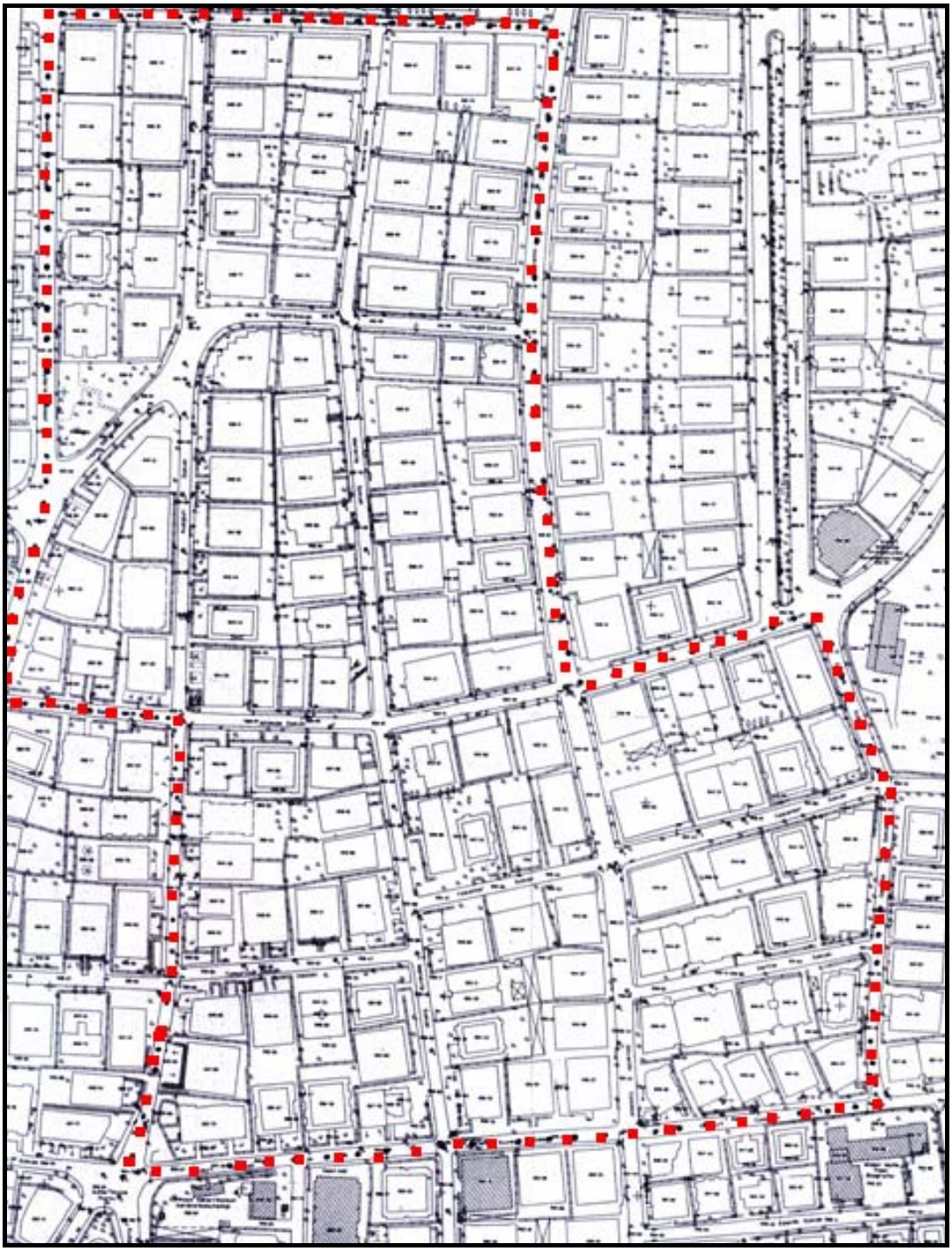


Figure 6.2 Current Plan of the Sample Field

6.2 Data Collection for the Case Study Area

The data for the case study is handled in two headings. The former is the data based on the physical structure of the space in which the physical characteristics are examined, while the latter is the data based upon, the users of the space.

6.2.1 The Data Based on the Physical Structure of Space

Following the determination of the sample field borders, primarily a pre-observation study is made on all of the residential blocks in the case study area. As a result of this observation, it appears that all the blocks in the case study area are not eligible for the purpose of the study. Hence, the criteria for the residential blocks used in the study is identified, each block is examined inthelight of these criteria and the convenient residential blocks for the study are selected inthelight of these data. The identified criteria can be seen in Table 6.1.

Table 6.1 Criteria for the Backyards Eligible for the Study

Characteristics	
Slope (%)(max)	%15
Surrounding building height (min-max)	4-6
Min size of the backyard (m2)	1200

Following the identification of such criteria, each residential block is numbered on the map and the values of the residential blocks are determined with respect to these characteristics (Figure 6.3).

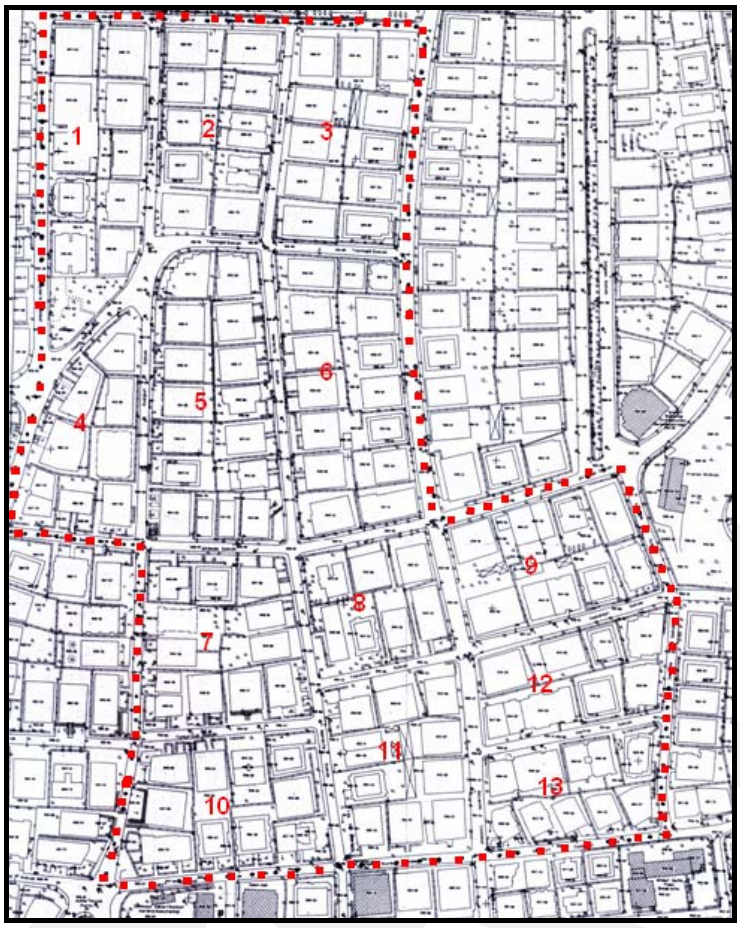
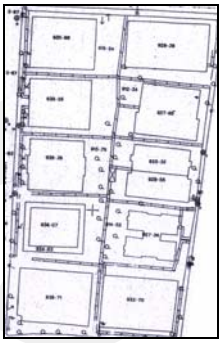


Figure 6.3 Numbers of Residential Blocks

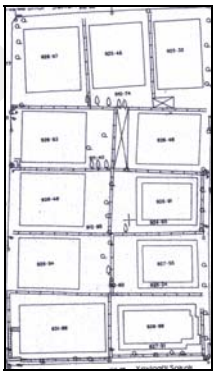
In the pre-observation stage, the characteristics such as the slope values of each residential block, the heights of the buildings, the size of the backyard, wind direction and the sunlight duration are detailed (Figure 6.4). The blocks where these characteristics are completely convenient are handled in the study.

RESIDENTIAL BLOCK 1		
Characteristics		**STD**
Slope (%)	**28**	max15
Surrounding building height (average)	5	4-6
Size of the backyard (m²)	**1100**	min 1200

RESIDENTIAL BLOCK 2		
Characteristics		**STD**
Slope (%)	15	max 15
Surrounding building height (average)	5	4-6
Size of the backyard (m)	1850	min 1200



RESIDENTIAL BLOCK 3		
Characteristics		**STD**
Slope (%)	15	max 15
Surrounding building height (average)	5	4-6
Size of the backyard (m²)	1890	min 1200



RESIDENTIAL BLOCK 4		
Characteristics		**STD**
Slope (%)	**25**	max 15
Surrounding building height (average)	4	4-6
Size of the backyard (m)	**630**	min 1200

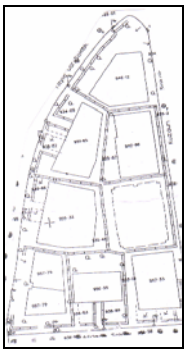
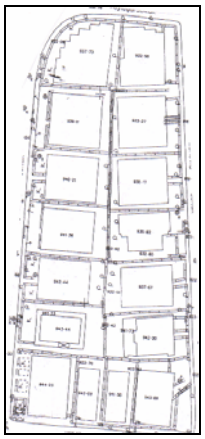
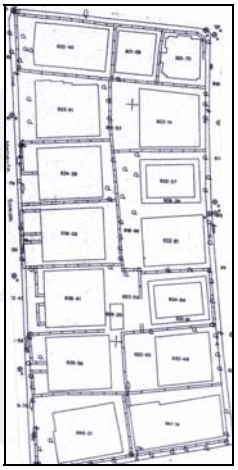


Figure 6.4 The Characteristics of the Residential Blocks

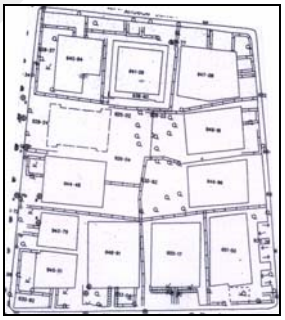
RESIDENTIAL BLOCK 5		
Characteristics		**STD**
Slope (%)	**20**	max 15
Surrounding building height (average)	5	4-6
Size of the backyard (m²)	1750	min 1200



RESIDENTIAL BLOCK 6		
Characteristics		**STD**
Slope (%)	**16**	max 15
Surrounding building height (average)	5	4-6
Size of the backyard (m²)	2100	min 1200



RESIDENTIAL BLOCK 7		
Characteristics		**STD**
Slope (%)	**26**	max 15
Surrounding building height (average)	4	4-6
Size of the backyard (m²)	1650	min 1200



RESIDENTIAL BLOCK 8		
Characteristics		**STD**
Slope (%)	**17**	max 15
Surrounding building height (average)	4	4-6
Size of the backyard (m²)	**700**	min 1200

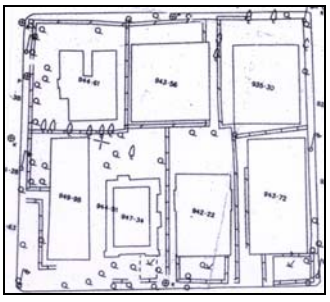
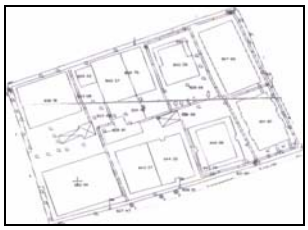
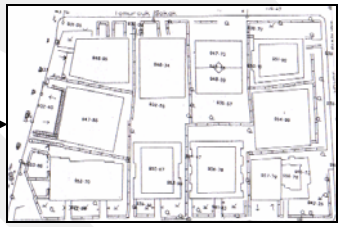


Figure 6.4 The Characteristics of the Residential Blocks (continued)

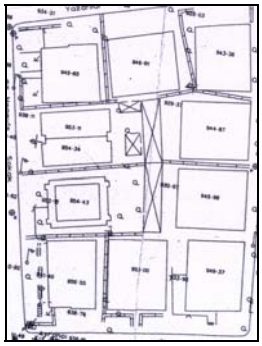
RESIDENTIAL BLOCK 9		
Characteristics		**STD**
Slope (%)	10	max 15
Surrounding building height (average)	5	4-6
Size of the backyard (m²)	2400	min 1200



RESIDENTIAL BLOCK 10		
Characteristics		**STD**
Slope (%)	15	max 15
Surrounding building height (average)	5	4-6
Size of the backyard (m)	1250	min 1200



RESIDENTIAL BLOCK 11		
Characteristics		**STD**
Slope (%)	**16**	max 15
Surrounding building height (average)	5	4-6
Size of the backyard (m²)	1400	Min 1200



RESIDENTIAL BLOCK 12		
Characteristics		**STD**
Slope (%)	**24**	max 15
Surrounding building height (average)	6	4-6
Size of the backyard (m)	**600**	min 1200

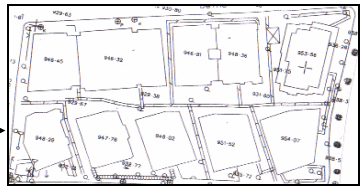


Figure 6.4 The Characteristics of the Residential Blocks (continued)

RESIDENTIAL BLOCK 13		
Characteristics		**STD**
Slope (%)	**17**	max 15
Surrounding building height (average)	6	4-6
Size of the backyard (m²)	**650**	min 1200

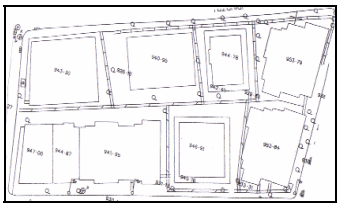


Figure 6.4 The Characteristics of the Residential Blocks (continued)

The data inconvenient for the identified criteria are written in bold letters in the tables. In respect of this, it appears from Figure 6.3 that all the characteristics of 4 blocks out of 13 fit the identified criteria. These can be given as residential blocks 2, 3, 9 and 10. Case study is done for these 4 residential blocks, thus the entire physical and social characteristics of these 4 residential blocks are analysed.

Residential Block 2 is surrounded by Ömür Street, Kuzgun Street, Meneviş Street and Yaylagül Street. All of the buildings in the block are utilized for residential purposes and most of them are detached buildings (Figure 6.5).

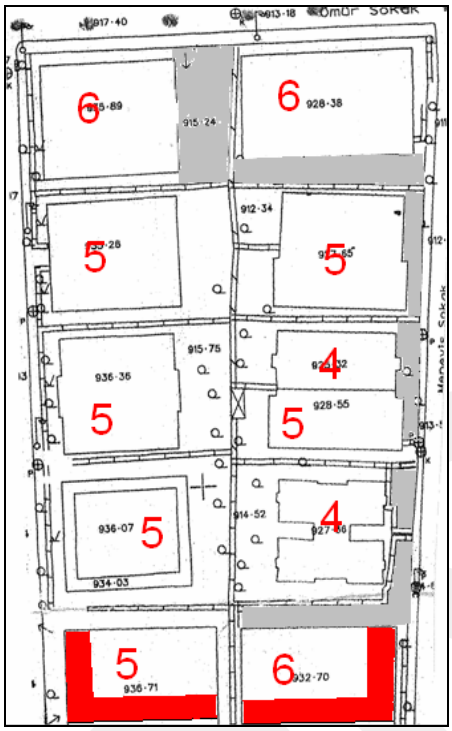


Figure 6.5 Current Plan of the Residential Block 2

(*The numbers on the buildings refer to the height of the storey,
*The areas coloured in red imply trade under the residence, and
*The areas colored in grey imply usage of parking lot)

54 % of the buildings in the residential block are 5-storeyed. The areas marked with the color of grey in Figure 6.4. display the private parking lots used by the residents of the apartment houses. It appears here that mostly the side and front gardens are used as parking lots.

The backyard of each apartment house is enclosed by wall, fence, wire fence or various plant components. It is conspicuous that some part of these spaces are unused and neglected, while some parts are planted haphazardly (Figure 6.6).

Figure 6.6 The Usage of Backyard in Residential Block 2

It is seen that most of the back facades of the buildings in the residential block are in good condition and the rate of solid-void is 30 %.

Residential Block 3 is surrounded by Meneviş Street, Ömür Street, Yaylagül Street and Güvenlik Street. 37 % of the buildings in the block are used only for residential purposes, whereas trade under the residence is seen in 63 % of the buildings. All of the buildings in this residential block are positioned in detached building structure (Figure 6.7).

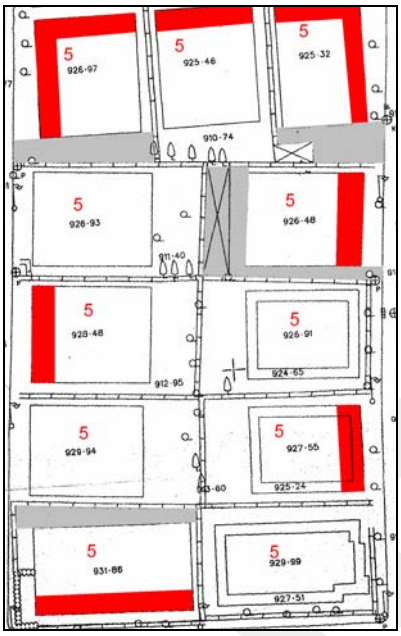


Figure 6.7 Current Plan of Residential Block 3

(*The numbers on the buildings refer to the height of the storey,
*The areas colored in red imply trade under the residence, and
*The areas colored in grey imply usage of parking lot.)

All of the buildings are 5-storeyed in the residential block. It is clear in Figure 6.8 that in some buildings the side gardens are used as parking lots, while solely in one building the backyard is used for the purpose of parking.

Figure 6.8 Parking Lot in Residential Block 3

In Residential Block 3, a different usage of the backyard of the building at the intersection of Ömür Street and Güvenlik Street draws attention. The backyard of this building is used by the owner of the back flat in the ground

floor as detached house garden. It can be seen that the area is enclosed and arranged for this usage (Figure 6.9).

Figure 6.9 An Example for the Usage of Backyard in Residential Block 3

In Residential Block 3, it is again apparent that the backyards of the apartment houses are generally enclosed by wall and fence. Mostly they are in limited sizes and planted haphazardly (Figure 6.10).

Figure 6.10 The Usage of Backyard in Residential Block 3

Most of the back facades of the buildings are in good conditions, and the rate of solid-void space is 40 % in average.

Residential Block 9 is surrounded by Gerede Street, Ali Dede Street, Yazanlar Street and Güvenlik Street. Although 36 % of the buildings in the block are used for trade under the residence, in the first floors of the two buildings trade usage takes place. This situation is related with the

existence of facade in the Güvenlik Street, which is a primary arterial road. The buildings in this residential block are positioned in both detached and attached order (Figure 6.11).

Figure 6.11 Current Plan of Residential Block 9

(*The numbers on the buildings refer to the height of the storey,
*The areas colored in red imply trade under the residence, and
*The areas colored in grey imply usage of parking lot.)

81 % of the buildings in the residential block are 5-storeyed. In general, the backyards of the buildings in the residential block are used for parking (Figure 6.12).

Figure 6.12 Parking Lot in Residential Block 9

In some of the buildings in Residential Block 9, the backyards are used as resting area for the residents of the apartment houses rather than as parking lot. It draws attention that there is some kind of small-scale constructions for this purpose (Figure 6.13).

Figure 6.12 The Usage of Backyards for Resting in Resindential Block 9

Distinct from the other blocks, there is a kind of construction in this block, which is assigned as a residence to an employee responsible for the apartment house (Figure 6.14).

Figure 6.14 Structuring in the Backyard

The other backyards in the residential block are generally enclosed by walls, in limited size and planted randomly (Figure 6.15).

Figure 6.15 The Usage of Backyard for Other Parcels in Residential Block 9

It is apparent that back facades of the buildings in the residential block are in good conditions, and the rate of blank space is 40 % in average.

Residential Block 10 is surrounded by Tomurcuk Street, Kuzgun Street, Meneviş Street and Kuveyt Street. It is possible to encounter with trade under the residence in only 27 % of the buildings. However, the ground and the first floors of the building at the intersection of Kuveyt Street and Kuzgun Street is used as a nursery school. The buildings in this residential block are mostly positioned in detached order (Figure 6.16).

Figure 6.16 Current Plan of Residential Block 10

(*The numbers on the buildings refer to the height of the storey,
*The areas colored in red imply trade under the residence,
*The areas colored in grey imply usage of parking lot, and
*The areas colored in blue imply usage of nursery school.)

81 % of the buildings in the block are 5-storeyed. The backyard is generally used for parking (Figure 6.17).

Figure 6.17 Parking Lot in Residential Block 10

The other backyards in the residential block are generally constrained by walls or altitude difference, have limited size, and are randomly planted (Figure 6.18).

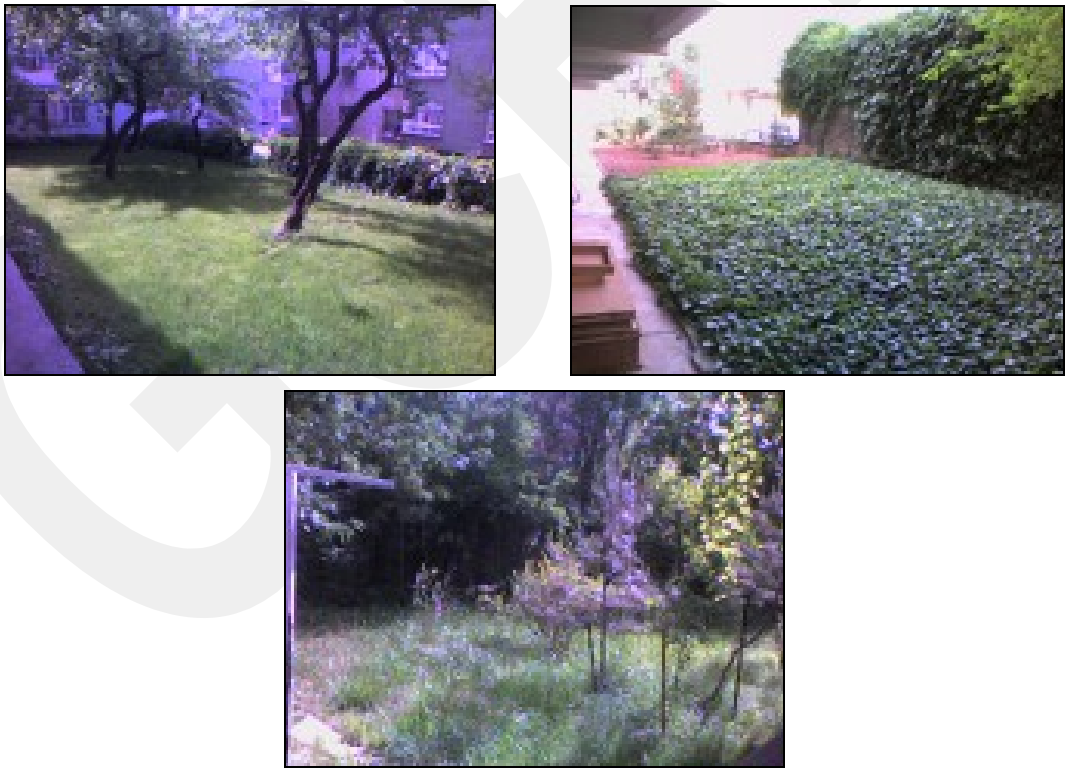


Figure 6.18 The Usage of Backyard for Other Parcels in Residential Block 10

It appears that most of the back facades of the buildings in the residential block are in good conditions, and the rate of solid-void is 50 % in average.

The characteristics of the 4 residential blocks undertaken priorly in the study are summarized in Appendix D.

6.2.2 Data Based Upon the Users of Space

Besides the data based upon observation, the requests of the users of space have great impact on space design. The obtained data have a significant role in enabling the space usable. Hence, as mentioned in the previous chapters of the study, with the assumption that different people have different living conditions and therefore have different expectations of space, in this stage of the study, in order to provide information about users, a questionnaire is made. The user information is acquired by questionnaire in this stage of the study.

In the first part of the questionnaire, there are questions regarding the acquisition of social information of users such as age, gender, and education level. Hence, the general profile of each residential block is obtained separately. The following questions are related with the point of view of the users on the backyard. For this purpose, in the questionnaire there are questions oriented towards the users for learning the frequency of the use and visual assessment of the space. In the next step, it is attempted to obtain the thoughts of the users on the scope of the study. Another question of the questionnaire is related with the user needs regarding the space. Furthermore, there are some questions to acquire information about the habits of outside space use.

Another essential data for the backyard design is the purpose of the use of the rooms of the buildings in the residential block looking at the back facade. By this way, it becomes possible to find out the interaction of the user inside the residence with the backyard. This data affect the design

decisions regarding the backyard. The questionnaire in Appendix E is used in order to obtain this mentioned information.

Before starting the questionnaire study in the selected residential blocks of the case study area, the number of houses is determined. According to this, there are totally 763 houses in the selected 4 blocks. It is planned to do questionnaire with approximately 13 % of this number, however the questionaire is conducted with only 12.4 %. The number of houses and questionnaire in the residential blocks can be followed in Table 6.2.

Table 6.2 The Number of Houses and Made Questionnaire Form in the Residential Blocks

Block No	**Number of Houses**	**Number of Filled Questionnaire Form**
2	234	24
3	170	25
9	171	22
10	188	24
Total	763	95

According to these specified numbers, the questionnaire study is done randomly in all of the residential blocks, and various results are derived. The data obtained from the survey is handled in two ways. The first is the evaluating each questions of questionnaire among its own data. This evaluation system facilitates the general evaluation of the data obtained from the user.

As mentioned before, the first part of the questionnaire is related with the acquisition of the social information of the user. In this context, the first acquired data is the age information (Table 6.3).

Table 6.3 Age Distribution in the Residential Blocks

Age Groups	R Block 2	R Block 3	R Block 9	R Block 10	Total	%
0-12	1	6	9	3	19	7
13-18	6	9	4	3	22	9
19-25	8	10	10	1	19	15
26-35	5	8	9	9	31	12
36-45	12	9	6	8	35	14
46-60	8	19	8	12	57	22
60+	21	11	11	11	54	21
Total	61	72	67	57	257	100

As it is seen on Table 6.3, the maximum values are obtained for the 40-60 and 60+ age groups after the evaluation of both the whole case study area and the individual residential blocks. This points out that the residents living in the case study area are within or above the middle age group. Therefore, the compatibility of the proposed function with the user age profile is determined as one of the objectives in the evaluation stage.

One of the social information about the user is gender information. The gender information obtained from the case study area can be seen in Table 6.4.

Table 6.4 Gender Distribution in the Residential Blocks

Gender	R Block 2	R Block 3	R Block 9	R Block 10	Total	%
Female	31	34	39	31	135	53
Male	30	38	28	26	122	47
Total	61	72	67	57	257	100

As seen in the Table 6.4, the gender information in the case study area and in each residential block is fairly similar. The number of males and females are close, thus it appears that there is a homogenous distribution. This

result implies the probability that the people living in the residential blocks usually have a family life.

Education level is one of the important social data regarding the user. The distribution with respect to education level can be followed from Table 6.5.

Table 6.5 Education Level in the Residential Blocks

Variable	**Block 2**	**Block 3**	**Block 9**	**Block 10**	**Total**	%
Primary education	10	14	5	11	40	16
Secondary Education	15	23	18	11	67	26
Undergraduate	22	19	29	21	91	35
Graduate	6	0	1	3	10	4
Attending	7	15	12	9	43	17
Not started	1	1	2	2	6	2
Total	61	72	67	57	257	100

The all case study area and each residential block display similar characteristics in education level. The percentages reveal that the university graduates have the highest value, which is very significant for the case study with respect to education level. This situation indicates that inhabitants of the residential block are inclined to social activities.

By the next part of the questionnaire, it is attempted to get the ideas of the user on the backyard. The first data obtained is the usage frequency of the backyard (Table 6.6).

Table 6.6 Usage Frequency of the Backyards in the Residential Blocks

Usage Frequency	R Block 2	R Block 3	R Block 9	R Block 10	Total	%
Never	13	15	17	14	59	62
Once a year	0	0	0	0	0	0
Once a month	0	2	0	0	2	2
Once a week	6	1	1	4	12	13
Everyday	5	7	4	6	22	23
Total	24	25	22	24	95	100

It seems that in Table 6.6 that the backyards are rarely used in all of the residential blocks. Another data derived from the table is that few people using the backyards prefer to use this space everyday (Figure 6.19).

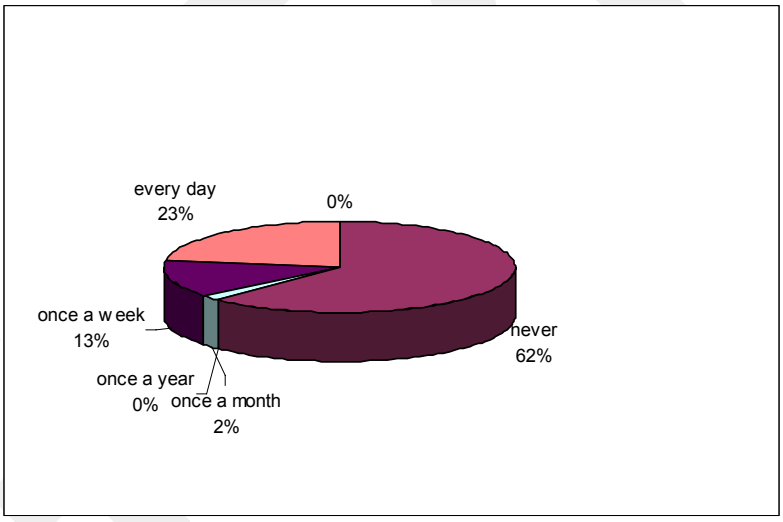


Figure 6.19 The Usage Frequency of the Backyards in all of the Residential Blocks

Another data regarding the user views is the user's evaluation of the current use of the backyards (Table 6.7).

Table 6.7 The Evaluation of Current Use of the Backyard in the Residential Blocks

Usage Evaluation	R Block 2	R Block 3	R Block 9	R Block 10	Total	%
Very good	7	4	4	5	25	21
Good	8	4	3	7	22	23
Average	4	7	7	7	25	26
Poor	5	10	8	5	28	30
Total	24	25	22	24	95	100

Table 6.6 indicates that the current use of the backyards is mostly defined as poor in most of the residential blocks. However, it is seen that the sum of the number of people marking the choices of “very good”, “good” and “average” is greater than the number of people with the choice of “poor”, which can be thought as a positive evaluation. Looking at the results from a different perspective, the answer of “average” ranks first among the positive views. At this point, choices of “poor” and “average” are combined in the same category, and it becomes apparent that the total rate of these choices is 56% (Figure 6.20).

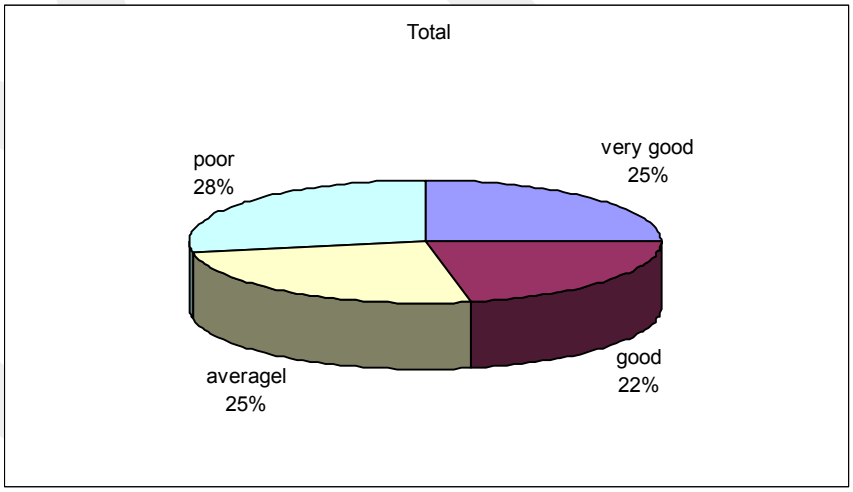


Figure 6.20 The Evaluation of Current Use of the Backyard in the Residential Blocks

Another data is related to the interpretation of the users on the study. The values to obtain this information can be followed in Table 6.8.

Table 6.8 The Evaluation of the Users on the Study

Interpretation on the Study	**R Block 2**	**R Block 3**	**R Block 9**	**R Block 10**	**Total**	%
A very good idea	**10**	**18**	**16**	**14**	**58**	**61**
Not bad but a better solution can be found	**2**	**1**	**3**	**0**	**6**	**6**
Not willing this area to be used	6	0	2	7	15	16
It does not matter	6	6	1	3	16	17
Other	0	0	0	0	0	0
Total	24	25	22	24	95	100

Table 6.8 displays that the study is mostly evaluated as “very good idea” when the values of the residential blocks are examined both independently and completely. This result implies that the users support the study regarding the backyard (Figure 6.21).

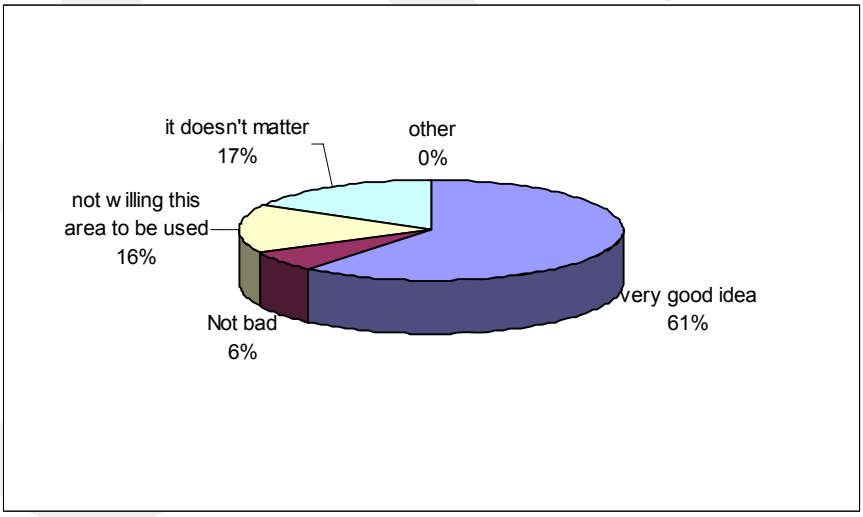


Figure 6.21 The Evaluation of the Users about the Study in all of the Residential Blocks

Among the functions such as sports field, park, children’s playground and car park, a priority ranking is required in the questionnaire in order to identify the requirements of the user regarding the backyard. Since the

function ranking first is effective, then the functions at the top and their values gain importance (Table 6.9).

Table 6.9 The Distribution of the Function of the Backyard Required at most by the User in the Residential Blocks

Function	R Block 2	R Block 3	R Block 9	R Block 10	Total	%
Sports field	2	3	2	4	11	12
Children's Playground	8	5	6	5	24	25
Park	12	14	14	10	50	53
Car Park	2	3	0	5	10	10
Other	0	0	0	0	0	0
Total	22	25	22	24	95	100

Table 6.9 indicates that the evaluation among the functions ranking first reveals a similarity for the residential blocks, moreover, the ranking as park, children's playground, sports field, car park draws attention at first glance (Figure 6.22). Therefore, the rank of functions required by the user takes place in the criteria while considering the alternatives.

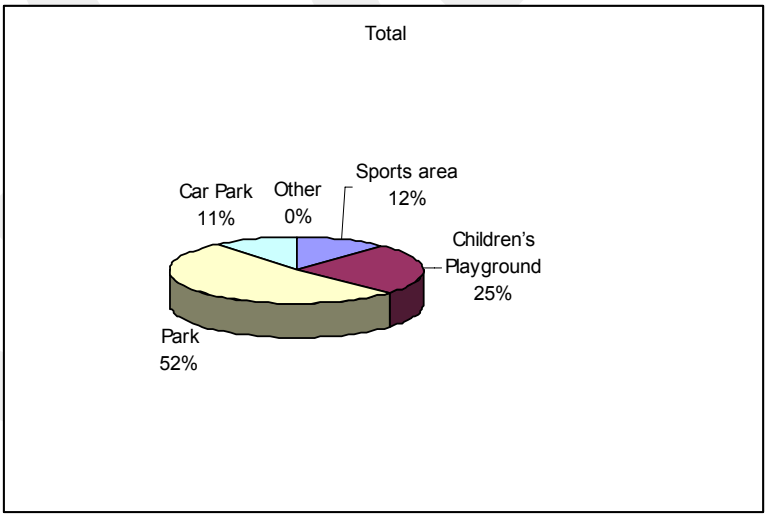


Figure 6.22 The Distribution of the Most Needed Function in the Backyards

The information acquired from the floor plan of the houses is important for determining the interaction of the user with the backyard. At this point, the primary data is the number of houses with rooms at the back facade (Table 6.10).

Table 6.10 The Number of Houses with the Rooms Looking at the Backyard

The room looking at the back facade	**R Block 2**	**R Block 3**	**R Block 9**	**R Block 10**	**Total**	**%**
The houses without rooms at the back facade	7	11	9	11	38	40
The houses with rooms at the back facade	17	14	13	13	57	60
Total	24	25	22	24	95	100

Table 6.10 reveals that in most of the houses involved in the questionnaire there are rooms looking at the backyard, influencing the determination of the tendency in the backyard in a more realistic way. Another data gaining importance at this point is the purpose of use of these rooms (Table 6.11).

Table 6.11 The Usage Purpose of the Rooms Looking at the Backyard in the Residential

The room looking at the backyard	**R Block 2**	**R Block 3**	**R Block 9**	**R Block 10**	**Total**	%
Bedroom	14	16	21	20	71	54
Salon	12	8	10	6	36	27
Living room	7	4	3	2	16	12
Kitchen	2	3	1	3	9	7
WC-Bathroom	0	0	0	0	0	0
Pantry/Store	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total number of rooms	35	31	35	31	132	100

As seen in Table 6.11, most of the rooms looking at the backyard are using as bedroom, indicating that among the functions proposed for the backyard, the ones not causing noise is mostly preferred. For this reason, the degree of noise creation is put in the criteria while dealing with the alternatives.

Whether there is a balcony looking at the backyard is also important for the interaction of the user with the backyard. The number of houses with balcony looking at the backyard is seen in Table 6.12.

Table 6.12 The Number of Balconies Looking at the Backyards in the Residential Blocks

The balcony looking at the backyard	**R Block 2**	**R Block 3**	**R Block 9**	**R Block 10**	**Total**	%
Yes	11	12	10	10	43	45
No	13	13	12	14	52	55
Total	24	25	22	24	95	100

Table 6.11 shows that there is no balcony in most of the houses included in the questionnaire. On the other hand, the usage purpose of the balcony gains importance in the houses with balcony looking at the backyard (Table 6.13).

Table 6.13 The Usage Purpose of the Balcony Looking at the Backyard

Usage of balcony	**Block 2**	**Block 3**	**Block 9**	**Block 10**	**Total**	%
Open	8	7	6	10	31	71
Closed winter garden	2	3	3	0	8	19
Closed store	0	1	1	0	2	5
Part of the room	1	1	0	0	2	5
Other	0	0	0	0	0	0
Total	11	12	10	10	43	100

Table 6.13 indicates that most of the balconies looking at the backyard is used as an open balcony. The car ownership of the inhabitants are important in order to understand the user's way of meeting the parking needs (Table 6.14).

Table 6.14 Car Ownership in the Residential Blocks

Parking	R Block 2	R Block 3	R Block 9	R Block 10	Total	%
Have a car	14	16	16	12	58	61
No car	10	9	6	12	37	39
Total	24	25	22	24	95	100

It is seen that 61 % of the people involved in the questionnaire owns a car, indicating that there is a great amount of car park need. However, the most important thing at this point is where the car owners park at present (Table 6.15).

Table 6.15 The Parking Area of the Car Owners in the Residential Blocks

Parking area	R Block 2	R Block 3	R Block 9	R Block 10	Total	%
Back garden	2	5	2	7	16	28
Front garden	6	4	11	1	22	38
Street	6	7	3	4	20	34
Another street	0	0	0	0	0	0
Total	14	16	16	12	58	100

As seen in Figure 6.23 the area used for parking is differentiated in each residential block. This might be thought as a result of either the physical characteristics of the residential blocks, or a condition introduced by the demand of the residents. The separate examination of the residential blocks puts forth that in R Block 2 the frontyard and the street, in R Block 3 the street, in R Block 9 the frontyard and in R Block 10 the backyard are used for parking.

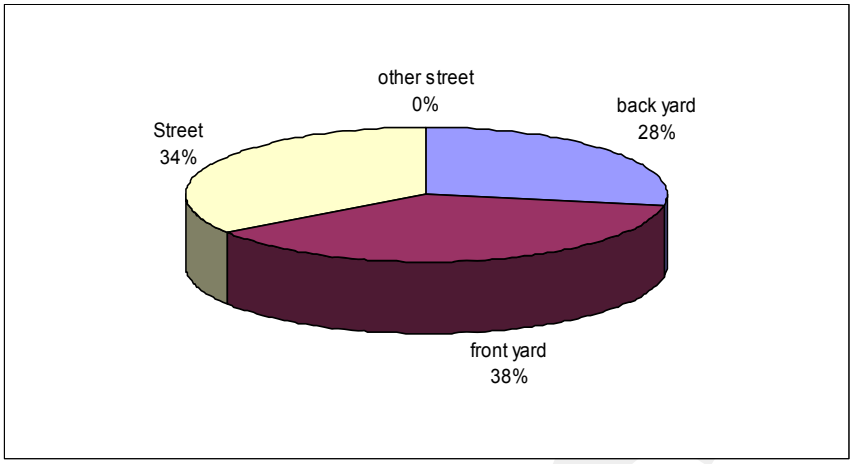


Figure 6.23 The Parking Area of the Car Owners in the Residential Blocks

The usage frequency, needs and problems of the people included in the survey are significant in order to identify their views on the usage of open area. The data on the open area usage frequency of the people can be followed in Table 6.16.

Table 6.16 The Distribution of Open Area Usage Frequency in the Blocks

Usage of open area		R Block 2	R Block 3	R Block 9	R Block 10	Total	%
Park	Never	16	21	13	15	65	68
	Once a week	3	3	3	6	15	16
	More than once a week	3	1	3	1	8	8
	Everyday	0	0	1	1	2	2
	Once a month	2	0	2	1	5	6
	Total	24	25	22	24	95	100
Sports field	Never	19	18	17	21	75	79
	Once a week	3	6	0	1	10	11
	More than once a week	2	1	3	0	6	6
	Everyday	0	0	0	2	2	2
	Once a month	0	0	2	0	2	2
	Total	24	25	22	24	95	100
Children's Playground	Never	23	22	19	21	85	90
	Once a week	1	3	1	2	7	7
	More than once a week	0	0	0	1	1	1
	Everyday	0	0	0	0	0	0
	Once a month	0	0	2	0	2	2
	Total	24	25	22	24	95	100

Table 6.16 displays that most of the people included in the questionnaire do not use the open green areas such as park, sports field, and children's playground. Despite this result, the fact that the people benefiting from these areas use such areas once a week seems to be interesting. Furthermore, the ranking of the usage frequency of open green areas also draws attention that park is first, sports field is second, and children's playground is third, which shows generally similar characteristics in the residential block.

Acquiring the information regarding whether there are problems related with open areas is very significant in order to determine the causes for unusage of these areas (Table 6.17).

Table 6.17 The Number of User that have Problems Related to Open Areas in Residential Blocks

Problems related with the open areas	**R Block 2**	**R Block 3**	**R Block 9**	**R Block 10**	**Total**	**%**
No problem or unknown	13	15	12	12	52	55
Problems exist	11	10	10	12	43	45
Total	24	25	22	24	95	100

Identification of the problems related with open areas has an important role in determining the needs of users. Table 6.18 shows the distribution of the problems of people included in the questionnaire regarding open areas.

Table 6.18 The Problems of Open Areas in Residential Blocks

The problems related with the open areas	**R Block 2**	**R Block 3**	**R Block 9**	**R Block 10**	**Total**	**%**
Distant from the residence	3	2	3	5	13	30
Security problem	4	2	1	4	11	26
Quality problem	1	4	5	2	12	28
Other	3	2	1	1	7	16
Total	11	10	10	12	43	100

Following Table 6.18, it appears that the problems in terms of the open areas around differentiate for each block. In Residential Block 2 the most important problem is security, in Residential Blocks 3 and 9 the quality and finally in Residential Block 10 the distance from the residence. These results reveal the essence of considering such characteristics in designing the alternatives.

The first is the evaluation of each question of questionnaire among its own data. This evaluation system enables the general evaluation of the data acquired from the user.

Another evaluation method for the data obtained from the questionnaire is the cross-table in which the data thought to have relationship is evaluated by overlapping. This evaluation method is essential for the determination of the relationship between the data.

The first data group which is thought to have a relationship is the evaluation of the current use and the existence of rooms looking at the backyard, for the user having a room looking at the backyard is in close interaction with the backyard. Naturally, the noise, the image and also the security – especially for the ground floors- is given higher importance by the user having a room looking at the backyard. At this point, the opinion of this group is significant (Table 6.19).

Table 6.19 Relationship between the Evaluation of Current Use - The Existence of Rooms Looking at the Backyard in the Residential Blocks

		The Evaluation of the Current Use									
		Very good		**Good**		**Average**		**Poor**		**Total**	
		%		%		%		%		%	
Whether a back room exists	**Exists**	15	14	15	14	15	14	15	15	60	57
	Does not exist	6	6	8	8	12	11	14	13	40	38
	Total	21	20	23	22	27	25	29	28	100	95

Table 6.19 indicates that most of the houses included in the questionnaire have rooms looking at the backyard, nevertheless, it is interesting that there is not any clear evaluation regarding this space. Almost all the evaluation choices get approximate values. It draws attention that the users without a room looking at the backyard are not satisfied with the current use of the backyard, which can be thought an indicator of backyard dissatisfaction of people in the apartment houses.

Owing to the reasons mentioned above, it is considered that the view of the user with and without a room looking at the backyard might differentiate, and therefore these two data groups are overlapped (Table 6.20).

Table 6.20 Relationship between the Evaluation of the Study - The Existence of Rooms Looking at the Backyard in the Residential Blocks

		Evaluation of the study									
		Very good		**Average**		**Not willing**		**It does not matter**		**Total**	
		%		%		%		%		%	
Whether a back room exists	**Exists**	33	11	4	4	10	10	12	12	59	57
	Does not exist	29	11	2	2	5	5	4	4	41	38
	Total	62	22	6	6	15	15	16	16	100	95

Table 6.20 indicates that a great portion of the users with at least one room looking at the backyard expresses positive views on the study, meanwhile, this is also valid for the users without room looking at the backyard. This is an important input for the implementation stage of the study.

Another information obtained is the function requirements of the users regarding this space. It is again considered that this data might differentiate for the user with and without a room looking at the backyard, and therefore these two data groups are overlapped (Table 6.21).

Table 6.21 Relationship between the Function Requirements Regarding the Backyard - The Existence of Rooms Looking at the Backyard in the Residential Blocks

		Function Requirements Regarding the Backyard									
		Sports Field		**Children's Playground**		**Park**		**Parking Lot**		**Total**	
		%		%		%		%		%	
Whether a back room exists	**Exists**	6	5	16	15	30	29	8	8	60	57
	Does not exist	6	6	9	9	23	21	2	2	40	38
	Total	12	11	25	24	53	50	10	10	100	95

Table 6.21 indicates that the function requirements do not vary for the user with and without a room looking at the backyard. The first preference of both groups is generally the function of park. This data is thought to be important for the evaluation of function alternatives regarding the backyard.

The views of the total number of people involved in the questionnaire on the current use of the backyard might be a misleading data due to the fact that the view of the person never using the backyard and the view of the person using the backyard everyday are subject to the same evaluation. However, the view of the person using the space should be treated differently. For this reason, the final data group is determined as the evaluation of the current use and the usage frequency of the backyard (Table 6.22).

Table 6.22 Relationship between the Evaluation of Current Use – Usage Frequency of the Backyard

		The Evaluation of the Current Use									
		Verygood		**Good**		**Average**		**Poor**		**Total**	
		%		%		%		%		%	
Usage Frequency of the Backyard	**Never**	**9**	**9**	**13**	**12**	**17**	**16**	**23**	**22**	**62**	**59**
	Once a year	0	0	0	0		0	0	0	0	0
	Once a month	0	0	0	0	2	2	0	0	2	2
	Once a week	3,5	3	6	6	3	3	0	0	12,5	12
	Every day	8,5	8	4	4	4	4	6	6	22,5	22
	Total	21	20	23	22	26	25	29	28	100	95

As seen in Table 6.22, most of the people included in the questionnaire never use the backyard. Moreover, it is also interesting that this group is not satisfied with the current use. At first glance, this situation implies that this group of people does not use the space due to its current use. Another point drawing attention is that the people using the backyard generally use the space everyday. However, this group does not have a clear evaluation on the current use of the space, and the choices have approximate values. This might be thought an indicator that the people use the backyard for its silence and simplicity.

By overlapping the data derived from the questionnaire, clear results are not likely to be obtained since the choices generally have approximate values. The reason for this situation is thought to be caused by the fact that the people included in the survey express their realistic views on the space without realizing the clues for implementation. Hence, it gets hard to benefit from the data aobtained by the questionnaire in the next phases of the study.

It is seen that the results of the questionnaire conducted in the residential blocks provide quite a few clues about the user. In order to indicate that the proposed method for the study is usable not only for these spaces but also

for another block, the alternatives are designed with respect to the general design rules, the results acquired by the survey become input for the study as being criteria in the stage of evaluation of the alternatives and therefore influence the evaluation at this stage.

6.3 Design and Evaluation of Alternatives

In the previous stage of the study a pre-observation study is done for the residential blocks in the sample field, and 4 blocks, which are compatible with the identified criteria and eligible for handling in the study, are determined. Evaluated among themselves, one of them is selected to be handled in this part of the study. The feasibility of the proposed method in a comprehensive way and the possibility for complex function use are considered in the selection of this residential block.

It appears when all the residential blocks are examined that the block with all such characteristics is Residential Block 9

All the buildings in the residential block are 5-storeyed. It is possible to encounter with trade under the residence in the buildings on the main street. The total size of the backyard constrained by the buildings is approximately 2400 m²(Figure 6.24). There are 7 crossings one of which is for the main street in order to reach the backyard. The dominant wind direction of Ankara, the northeast direction, is accepted as the dominant wind direction in the residential block. The wind speed is 2.4 m/sec in average. The buildings in this direction within the block are the highest ones with also the impact of the slope. The entrance to the residential block in this direction is provided by only one point. Thus, in the space except for the crossing point, the effect of wind is intensively felt.

Figure 6.24

Detailed Current Plan of Residential Block 9

As mentioned before, this block is located in southwest-northeast direction, with a wide opening to the main street from one side. The block has a slope of 15 % in average (Figure 6.25).

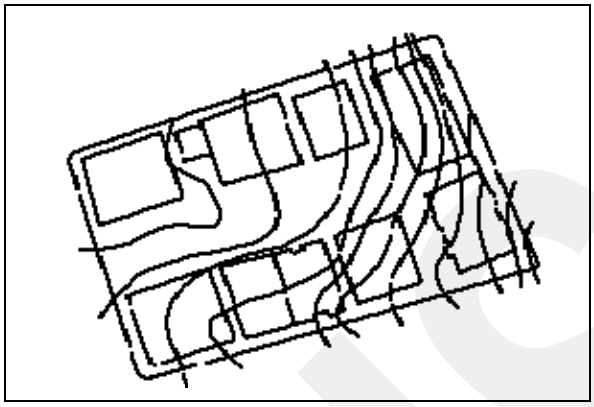


Figure 6.25 Slope Contours of Residential Block 9

Another data related with the backyard is the shadow condition of the space. This is first related with the mathematical location of the space by which it is possible to reach the values of shadow situation of the space.

Various design alternatives, each enabling different function use, are established for Residential Block 9 that is specified with its various characteristics. Considering the objectives and the criteria produced for these objectives, the alternatives are evaluated by using a multi-criteria evaluation method, and then the optimum alternative is determined. The principle for the establishment of alternatives for Residential Block 9 and their description are issued in the next part of the study.

6.3.1 Objectives and Criteria

There are numerous characteristics that an open public space should have. Since the semi-public spaces handled in the study serve a common space, most of the essential characteristics for such spaces are in line with the characteristics of open public space. For this reason, the vital characteristics of open public spaces have a significant role in specifying

the criteria for alternatives. The initial characteristic considered at first is that the implementation and management cost should be acceptable, because the implementation of the design for these spaces is under the public initiative and within the responsibilities of the local governments although the costs are met by own resources of the users. Minimization of the cost without removing the quality always improves the feasibility.

Other characteristics that should exist in the open public space can be defined as the characteristics established through the user requirements. Carr, S. et. al. (1995) summarizes these characteristics under 5 headings: comfort, relaxation, passive engagement, active engagement with the environment, and discovery. The characteristics classified by Carr, S.(1995) can briefly be explained as;

- Comfort; Comfort is a basic need. A comfortable space increases the tendency of a person to use that space for longer periods. The space should be designed depending on the climate conditions, when necessary, there should be components protecting from the sun and rain, and also spaces should be designed providing people to benefit from the sun. Another important factor for the design of a comfortable open public space is the existence of comfortable and ergonomic sitting components. Moreover, it is essential for the design of a comfortable open public space that the security of the area be provided and the space be abstracted from traffic insofar as it is possible. For these reasons, the provision of suitable shadow conditions for seasonal properties is identified as one of the important objectives.

- Relaxation: Relaxation is distinguished from comfort by the level of release it describes. It is more developed state with body and mind at ease. A sense of psychological comfort may be a prerequisite of relaxation- a lifting of physical strains, moving the person to a sense of repose. The most important factor for open space is the material

of the design components. The use of natural components (water, tree…etc.) in space design also has a refreshing impact on the space. Therefore, maximization of the value of green area size is determined as one of the study objectives.

- Passive Engagement: This category includes the frequently observed interest and enjoyment people derive from watching the passing scene. The visual contact of people can be given as an example for these needs. Watching the natural components and work of arts in the public space, besides the physical activities (sports match, etc.) around are considered examples for this type of behaviour.

- Active Engagement; Active engagement represents a more direct experience with a place and the people within it. The communication of people although they do not know each other is one of these needs. Moreover, people need spending time with their parents or friends (by having a picnic, playing games, etc.) in open areas and the type of this need changes according to the age group. In the study, first active engagement is considered; therefore 'creating spaces in the backyard where people can communicate with each other and with their environment' is determined as one of the objectives.

- Discovery: Exploration is a human need. The major aspects of discovery appear to be the diversity in the physical design and the changing vistas. Buildings with different facade characteristics and different type of designs, attempting to discover attractive objects in short, is one of the needs of people regarding open space. This characteristic is not dealt with in the study, since the user of the backyard is definite, in other words, the user already knows the characteristics of the space and uses the space taking these characteristics into account.

Besides the characteristics related with the user requirements of space, there are also some design-based characteristics that should exist in open public space. All these characteristics are taken into account while establishing the alternatives. However, within the design, these characteristics differentiate for each alternative. Jacobs et. al.(1961) defines these characteristics under 4 headings;

- Intricacy: It is related to the variety of reasons for which people come to neighbourhood parks. In other words, enabling an open public space to be used differently in different times is important. Hence, the space should not be designed in the way that is dissolved easily, and the user should discover a different point whenever he/she comes.

- Centering: Centers are the spaces of junctions or stopping points which make people have the feeling of center in open public spaces. These spaces meet a great many needs of people. Complemented by various design components, these spaces can be used for the purposes of sitting, resting, chatting, doing various theatrical activities, etc. Thus, the centers in open public spaces are the spaces used for the longest periods.

- Sun: As mentioned in Comfort requirement, sun, therefore the need for shadow changes seasonally. Shadow is sometimes a demanded condition while sometimes not.

- Enclosure: One of the most important characteristics of an open public space is enclosure. For these spaces, buildings are the most important constraining units. Hence, the location and position of the buildings gain importance.

Besides this information, the results of questionnaire issued in the previous parts of the study are also effective on the identification of objectives. The results used in evaluation can be summarized as;

- The residents especially says that the study has very good idea.
- The residents' needs are ranking as park, children's playground, sports field, car park at first glance.
- Generally utilization the rooms looking at the back facade are used as bedroom and therefore rarely preferring the functions causing noise.
- Generally utilization of the rooms looking at the backyard are used as salon and the balconies as open balcony, and therefore the importance of the vista.
- The residents especially have a car, and they use front garden or street as parking area.
- The existence of security problem regarding the open areas that people currently use, and hence their consideration of the security problem is important.

In the light of all these information, there are some characteristics that should exist in the proposed designs so as to increase the public use potential of the backyards of the residences. These characteristics are specified as the objectives. Except for these objectives, there are some concrete data enabling us to measure to what extent we reach such a space having these characteristics. These data is called as criteria (Elker, 1997). For this purpose, testing the convenience of each alternative for such characteristics gains importance. At this point, the characteristics are identified as the objectives. These objectives are handled in 3 main headings;

1. Economic Objectives;

1.1. To minimize the cost of the project.

1.2. To find some financial source meeting the management cost of the arranged backyard of the residence.

2. Socio-cultural Objectives;

2.1. To make sufficent for the expectations of the residents regarding the backyard at the maximum level.

2.2. To enable the usage of the backyard by the residents of the buildings.

2.3. To enable the intensity of daily use of the backyard as high as possible.

2.4. To create spaces in the backyard only where people can communicate with each other and with their surrounding.

2.5. To enable the compatibility of the proposed functions for the backyard with the user profile.

3. Physical Objectives;

3.1. To provide wider and planned green area in the backyard at maximum value.

3.2. To ensure the field security.

3.3. To create a defined space in the backyard.

3.4. To provide suitable shadow conditions for the seasonal properties.

3.5. To enable suitable wind conditions in the backyard.

3.6. To hold the noise pollution at minimum.

3.7. To improve the vista of the rooms of the residences looking at the back façade.

However, in order to use these objectives for the evaluation of alternatives, they have to be handled with some concrete data. Therefore, the objectives that have those characteristics are chosen, and then, the criteria, which enable us to reach these objectives, are determined. These objectives and criteria are seen on Table 6.23.

Table 6.23 Objectives and Criteria for the Evaluation of the Alternatives

Objectives	**Criteria**
To minimize the cost of project	To minimize the project investment cost
To make sufficient for the expectations of the residents regarding the backyard at the maximum level	To grade with respect to the questionnaire outcomes for the selection of the function
To enable the intensity of daily use of the backyard as high as possible	To enable the diversity of the functions in the designed space at the maximum level
To create spaces in the backyard where people can communicate with each other and with their surrounding.	To maximize the number of benches in the space
	To maximize the number of small public squares in the space
To provide wider green area in the backyad at maximum value	To maximize the size of the green area (in m²) in the space
	To maximize the number of trees in the space
To ensure the field security	To minimize the number of crossings opening outdoors
To provide suitable shadow conditions for the seasonal properties	To minimize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in March
	To maximize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in June
To hold the noise pollution at minimum	To minimize the number of functions causing noise in the space
To enable the compatibility of the proposed functions for the backyard with the user profile	To maximize the compatibility of the proposed functions with the age profile of users
To improve the vista of the rooms of the residences looking at the back facade	To increase the number of existing buildings with the green area vista

The impact of all these objectives and criteria on the evaluation of alternatives is not the same. Therefore, the values of these objectives and criteria should be multiplied by certain weights. Some of the data acquired by the questionnaire study is attempted to be used in order to determine the weights, nonetheless, it appears when the values are examined that there is not any extreme points. Hence, these data cannot be used in the determination of weights. The weights are determined by considering the possible reactions of the user in the light of personal experience and knowledge (Table 6.24).

Table 6.24 Objectives, Criteria and Weights

Objectives	Weight	Criteria	Weight
To minimize the cost of project	0,15	To minimize the project investment cost	0,15
To make sufficient for expectations of the residents regarding the backyard at the maximum level	0,10	To grade with respect to the questionnaire outcomes for the selection of the function	0,10
To create spaces in the backyard where people can communicate with each other and with their surrounding	0,15	To maximize the number of benches in the space	0,05
		To maximize the number of small public squares in the space	0,10
To provide wider green area in the backyard at maximum value	0,20	To maximize the size of the green area (in m²) in the space	0,10
		To maximize the number of trees in the space	0,10
To ensure the field security	0,05	To minimize the number of crossings opening outdoors	0,05
To provide suitable shadow conditions for the seasonal properties	0,20	To minimize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in March	0,10
		To maximize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in June	0,10
To hold the noise pollution at minimum	0,05	To minimize the number of functions causing noise in the space	0,05
To enable the compatibility of the proposed functions for the backyard with the user profile	0,05	To maximize the compatibility of the proposed functions with the age profile of users	0,05
To improve the vista of the rooms of the residences looking at the back facade	0,05	To increase the number of existing buildings with the green area vista	0,05

6.3.2 Description of the Alternatives

As mentioned in the previous parts of the study, the functions for the backyard are determined as park, children's playground, sports field and car park in terms of location, usage potential and feasibility. The alternatives are designed compatible with this function diversity. In order for the proposed method to be dealt with in the study in a more comprehensive way, the functions are paired depending upon the mixed-use principle. The alternatives are identified as;

*Alternative 1 (enabling the usage of Park and Children's Playground)
*Alternative 2 (enabling the usage of Sports Field and Car Park)
*Alternative 3 (enabling the usage of Car Park and Children's Playground)
*Alternative 4 (enabling the usage of Park and Car Park)
*Alternative 5 (enabling the usage of Sports Field and Children's Playground)
*Alternative 6 (enabling the usage of Park and Sports Field).

Alternative 1 (enabling the usage of Park and Children's Playground):

This alternative enables the use of two functions in the backyard, namely park and children's playground functions (Figure 6.26).

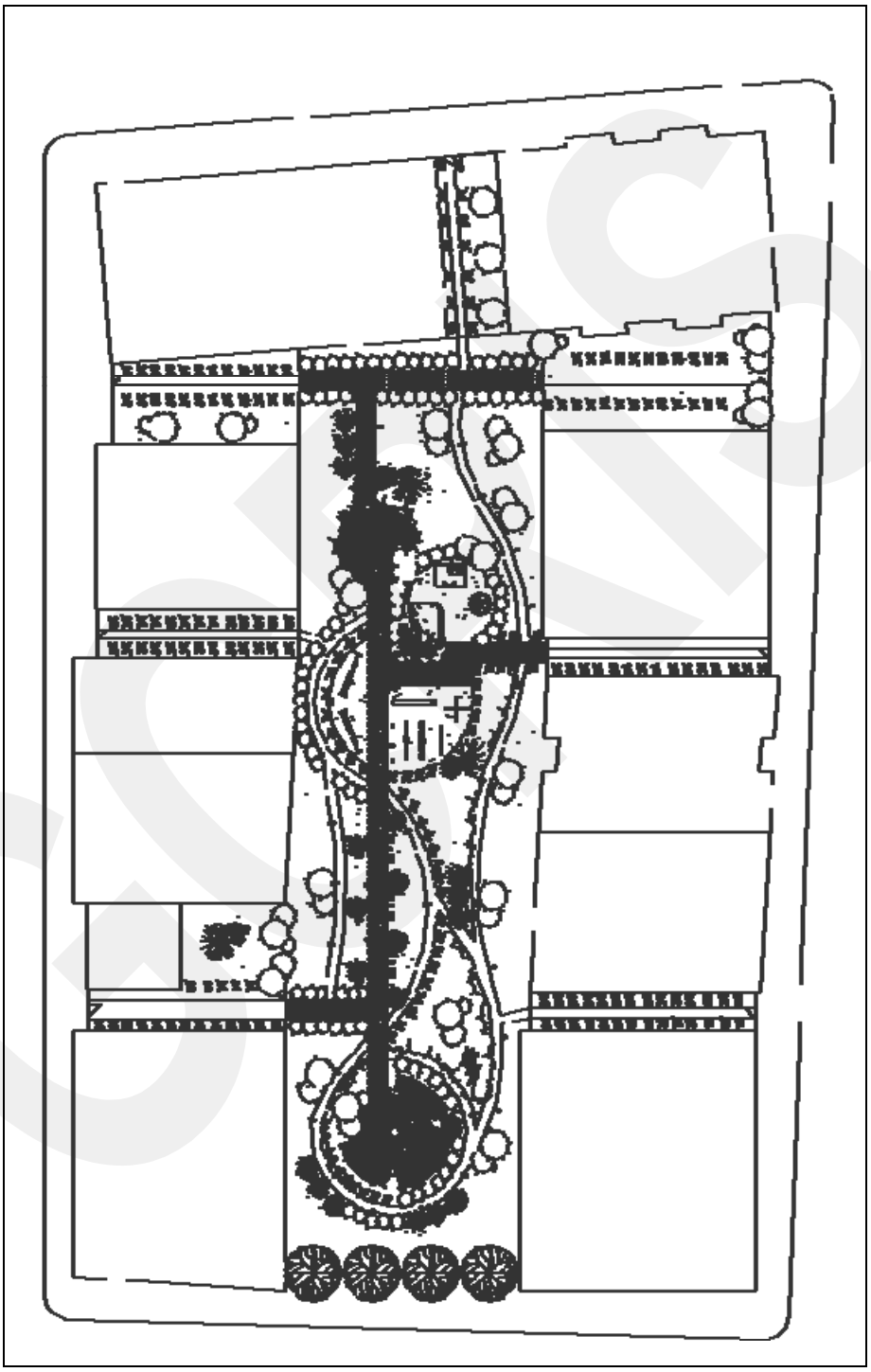


Figure 6.26 Alternative 1- Backyard Arrangement of the Residential Block 9

In addition to the open area design rules that will be evaluated in detail sooner, the selection of the location of functions and the provision of opening the space outside are also influential on the establishment of alternatives. In this alternative, the backyard of the buildings is constrained with huge trees, and the sitting and walking areas for which security is less required are located nearer to these areas. On the other hand, the children's playground where security is very important is located in a more protected area that is constrained by the buildings. The alternative is established by considering the data.

In all alternatives including a children's playground, the playground is designed as serving a neighbourhood unit of 700 people.

Alternative 2 (enabling the usage of Sports Field and Car Park)

This alternative enables the usage of the functions of sports field and car park in the backyard (Figure 6.27).

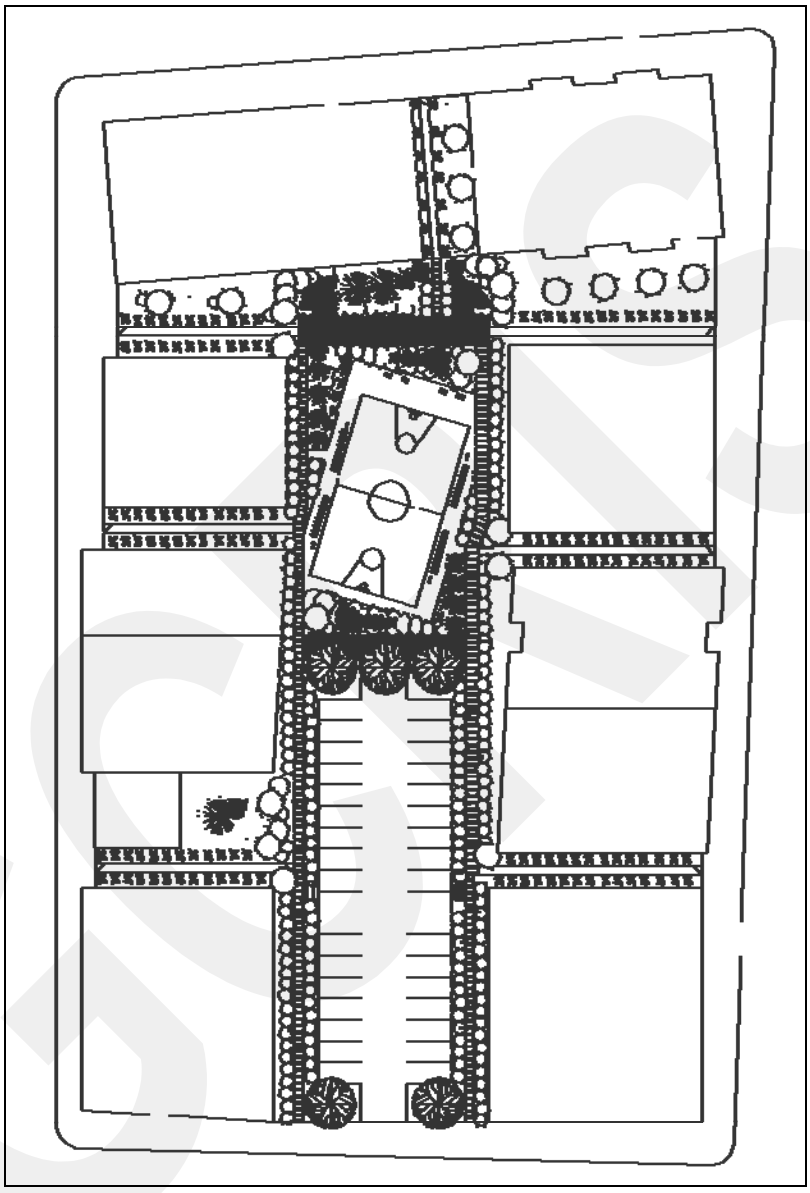


Figure 6.27 Alternative 2- Backyard Arrangement of the Residential Block 9

The existence of the car park in this alternative requires the usage of the street side of the backyard for this purpose. In this alternative and also in other alternatives including the car park, the car park is designed with the capacity of 36 vehicles and is open for the residents of the residential block.

By estimating the car ownership rate with total number of households, the average number of vehicles is found, and then the capacity of the car park is determined by assuming that the car park will serve for the 25% of the average number of vehicles.

Alternative 3 (enabling the usage of Car Park and Children's Playground)

This alternative enables the usage of the functions of children's playground and car park (Figure 6.28).

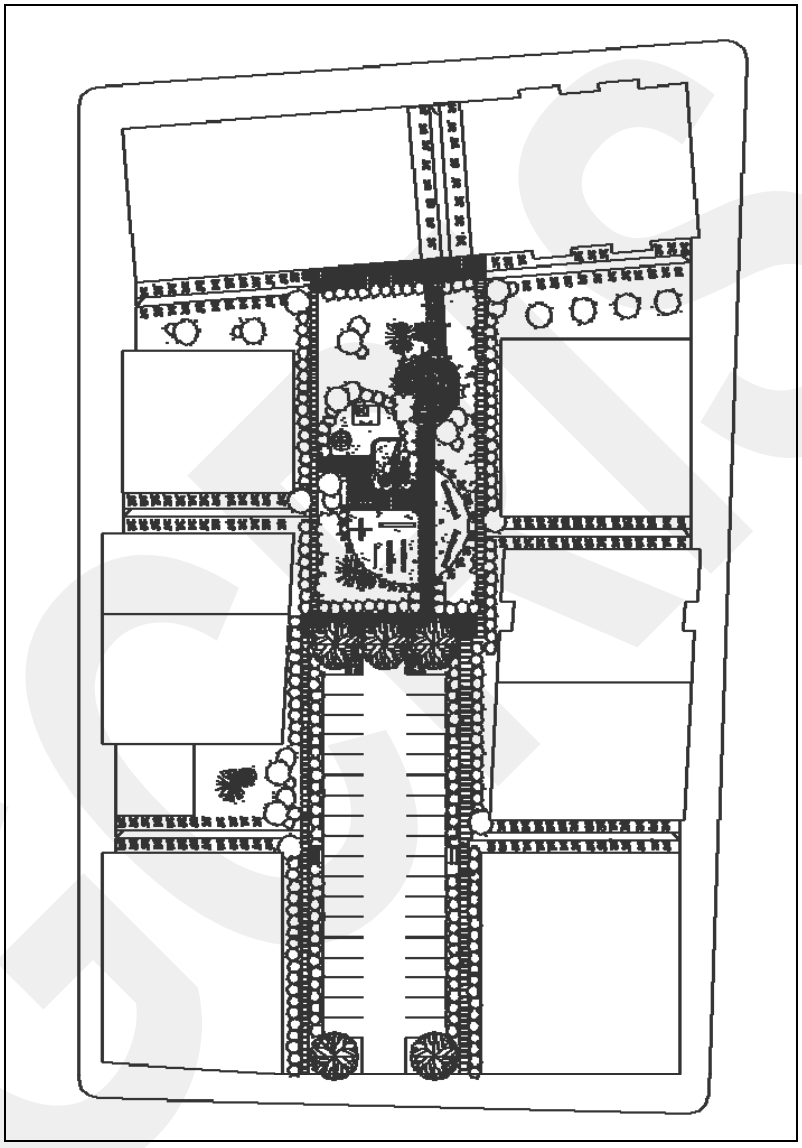


Figure 6.28 Alternative 3- Backyard Arrangement of the Residential Block 9

Due to the existence of car park and the necessity of locating the children's playground in a more protected area, in this alternative, the car park is located in the street side of the residential block.

Alternative 4 (enabling the usage of Park and Car Park)

This alternative enables the usage of the backyard with the functions of car park and park (Figure 6.29).

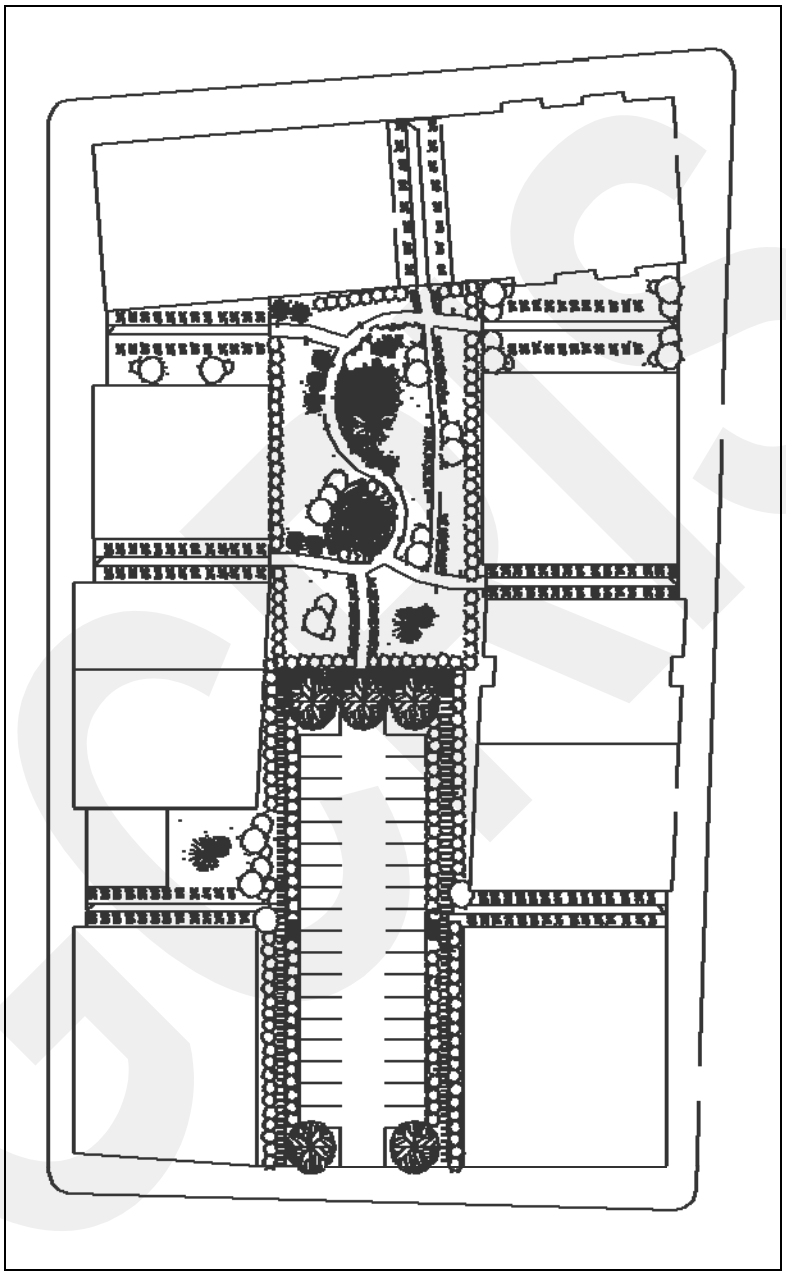


Figure 6.29 Alternative 4- Backyard Arrangement of the Residential Block 9

The existence of the car park requires the usage of the part of the residential block opening the street for this purpose.

Alternative 5 (enabling the usage of Sports Field and Children's Playground)

This alternative enables the usage of the functions of sports field and children's playground in the backyard (Figure 6.30).

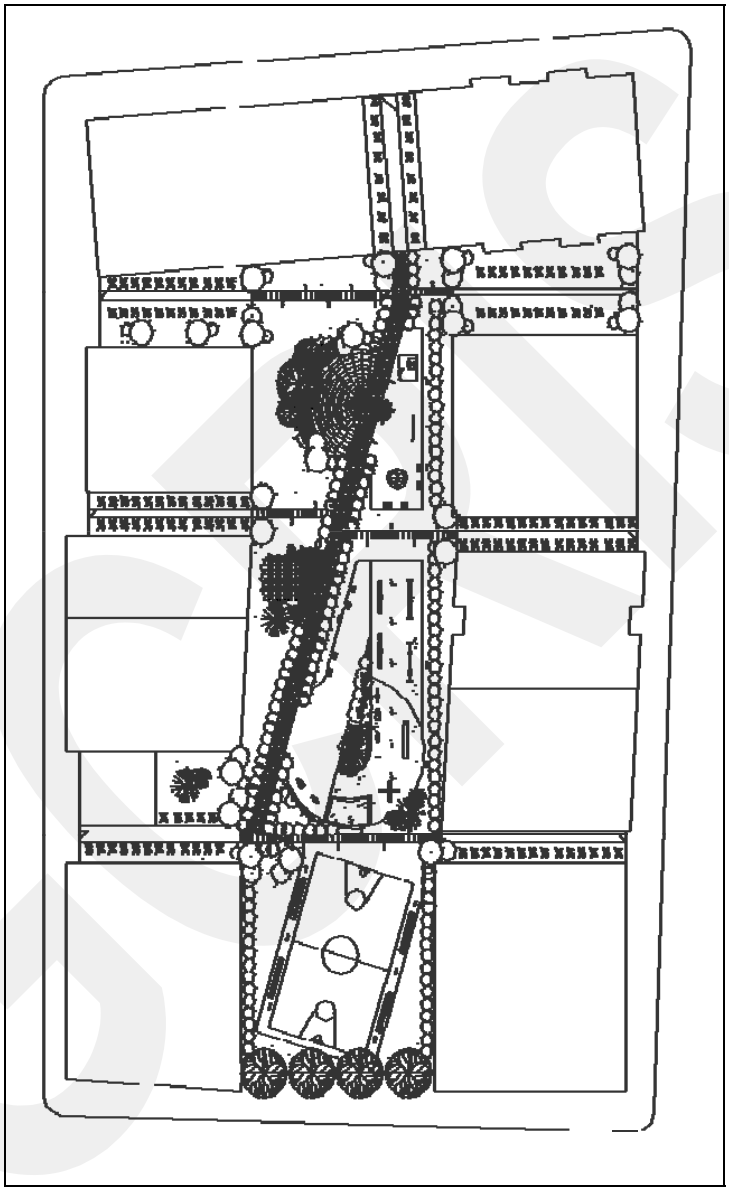


Figure 6.30 Alternative 5- Backyard Arrangement of the Residential Block 9

The children's playground in this alternative is located in the area surrounded by the buildings for security reasons. Sports field is located in the part of the residential block opening the street.

Alternative 6 (enabling the usage of Park and Sports Field)

This alternative enables the usage of the backyard with the functions of park and sports field (Figure 6.31).

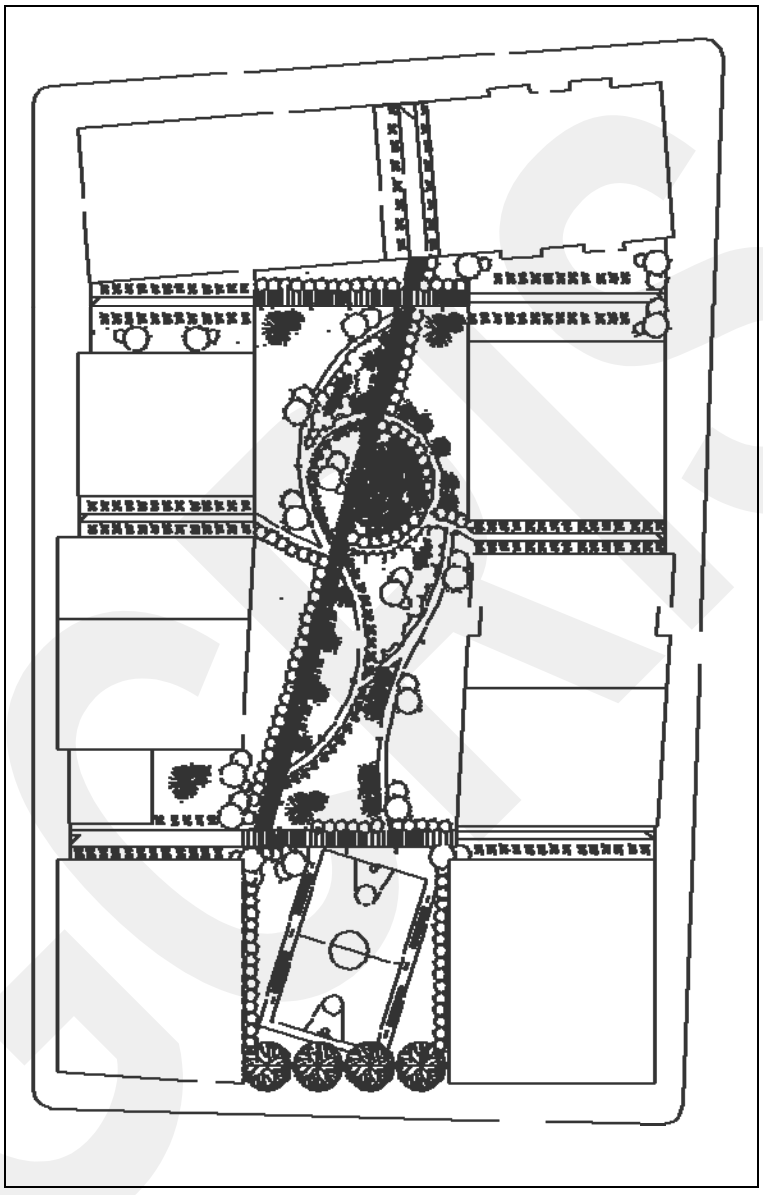


Figure 6.31 Alternative 6- Backyard Arrangement of the Residential Block 9

In this alternative, the sports field that might lead to noise is located in the area where a wide gap exists in the street side of the backyard.

6.3.3 Measurements for Alternatives

It is essential to do some kind of measurements for the criteria in order to determine the achievement of the alternatives in reaching the objectives (Elker,1997). Hence, it is very important that the measurement methods used in the study are sensitive and extensive. The measurement techniques used in the study and their applications are below.

C1. Measurement Method (To minimize the cost of project):

In order to measure this criteria, the number or the size of all the components used in design are multiplied by the 2005 unit prices in Table 6.25. While calculating the costs, the preparation cost of the land is ignored since it is same for all of the designs.

Table 6.25 Unit Prices in 2005 of Fifth Service Group of Components Used in Design (Başal, 1999)

	Unit price
Landscape components	
Pergola	3.500 YTL/unit
Benches	150 YTL/unit
Wastebin	200 YTL/unit
Walking path (yürüyüş yolu)	20 YTL/m2
Parking lot	40 YTL/m2
Children's playground	15 YTL/m2
Playground toys	2.000 YTL/m2
Sports Field – Basketball field	50 YTL/m2
Vegetation Components	
Planting trees	8 YTL/unit
Seasonal and multi-annual flowers	69 YTL/m2
Creating bushes area	51 YTL/m2
Creating sward	14 YTL/m2

The investment cost of each alternative is calculated by using the unit prices in Table 6.25. Calculations are given in Appendix F. Total investment costs of alternatives are follows as;

Alternative 1; **74 232 YTL**
Alternative 2; **109 429 YTL**
Alternative 3; **112 123 YTL**
Alternative 4; **81 759 YTL**
Alternative 5; **94 198 YTL**
Alternative 6; **58 543 YTL**

C2.Measurement Method (To grade with respect to the quetionnaire outcomes for the selection of the function)

For this criterion, the alternatives are graded with respect to the most required function of the user in the residential block acquired by the questionnaire results. According to them, the rank of the required functions in Residential Block 9 is like that: 1-Park, 2-Children's Playground, 3-Sports Field (Table 6.8). Taking this rank into account, the designs in which the back garden is park are given 20 points, children's playground 15 points, sports area 10 points, and the other 5 points.

Alternative 1; park (20)+children's playground (15)=**35**
Alternative 2; sports field (10)+car park (5)=**15**
Alternative 3; car park (5)+children's playground (15)=**20**
Alternative 4; park (20)+car park (5)=**25**
Alternative 5; sports field (10)+children's playground (15)=**25**
Alternative 6; park (20)+sports field (10)=**30**

C3.Measurement Method (To maximize the number of benches in the space)

In order to evaluate this criterion, the total number of benches in each alternative is counted. According to this;

Alternative 1; **35**
Alternative 2; **28**
Alternative 3; **15**
Alternative 4; **18**
Alternative 5; **40**
Alternative 6; **37**

C4.Measurement Method (To maximize the number of small public squares in the space)

The number of public squares in each of the design is counted in order to evaluate this criterion. According to this;

Alternative 1; **2** public squares
Alternative 2; **2** public squares
Alternative 3; **1** public square
Alternative 4; **2** public squares
Alternative 5; **2** public squares
Alternative 6; **1** public square

C5.Measurement Method (To maximize the size of the green area (in m2))

The size of the green areas in each alternative is measured in order to evaluate this criterion. According to this;

Alternative 1; **1871** m²
Alternative 2; **297** m²

Alternative 3; **604** m²
Alternative 4; **1131** m²
Alternative 5; **1733** m²
Alternative 6; **1756** m²

C6.Measurement Method (To maximize the number of trees in the space)

The number of huge trees in each alternative is counted in order to evaluate this criterion. According to this;

Alternative 1; **54** trees
Alternative 2; **33** trees
Alternative 3; **23** trees
Alternative 4; **30** trees
Alternative 5; **31** trees
Alternative 6; **47** trees

C7.Measurement Method (To minimize the number of transitions/crossings opening outdoors)

The number of crossings in each alternative is counted in order to evaluate this criterion. According to this;

Alternative 1; **7** crossings
Alternative 2; **8** crossings
Alternative 3; **8** crossings
Alternative 4; **8** crossings
Alternative 5; **7** crossings
Alternative 6; **7** crossings

In order to measure the extent to which the objective of creating suitable shadow conditions for seasonal characteristics is achieved, first it is necessary to determine the shadow conditions of the backyard. At this

point, initially the coordinate information of the space should be obtained, nevertheless, since it is impossible to reach the mathematical location of the space, the center coordinates of Ankara are used. Ankara is on the 40' north latitude and 33' east longitude (www.cografyasaati.com). In addition to this data, the shadow condition of the residential block changes with seasonal and time differences. For this reason, considering the climate conditions meanwhile, the shadow condition in June 21 and in March 21 are evaluated. The values at 12.00 o'clock and 15.00 o'clock, which are assumed to be the times in which the space is the most intensively used in the day, are handled. By using the Sunpath Diagram of Lechner (1990), the angle of sunlight to this space is calculated for the dates and times previously mentioned (Table 6.26).

Table 6.26 Angle of Sunlight to the Backyard
(Lencher, 1990)

	12.00	**15.00**
March 21	53 º	35 º
June 21	76 º	53 º

By using the building heights and the angle of the sunlight, the areas under shadow at definite hours and days are determined. The condition of Residential Block 9 in terms of these data is seen in Figure 6.32.

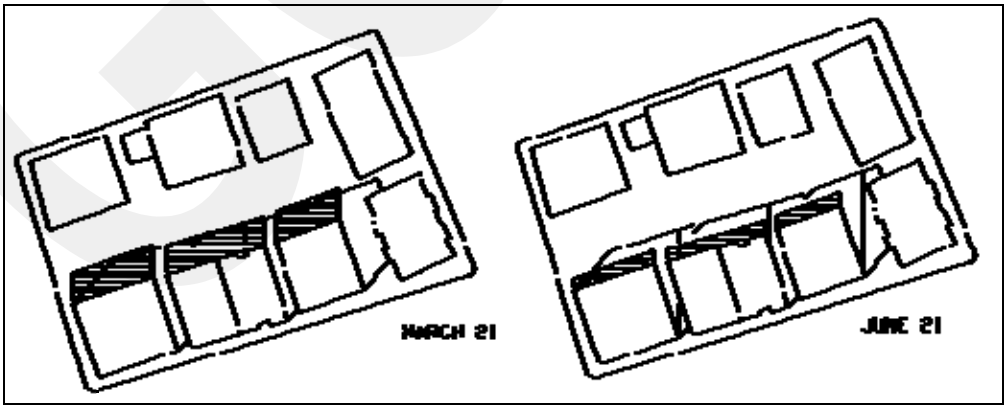


Figure 6.32 The Areas in the Residential Block under Shadow
(Lined areas indicate the shadow condition at 12.00 o'clock, and dotted areas indicate the shadow condition at 15.00 o'clock)

C8. Measurement Method (To minimize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in March)

The plan indicating the areas under shadow in the residential block as constituted in the previous parts of the study is used in order to evaluate this criterion (Figure 6.15). This plan and the designs are overlapped, then the shadow areas in sitting places, parks or in children's playgrounds are calculated for each design, and the average size of the shadow area in the noon and in the evening are found.

Alternative 1;(12.00 o'clock) +(15.00 o'clock)/2=**1202** m²
Alternative 2;(12.00 o'clock) +(15.00 o'clock)/2=**1028** m²
Alternative 3;(12.00 o'clock) +(15.00 o'clock)/2=**1437** m²
Alternative 4;(12.00 o'clock) +(15.00 o'clock)/2=**196** m²
Alternative 5;(12.00 o'clock) +(15.00 o'clock)/2=**5515** m²
Alternative 6;(12.00 o'clock) +(15.00 o'clock)/2=**1618** m²

C9. Measurement Method (To maximize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in June)

The plan indicating the areas under shadow in the block as constituted in the previous parts of the study is used in order to evaluate this criterion (Figure 6.15). This plan and the designs are overlapped, then the shadow areas in sitting places, parks or in children's playgrounds are calculated for each design, and the average size of the shadow area in the noon and in the evening are found.

Alternative 1;(12.00 o'clock) +(15.00 o'clock)/2=**626** m²
Alternative 2;(12.00 o'clock) +(15.00 o'clock)/2=**756** m²
Alternative 3;(12.00 o'clock) +(15.00 o'clock)/2=**999** m²
Alternative 4;(12.00 o'clock) +(15.00 o'clock)/2=**131** m²

Alternative 5;(12.00 o'clock) +(15.00 o'clock)/2=**4560** m²
Alternative 6;(12.00 o'clock) +(15.00 o'clock)/2=**1496** m²

C10. Measurement Method (To minimize the number of functions causing noise in the space)

In order to evaluate this criterion, the noise creation conditions of the functions are graded, and each design is evaluated according to these grades. In this respect, the rank of the functions from the ones causing noise the most to the ones causing noise the least and their grades are like this: sports area (20), children's playground (15), parking lot (10), park (5).

Alternative 1; park (5)+children's playground (15)=**20**
Alternative 2; sports field (20)+car park (10)=**30**
Alternative 3; car park (10)+children's playground (15)=**25**
Alternative 4; park (5)+car park (10)=**15**
Alternative 5; sports field (20)+ children's playground (15)=**35**
Alternative 6; park (5)+ sports field (20)=**25**

C11 Measurement Method (To maximize the compatibility of the proposed functions with the age profile of users)

For evaluating this criterion, the compatibility of the functions with the age profile of the residential block is graded, and each design is evaluated according to these grades. Then, the functions are ranked and graded according to their compatibility with the age profile.

The function suitable for 0-12 age group (7%) - children's playground
The function suitable for 13-18 age group (9%) - sports field, park
The function suitable for 19-35 age group (27%) - park, sports field, car park
The function suitable for 36-60 age group (36%) - park, car park
The function suitable for 60+ age group (21%) - park

The functions according to the age groups are graded as,

Children's Playground, 7% - 1 point

Park, 93% - 10 points

Sports Field, 36% - 3 points

Car Park, 63% - 7 points.

Alternative 1; park (10)+children's playground (1)=**11**

Alternative 2; sports field (3)+car park (7)=**10**

Alternative 3; car park (7)+children's playground (1)=**8**

Alternative 4; park (10)+car park (7)=**17**

Alternative 5; sports field (3)+children's playground (1)=**4**

Alternative 6; park (10)+sports field (3)=**13**

C12 Measurement Method (To increase the number of existing buildings with the green area vista)

The number of buildings with green area vista in each alternative is counted in order to evaluate this criterion. According to this;

Alternative 1; **11** buildings

Alternative 2; **0** buildings

Alternative 3; **6** buildings

Alternative 4; **6** buildings

Alternative 5; **9** buildings

Alternative 6; **9** buildings

The data acquired by the measurements for each alternative can be seen in Table 6.27.

Table 6.27 Measurement Results

Objectives	Criteria	Unit	Alt 1	Alt 2	Alt 3	Alt 4	Alt5	Alt 6
To minimize the cost of project	To minimize the project investment cost	1000 YTL	74 232	109 429	112 123	81 759	94 198	58 543
To make sufficient for expectations of the residents regarding the backyard at the maximum level	To grade with respect to the questionnaire outcomes for the selection of the function	Point	35	15	20	25	25	30
To create spaces in the backyard where people can communicate with each other and with their surrounding	To maximize the number of benches in the space	Number of benches	35	28	15	18	40	37
	To maximize the number of small public squares in the space	Number of public squares	2	2	1	2	2	1
To provide wider green area in the field at maximum value	To maximize the size of the green area (in m²) in the space	M²	1871	297	604	1131	1733	1756
	To maximize the number of trees in the space	Number of trees	54	33	23	30	31	47
To ensure the field security	To minimize the number of crossings opening outdoors	Number of cross	7	8	8	8	7	7

Table 6.27 Measurement Results (continued)

Objectives	Criteria	Unit	Alt 1	Alt 2	Alt 3	Alt 4	Alt5	Alt 6
To provide suitable shadow conditions for the seasonal properties	To minimize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in March	M²	1202	1028	1437	196	5515	1618
	To maximize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in June	M²	626	756	999	131	4560	1496
To hold the noise pollution at minimum	To minimize the number of functions causing noise in the space	Point	20	30	25	15	35	25
To enable the compatibility of the proposed functions for the backyard with the user profile	To maximize the compatibility of the proposed functions with the age profile of users	Point	11	10	8	17	4	13
To improve the vista of the rooms of the residences looking at the back facade	To increase the number of existing buildings with the green area vista	Number of houses	11	0	6	6	9	9

The next stage following the acquisition of measurement results is the evaluation stage of these data. However, as seen in Table 6.27, the units of each data acquired by the measurements are different. Hence, the evaluation and interpretation of these data will not be convenient, and, there is a need to bring these data on the same scale, which is provided by standardization.

6.3.4. Comparison of the Alternatives

With the standardization process, reducing the data to the same scale provides the comparability of the data. Generally the highest value of the common scale is accepted as 100 for standardization. In other words, the lowest of the highest value is accepted as 100 changing with respect to the characteristic of the data. The data getting the lowest or the highest value, which is supposed to be the least required result, is accepted as 0. Hence, by estimating these two values, all of the measurement results are reduced to the same scale (Elker, 1997).

Considering this study, for instance, it is seen in Table 6.25 that for the first criterion the most suitable value belongs to Alternative 6 and the least suitable value to Alternative 2. Therefore, the value of Alternative 6 is accepted as 100, the value of Alternative 2 as 0, the other values within the interval are estimated on the basis of these values (Table 6.28).

Table 6.28 Standardization Table

Objectives	Criteria	Unit	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
To minimize the cost of project	To minimize the project investment cost	1000 YTL	81	0	34	71	56	100
To make sufficient for the expectations of the residents regarding the backyard at the maximum level	To grade with respect to the questionnaire outcomes for the selection of the function	Point	100	0	25	50	50	75
To create spaces in the backyardwhere people can communicate with each other and with their surrounding	To maximize the number of benches in the space	Number of benches	80	52	0	12	100	88
	To maximize the number of small public squares in the space	Number of public squares	100	100	0	100	100	0
To provide wider green area in the field at maximum value	To maximize the size of the green area (in m²) in the space	M²	100	0	19	53	91	
	To maximize the number of trees in the space	Number of trees	100	32	0	23	26	77
To ensure the field security	To minimize the number of crossings opening outdoors	Number of crossing	100	0	0	0	100	100

Table 6.28 Standardization Table(continued)

Objectives	**Criteria**	**Unit**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 5**	**Alt 6**
To hold the noise pollution at minimum	To minimize the number of functions causing noise in the space	Point	75	25	50	100	0	50
To enable the compatibility of the proposed functions for the backyard with the user profile	To maximize the compatibility of the proposed functions with the age profile of users	Point	54	46	31	100	0	69
To improve the vista of the rooms of the residences looking at the back facade	To increase the number of existing buildings with the green area vista	Number of houses	100	0	54	54	82	82

Following the reduction of each criterion to the same scale, previously determined weights should be included in evaluation. For this purpose, the weight of each criterion should be multiplied by the measurement results obtained from standardization (Table 6.29). When the values acquired after doing this operation for each choice are added, then the achievement rank of that choice in reaching the objective is obtained (Elker, 1997).

The most eligible alternatives are the ones with the highest values, since the most suitable result is accepted as 100 in standardization in this study.

Table 6.29 Comparison of the Measurement Results

Objectives	**Criteria**	**Weight**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 5**	**Alt 6**
To minimize the cost of project	To minimize the project investment cost	0,15	12.2	0	5.1	10.6	8.4	15
To make sufficient for the expectations of the residents regarding the backyard at the maximum level	To grade with respect to the questionnaire outcomes for the selection of the function	0,10	10	0	2.5	5	5	7.5
To create spaces in the backyard where people can communicate with each other and with their surrounding	To maximize the number of benches in the space	0,05	4	2.6	0	0.6	5	4.4
	To maximize the number of small public squares in the space	0,10	10	10	0	10	10	0
To hold the size of the green area in the field at maximum value	To maximize the size of the green area (in m²) in the space	0,10	10	0	1.9	5.3	9.1	9.3
	To maximize the number of trees in the space	0,10	10	3.2	0	2.3	2.6	7.7
To ensure the field security	To minimize the number of crossings opening outdoors	0,05	5	0	0	0	5	5

Table 6.29 Comparison of the Measurement Results (continued)

Objectives	**Criteria**	**Weight**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 5**	**Alt 6**
To provide suitable shadow conditions for the seasonal properties	To minimize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in March	0,10	8.1	8.4	7.7	10	0	7.3
	To maximize the average of daily size of shadow area in the benches, parks and children's playgrounds of the space in June	0,10	1.1	1.4	2	0	10	3.1
To hold the noise pollution at minimum	To minimize the number of functions causing noise in the space	0,05	3.7	1.2	2.5	5	0	2.5
To enable the compatibility of the proposed functions for the backyard with the user profile	To maximize the compatibility of the proposed functions with the age profile of users	0,05	2.7	2.3	1.5	5	0	3.4
To improve the vista of the rooms of the residences looking at the back facade	To increase the number of existing buildings with the green area vista	0,05	5	0	2.7	2.7	4.1	4.1
TOPLAM			**81.8**	29.1	25.9	56.5	59.2	69.3

As seen in Table 6.29, among the alternatives, alternative 1 gets the highest grade in the comparison of the measurement results. This alternative is designed for the utilization of backyards as park and children's playground. In other words, in order to increase the usage potential of the

backyard of the residence, the most eligible design is the design involving the functions of park and children's playground.

It appears that the alternative getting the second highest grade is alternative 6. In this alternative, the backyard is designed as park and sports field. On the other hand, it is clear in the comparison that the alternatives getting the lowest grades are alternative 3 (including car park and children's playground functions) and alternative 2 (including car park and sports field).

As mentioned in the previous chapters, the result of the case study will be differentiated according to the properties of the each individual space and it's users. According to this obtained result, the highest graded alternative is the one which provides the best solution for the residential block studied in the case study. The methodology used in the case study has the potential of acting as a model for similar situations. This issue is discussed in the following chapter.

CHAPTER 7

CONCLUSION

'Space' is a very comprehensive concept. The area meant by space may be sometimes a small room in a house and sometimes a large square. The urban outdoor concept within the scope of this concept has many different features like the user variety and space size. Urban outdoor spaces can be grouped as public spaces, private spaces and semi-private spaces having the characteristics of both groups.

The housing backyards mentioned in the study are the urban outdoor spaces formed by gathering of the backyards of detached apartment buildings on a residential block. When the backyards of detached apartments on a residential block are examined in Turkey, it can be seen that each of them are shaped in accordance with the development rules and that they are left-over spaces with a quite limited size. These left-over spaces are mostly the disused and neglected areas but when the whole city is taken into consideration, they have a great potential as green areas. The study is carried assuming that the backyards of apartment buildings on a residential block can form a whole. In this context, these spaces have a semi-private feature and they are within the scope of publicly use spaces. For this reason, the issue is concerned in various aspects; a method to increase the potential of the common use of housing backyards is established in the light of the obtained data.

In the thesis, urban space concept is analyzed, because the subject explored is a part of space concept and the place of housing backyard is mentioned within this concept. Various classifications are done concerning the urban outdoor space in accordance with the quality and property of limiting elements, their relationship with each other and the characteristics of the space users. The spaces are classified as natural, artificial and mixed spaces in accordance with the characteristics of the elements constituting the spaces and they are also classified as soft and hard spaces in accodance with the natural and artificial materials that constitute the space. Spaces are also classified as positive and negative space in accordance with its formal characteristics. They are alternatively grouped as spaces forming a very weak effect, spaces forming semi-space effect and spaces forming a strong effect, according to the position of the buildings comprising urban outdoor space. Another classification concerning the urban outdoor space is the classification done according to the characteristics of the activity. In this classification, space is handled as static and dynamic space. The classification type discussed in detail from the aspect of the scope of the study is the grouping made according to the user and property. According to this classification, the space is grouped as private, public and semi-private space that completes the two and it is a transition space. Because the components of the housing backyards are both natural and artificial elements within this space variety backyards are considered as the mixed spaces. They are classified under the hard spaces because the limiters are dominantly artificial elements; under group of positive spaces because the space is definite, evident, readable and in humane scale. Backyards are also classified as strong spatial sence or semi-spatial sence space in accordance with the positioning of the limiting buildings. The backyards are static spaces according to the usable activity variety.

Then, the components constituting the space with its main features are analyzed. These components are defined as buildings, their facades, flooring material, natural factors and street furnitures. General design

principles used to relate the components with each other at each dimension of urban design are also dealt with in the thesis.

The components affecting the quality of the urban space and the user-space relationship is another important subject that was studied in the thesis. These components are handled as physical and social components, then the effects of the space to the activities are mentioned. Physical elements are discussed under the headings of microclimate, topography, natural factors covering the plants and factors related to buildings and the artificial factors other than buildings. It is observed that the social elements are determined according to the features of the user differing according to age, gender, cultural and economic features. It is also seen that each group has different requirements and expectations. As a result of these analysis it is found out that it is necessary to examine each of these factors specific to that space during the design process. It is also determined that these examinations should be done in an extended and multi-dimensional way and that the studies should cover questionaries, observations and examinations concerning the area. It is concluded that the type of the activity suggested for the space is determined according to the physical and social features of the space and thus, all of these features should be handled within this scope.

The housing backyards constituting the basic subject of the study is discussed within the scope of urban spaces, its definition, perception, present utilization type and its potentials, are mentioned. As specified in the beginning of the study, most of these spaces are defined as left-over spaces formed by apartment houses parcel in accordance with the development rules and it is concluded that some of these spaces are used by being organized at a venture. In current use, especially, housing backyards are used as car parks depending on their size and geometry, as depots or storage areas, as green areas made up of various wild plants, as left-over spaces not used for any specific function. Also, when the backyard of each building is undertaken together with other backyards, it is observed

that these areas have a potential of providing functions that need larger areas such as children's playground, sports area, parks and parking lots.

After exploring the components of housing backyards with all of its aspect, the related sections of the Turkish Development Law, that governed the present shape of the housing backyards, is examined from a critical angle and the problematic aspects are discussed. Ultimately, it is observed that the building pattern constituted as a result of the development plans has been formed only according to the specific distances determined by the law without any aesthetics and it is also found out that in this type of pattern the qualities specific to the place are neglected. However, it is specified that to propose a law concerning the reduction of these inconventences is beyond the scope of this thesis. Instead, it is concluded that these disadvantages can be compensated by a consistent and functional organization model aiming at facilitating the realization of common use of housing backyards.

Transformation model that is suggested in this phase of the study shall definitely have differences according to the undertaken area and the residents in the area. Therefore, the organization and finance model suggested in this phase is developed in order to be a sample for other studies.

Since the transformation areas undertaken within the scope of the thesis shall not totally have a public identity, they will have a semi-public structure at the end of the transformation. The realization, approval, inspection, resource provision and tracking of the use of the application project concerning the area should not be expected to be executed by local managements. At this point, it is only possible for the local managements to play an encouraging role. Because, although these areas have a semi-public structure, they shall have open green area properties providing the breathing of the city within the general city structure. For this reason, it is suggested that the local managements provide technical support in the preparation and application phases of the project in order to encourage the

study. In order to support the other phases of the transformation, it is suggested to set up a District Improvement Committee of which the members are the managers of the apartments in each district and the management board is selected among the members, by the members. With the support of these two forces, organization and finance model is considered to function as follows: the backyards requested to be organized with the demand of the apartment managers in the urban block shall be notified to the local managements via District Improvement Committee and local managements shall examine the demands and prepare a project for the suitable ones, taking the user requests and general design rules as basis. Then these projects shall be introduced to the residents of the block by the apartment managers, in the a joint meeting, and the project accepted with the majority of the votes of the attendants shall be forwarded to the District Improvement Committee. The committee shall determine the application cost of the project. Labour cost, gravel and sand, manpower within the structure of the municipality itself and productions that is nearly equivalent to the 25% of this cost shall be paid by the local management. The rest of the cost shall be collected in monthly payments by the apartment managers in that block. That cost shall be added to the contribution price and the total shall be collected within 2 years. However, if functions such as canteen or sports area that can provide income are suggested in the design prepared for the backyards, these function areas shall be rented to private enterprises and the income shall be subtracted from the investment and management cost of the project and the rest of the price shall be paid by the residents. The management cost of the backyards that are re-designed and opened for public use shall again be reflected to the contribution price of the apartment dwellers in the block and transferred to District Improvement Committee monthly, and functioning shall be provided by this committee. This organization and finance model can be seen in Figure 7.1.

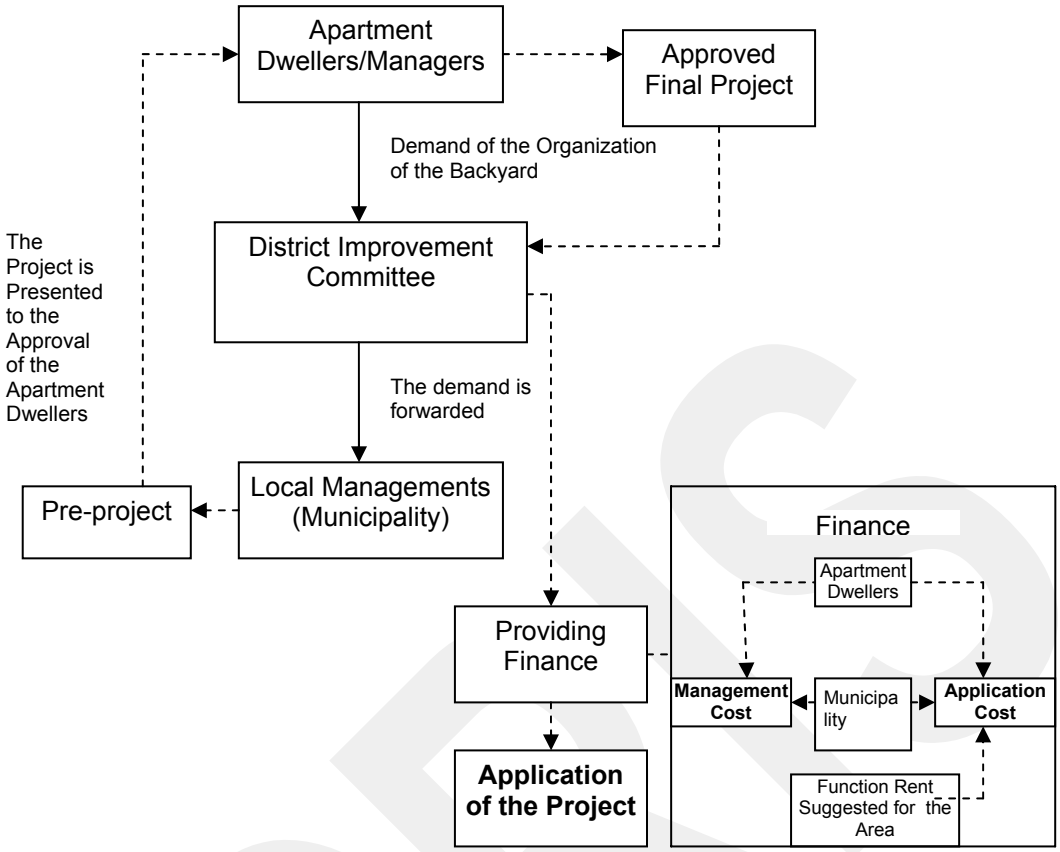


Figure 7.1 Suggested Organization and Finance Model

In the thesis, a proposal for methodology is formed in order to help designers targeting the increase of the potential of the common use of housing backyards by performing a case study in an area with the light of entire information gathered so far. For this purpose, Aşağı Ayrancı is determined as a case study area because of the existence of many detached buildings suitable to the scope of the study. Primarily, a region is determined within the area where such uses are intense and then all residential blocks within the area are examined in general and those that are suitable for detailed examination are determined. General physical features for these residential blocks are analyzed and user characteristics, point of views, requests and expectations concerning housing backyards are determined through a survey study.

Then the residential block that is most suitable for design is selected and this block is investigated by making more detailed studies. Six design alternatives, concerning this residential block, are developed each one containing a pair of functions choosen among children's playground, park, sports area and parking lots. These alternative designs are compared through a multi-criteria evaluation method by taking into account general design principles, survey results and personal accumulations. As a result of this comparison, Alternative 1, containing park and children's playground functions, is determined as the most suitable design for this space and space user (Figure 6.24).

This method used in the case study is determined as a method that can be fromferred to other design studies to be prepared in the future aiming at increasing the potential of common use of housing backyards. This method is shortly summarized in Figure 7.2.

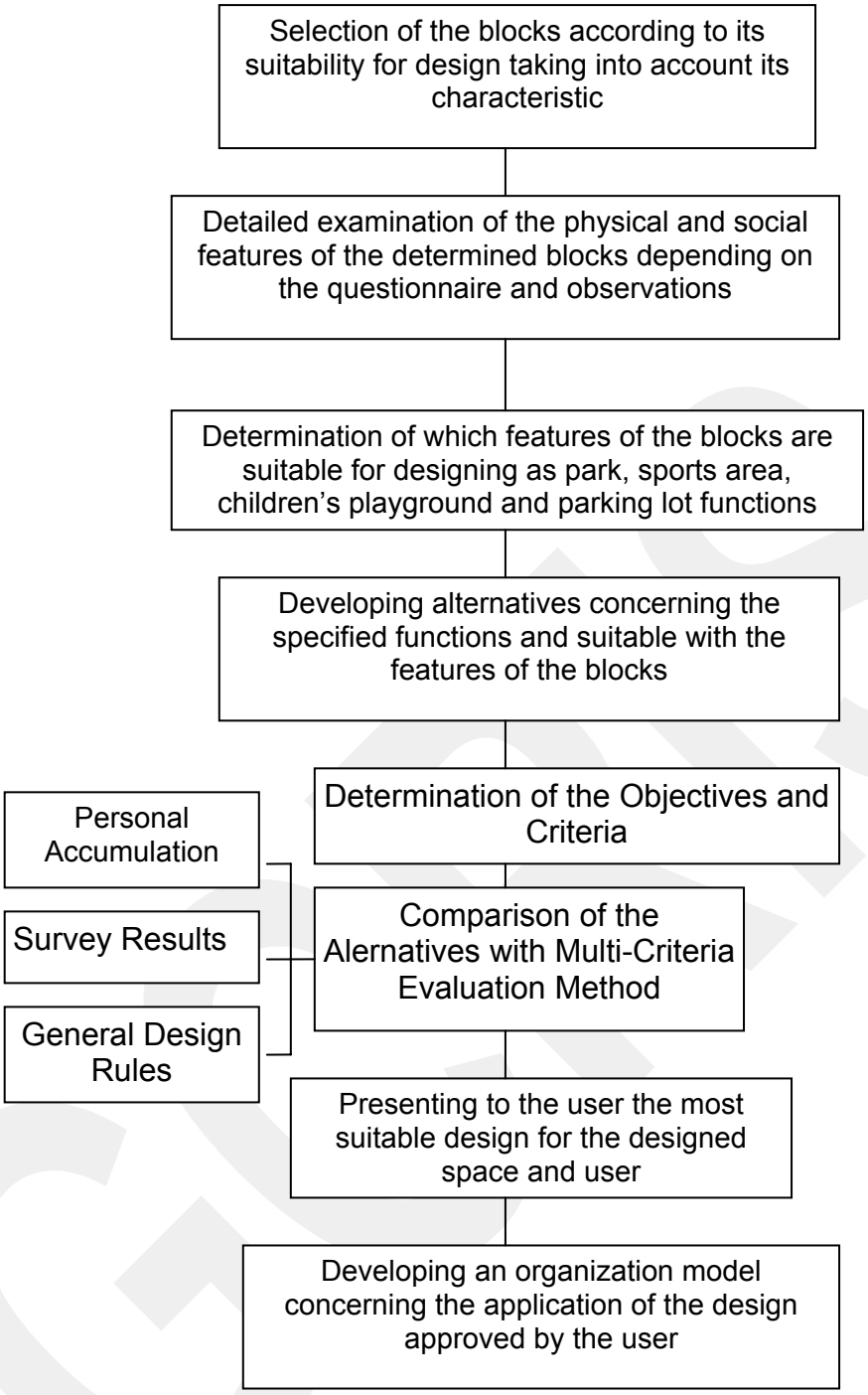


Figure 7.2 A Methodhology for the Improving of the Common Use of Housing Backyards

As mentioned before, the primary subject of the thesis is the improvement of the common use of housing backyards, and the suggestions concerning the design phase of the study are mentioned predominantly. However, the subject is very extensive and multi dimensional. The headings mentioned and each subject that comprises the chapters of the thesis have a scope that can be undertaken as individual study subjects.

For instance, the use of housing backyards by all citizens is a subject that can be examined in the context of a different thesis. Because these are the potential open spaces in a city and also have the potential of being usable for all the pedestrians.

Determination of design principles specific for housing backyards is another subject that can be handled in a thesis. Because, these spaces have particular characteristics like their scales, their properties of being surrounded by private residential blocks, etc.

The effect of the users of the urban space on the shaping of the space is also a subject worthwile of being studied in detail. Because a space designed respecting users' demands and properties is certainly an effective space type.

Legal dimensions of the issue and amendment in the Development Law in order to solve the limitations in the common use of backyards is another potential thesis subject. The proposals in the context of this subject will facilitate the creation of defined, usable and sustainable spaces. The actual undefined settlement is a result of existing Development Law. Another important subject is how public participation can be realized practically in the design of the housing backyards, the effect of public participation on design criteria.

All of these subjects have the potential of being examined in different thesis in the future.

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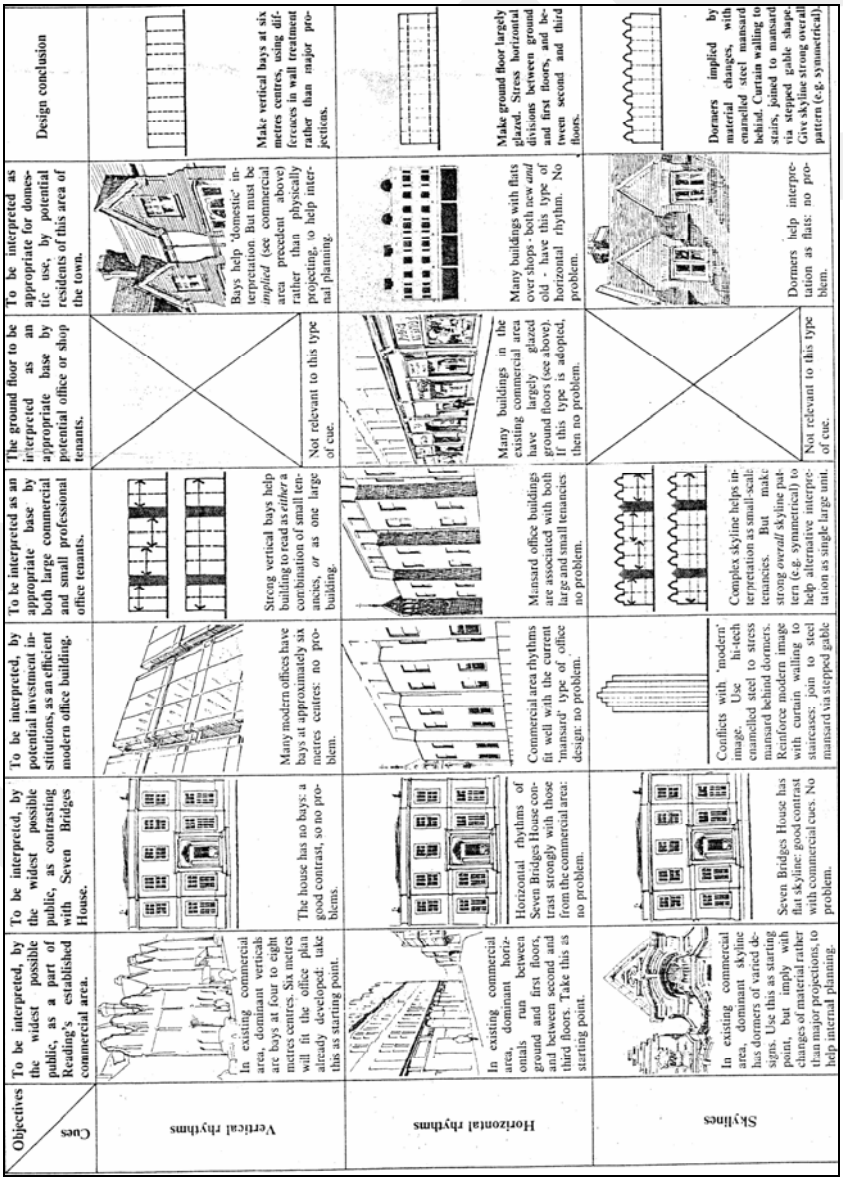
APPENDIX A

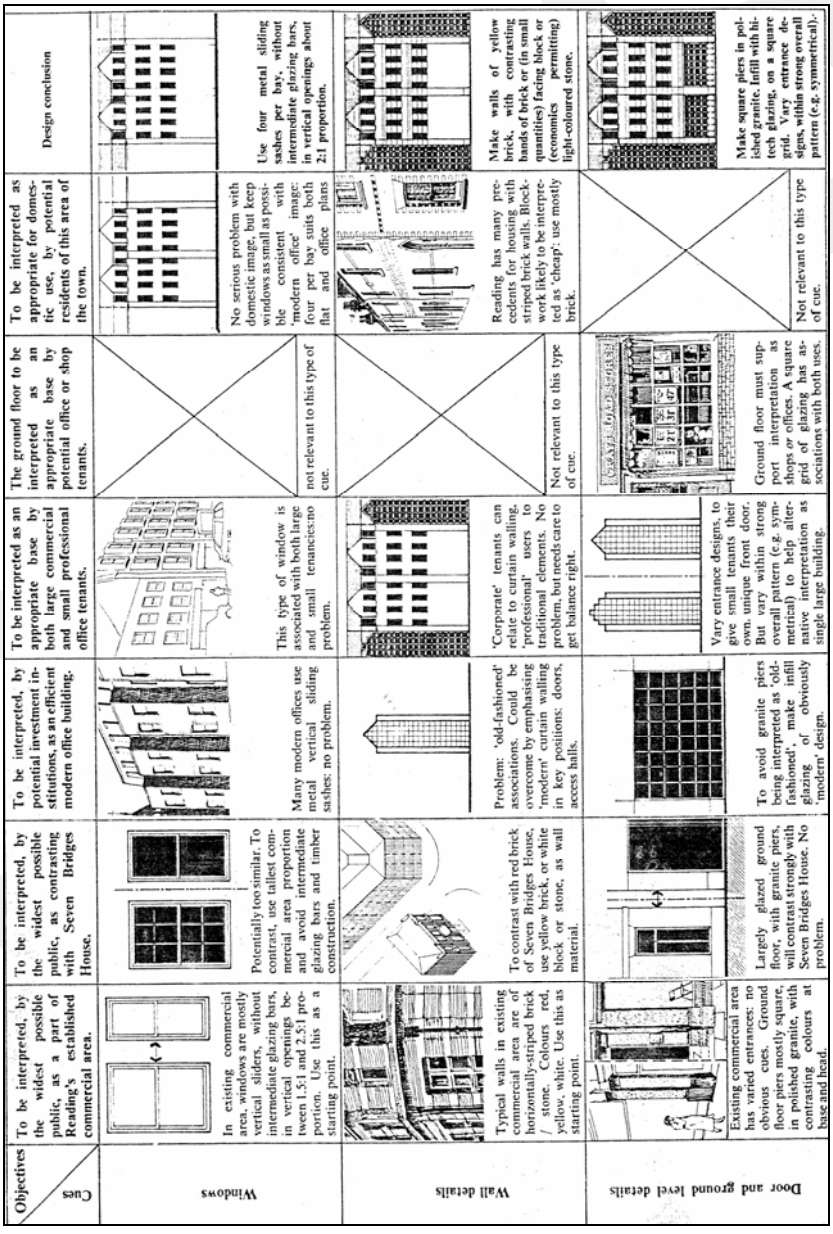
FAÇADE CHARACTERISTICS



(Bentley&Alcock,1987)

APPENDIX A

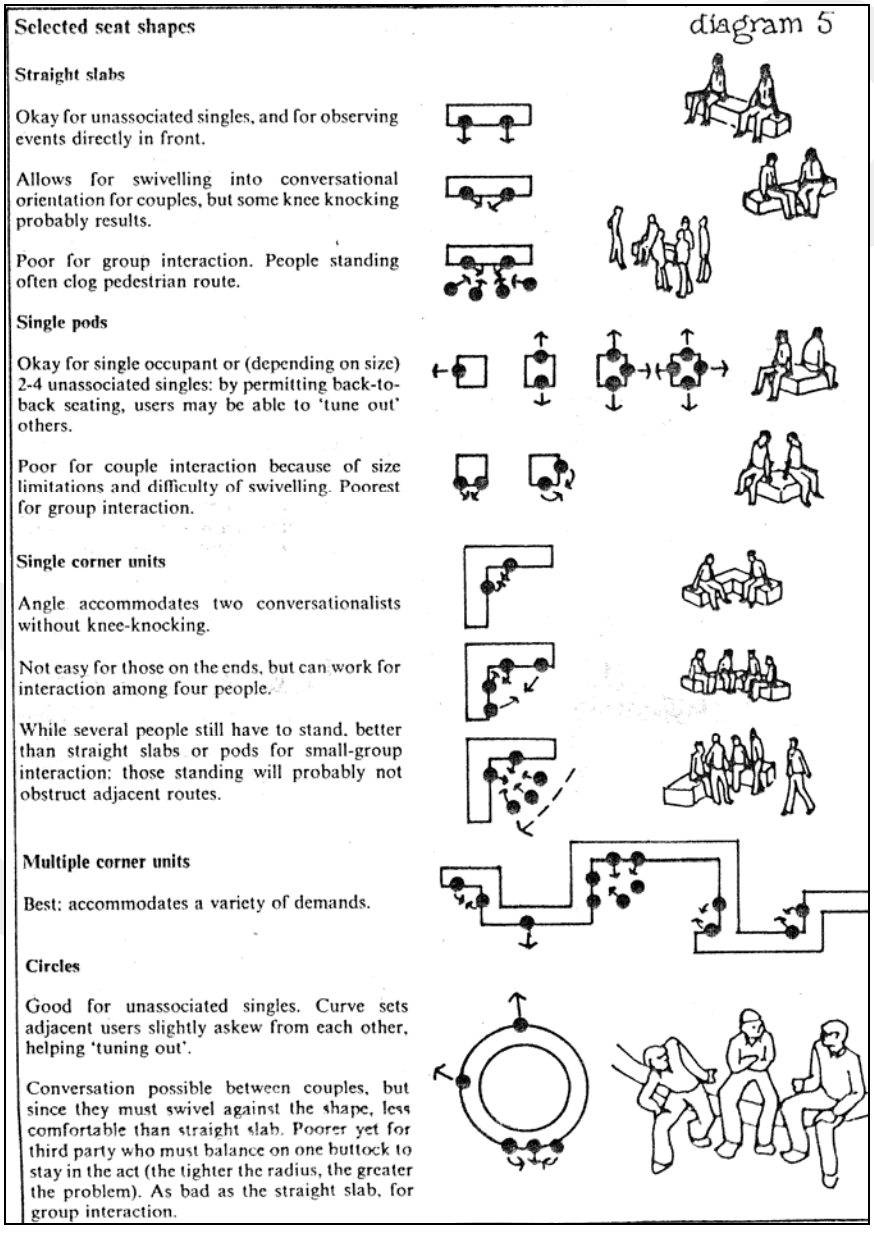
FAÇADE CHARACTERISTICS (CONTINUED)



(Bentley&Alcock,1987)

APPENDIX B

POSITIONING WAYS OF SEATINGS



Selected seat shapes

diagram 5

Straight slabs

Okay for unassociated singles, and for observing events directly in front.

Allows for swivelling into conversational orientation for couples, but some knee knocking probably results.

Poor for group interaction. People standing often clog pedestrian route.

Single pods

Okay for single occupant or (depending on size) 2-4 unassociated singles: by permitting back-to-back seating, users may be able to 'tune out' others.

Poor for couple interaction because of size limitations and difficulty of swivelling. Poorest for group interaction.

Single corner units

Angle accommodates two conversationalists without knee-knocking.

Not easy for those on the ends, but can work for interaction among four people.

While several people still have to stand, better than straight slabs or pods for small-group interaction: those standing will probably not obstruct adjacent routes.

Multiple corner units

Best: accommodates a variety of demands.

Circles

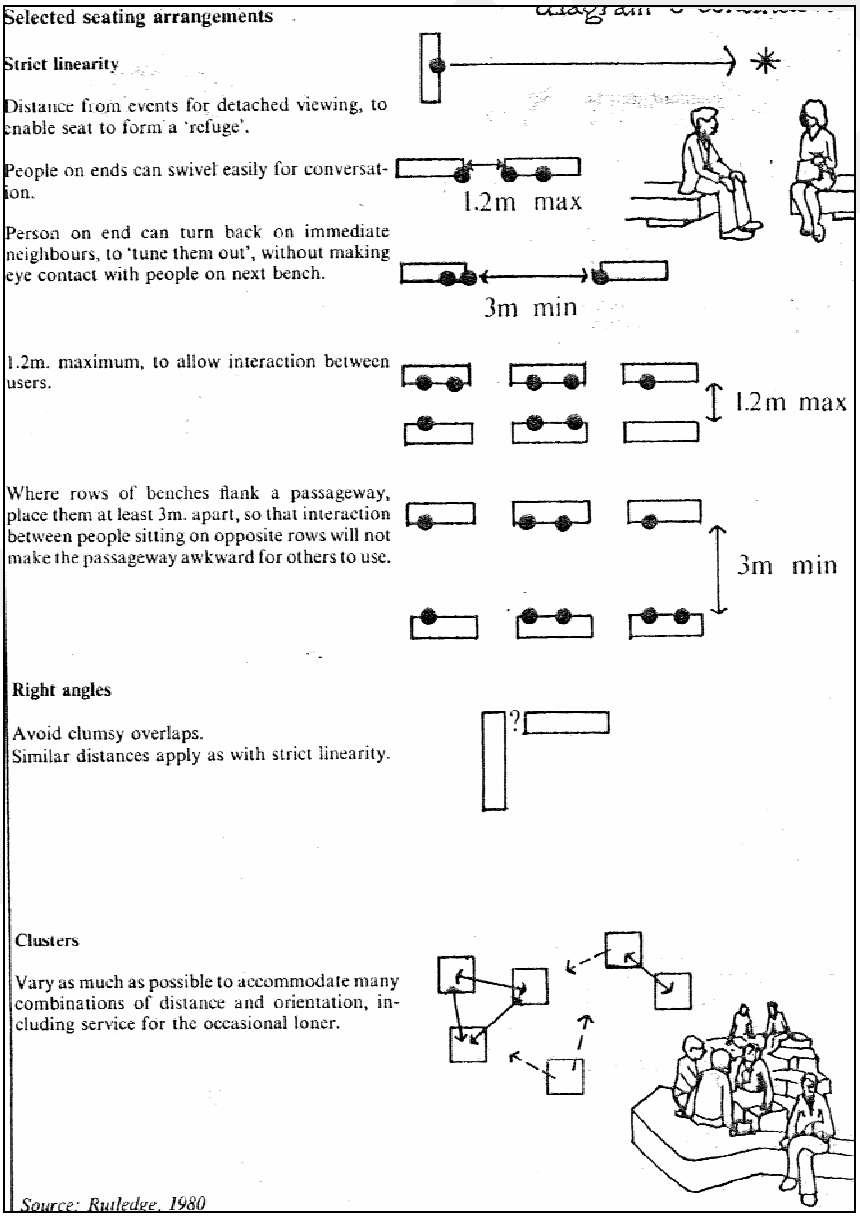
Good for unassociated singles. Curve sets adjacent users slightly askew from each other, helping 'tuning out'.

Conversation possible between couples, but since they must swivel against the shape, less comfortable than straight slab. Poorer yet for third party who must balance on one buttock to stay in the act (the tighter the radius, the greater the problem). As bad as the straight slab, for group interaction.

(Bentley&Alcock,1987)

APPENDIX B

POSITIONING WAYS OF SEATINGS (CONTINUED)



(Bentley&Alcock,1987)

APPENDIX C

SPACE REQUIREMENT FOR PLAY SWINGS

Height(m)	No. Of seats	Bays	Area(m2)
2-45	3	1	45
	4	2	52
	6	2	67
3	3	1	58
	4	2	67
	6	2	83
3-65	3	1	80
	4	2	90
	6	2	120

(Marlowe,1977)

APPENDIX D

THE CHARACTERISTICS OF RESIDENTIAL BLOCKS

Block no	Number of parcels /lots	Average storey height	Land use (%m2)		Visual assessment of the backyard				Current use of the backyard	
			Residence	Trade under residence	Facade evaluation	Facade solid-void rate (%)	Pattern of green area	Backyard constraining component	Size(% m2)	Function
2	11	5	82	18	GOOD	30	Random	Wall Wire Plant cover	5	Resting
									15	Parking
									80	Unused
3	11	5	37	63	GOOD	40	Random Designed	Wall Wire	10	Resting
									19	Parking
									71	Unused
9	11	5	64	36	GOOD	40	Random	Wall	5	Resting
									80	Parking
									15	Unused
10	11	5	73	27	GOOD	50	Random	Wall	40	Parking
									60	Unused

APPENDIX E

QUESTIONNAIRE FORM

Çankaya University

Graduate School of Natural Sciences

Graduate Programme of Interior Architecture

Sample Field Survey on the Thesis Study of "Improving the Public Use Quality of the Back Gardens of the Residences"

General Characteristics of the Flat:

The floor:

The facade position:

	Age	Gender	Education level
1. Person			
2. Person			
3. Person			
4. Person			
5. Person			

1) How often do you use the back garden of your residence? (except parking)

a) Never
b) Once a year
c) Once a month
d) Once a week
e) Everyday

2) How do you describe the current use and appearance of the back garden of your residence?

a) Very good b) Good c) Average d) Poor

3) What do you think on designing the back gardens by integrating (assuming as a housing complex) them?

a) A very good idea
b) Not bad but a better solution can be found
c) Not willing this area to be used
d) It does not matter
e) Other

APPENDIX E

QUESTIONNAIRE FORM (CONTINUED)

4) In your opinion, which function should the back garden of your residence undertake? Can you rank with respect to the priority?

a) Sports area
b) Children's playground
c) Park
d) Parking lot
e) Other

5) For what purpose do you use the rooms of your flat looking at the back garden?

a) Bedroom ( )
b) Salon ( )
c) Living room ( )
d) Kitchen ( )
e) WC/Bathroom ( )
f) Pantry/Store ( )
g) Other ( )

6) Do you have balcony looaking at the back garden?

a) No
b) Yes……..How do you use? a) As an open balcony c)As a closed pantry/store
b) As a close winter garden d)As a part of the room

7) If you have a car, where do you use for parking?

a) Back garden d) Another Street
b) Front garden e) Other
c) Street

8) Which functions as park, sports area, children's playground and how often do you use?

	Never	Once a month	Once a week	More than once a week	Everyday
Park					
Sports area					
Children's playground					

9) What are the problems related with these areas?

a) Distant from the residence b) Security problem
c) Not qualitative

APPENDIX F

CALCULATION OF THE INVESTMENT COST

Alternative 1; Landscape Components

Pergola; 5* 3500=17500 YTL

Bench; 35*150 =5250 YTL

Wastebin; 6*200=1200 YTL

Walking path; 300*20 =6000 YTL

Car Park;0

Children's Playground; 90*15=13500 YTL

Playground Toys; 10*2 000=20000 YTL

Sports Field;0

Vegetation Components

Tree; 54*8= 432 YTL

Flower; 45* 69=3105 YTL

Bushes; 100*51=5100 YTL

Sward; 150*14=2100 YTL

Total=74 232 YTL

Alternative 2; Landscape Components

Pergola; 2* 3500=7000 YTL

Bench; 28*150 =4200 YTL

Wastebin; 6*200=1200 YTL

Walking path; 280*20 =5600 YTL

Car Park; 1200*40=48000

Children's Playground; 0

Playground Toys; 0

Sports Field; 600*50=30000 YTL

Vegetation Components

Tree; 33*8=264YTL

Flower; 35* 69=2415 YTL

Bushes; 150*51=7650 YTL

Sward; 150*14=2100 YTL

Total=109 429 YTL

Alternative 3; Landscape Components

Pergola; 2* 3500=7000 YTL

Bench; 15*150 =2250 YTL

Wastebin; 6*200=1200 YTL

Walking path; 300*20 =6000 YTL

Car Park; 1200*40=48000

Children's Playground; 90*15=13500 YTL

Playground Toys; 10*2000=20000YTL

Sports Field;0

Vegetation Components

Tree; 23*8=184 YTL

Flower; 31* 69=2139 YTL

Bushes; 220*51=11220 YTL

Sward; 45*140=630 YTL

Total= 112 123YTL

Alternative 4; Landscape Components

Pergola; 3* 3500=10500 YTL

Bench; 18*150 =2700 YTL

Wastebin; 6*200=1200 YTL

Walking path; 310*20 =6200 YTL

Car Park; 1200*40=48000

Children's Playground; 0 YTL

Playground Toys; 0 YTL

Sports Field;0

Vegetation Components

Tree; 30*8= 240 YTL

Flower; 46* 69=3174 YTL

Bushes; 165*51=8415 YTL

Sward; 95*14= 1330YTL

Total=81 759 YTL

Alternative 5; Landscape Components

Pergola; 4* 3500=14000 YTL

Bench; 40*150 =6000 YTL

Wastebin; 6*200=1200 YTL

Walking path; 285*20 =5700 YTL

Car Park;0

Children's Playground; 120*15=1800 YTL

Playground Toys; 10*2000=20000YTL

Sports Field; 600*50=30000 YTL

Vegetation Components

Tree; 31*8= 248 YTL

Flower; 20* 69=1380 YTL

Bushes; 230*51=11730 YTL

Sward; 160*14=2240 YTL

Total=94 198 YTL

Alternative 6; Landscape Components

Pergola; 2* 3500=7000 YTL

Bench; 37*150 =5550 YTL

Wastebin; 6*200=1200 YTL

Walking path; 315*20 =6300 YTL

Children's Playground; 0

Playground Toys; 0

Sports Field; 600*50=30000 YTL

Vegetation Components

Tree; 47*8= 376 YTL

Flower; 28* 69=3105 YTL

Bushes; 100*51=1932 YTL

Sward; 220*14=3080 YTL

Total=58 543 YTL