STAIRWAYS AS SPATIAL ELEMENTS IN AN URBAN ENVIRONMENT

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ABSTRACT

This study is focused on determining the design criteria for creating livable and democratic stairways, which are a part of the public space, that would enhance social interactions by providing all day long safe and comfortable use by residents as well as passers-by through analysing the physical aspects in order to lay out the functional problems. Stairways, which at first were a symbol of power or were a path to gods, after the beginning of public life, sharing urban space, circulation, pedestrian movement, created paths that evolved through topographic obstacles to become connections between different levels that required new designs and arrangements.

The intricate relation between stairways, street-life and urban social life leave the stairways neglected through the changes in public life where the streets filled with obstacles are becoming gateways to residences. On the other hand stairways in the past have always been urban spaces which housed social life with all its features by looking at evidence of works in literature, music and cinema through time. Street characteristics have an important role in the urban setting as they evolve with public life reflecting its social, cultural and economic status. Because of the above reasons outdoor spaces are to be designed considering the social, cultural properties, needs and requests of the residents' and passers-by's keeping track of the harmony with the environment. The study, at this point, stresses that stairways, although cannot house all outdoor activities, are more than mere elements of between levels circulation elements due to their capacity of a bearing many functions. The necessity of considering the variety of behaviours, needs and requests of differing age and user groups when designing is another issue pointed out in this study. Although stairways have the advantage of being isolated from vehicle traffic they still pose problems to the handicapped and elderly. Inspite the unavailability of ramp implementation in some cases stairways are still the playground for kids.

The case study area is Güzelyalı district in İzmir, which has a variety of stairways with different characteristics. The stairways in the area have been

classified with reference to their functions in the past, and their evolved functions due to increase in population and wear in time. The current physical and social situation of these stairways have been analysed with observation, photographing, inquiries etc. These methods provided a stronger foundation for discriminating the needs and requirements of the users, by a participative approach, in order to put forward design methods that would create an environmental quality to reach these goals.

The study states that stairways, in addition to being safe paths for necessary activities, should promote optional and social activities to take place on them. This can be obtained by designs that are motivating, exiting, implemented such that they are connected to other public spaces, enhance environmental quality with sensible use of design elements a outdoor furniture.

Key words: urban space, public space, stairway, steps, pedestrian, stairway activities, access, social interaction, environment quality

ÖZ

Bu çalışma, kentsel kamusal mekanın bir parçası olarak karşımıza çıkan merdivenli sokakların fiziksel ve buna bağlı olarak işlevsel problemlerini ortaya koyup, sokak sakinleri ve diğer kullanıcılar tarafından gün boyu aktif bir şekilde kullanımını sağlayacak güvenli ve konforlu, sosyal yaşama katılım olanakları verecek demokratik ve yaşanabilir merdivenli sokaklara ilişkin tasarım kriterlerini belirlemeyi amaçlamaktadır. Önceleri gücün simgesi, tanrıya erişmenin aracı olarak karşımıza çıkan merdivenler; toplumsal yaşamın benimsendiği zamandan bu yana ortak yaşamın, sirkülasyonun, yaya hareketliliğin ortaya çıktığı sokaklardan topoğrafik engeller nedeniyle farklılaşarak farklı kotları birbirine bağlayan farklı tasarım ve düzenlemeler gerektiren sokaklar halini almıştır.

Merdivenli sokaklar ile sokak yaşamı ve kentsel sosyal yaşam arasındaki sıkı bağlantı toplumsal yaşamın değişmesiyle günümüzde göz ardı edilmekte, sokaklar konutlara erişim imkanı sağlayan aşılması zor geçitler halini almaktadır. Oysa ki geçmişten günümüze edebiyat, müzik, sinema sanatlarında hep gündemde olması da gösterir ki merdiven sosyal yaşamın tüm canlılığıyla üzerinde geçtiği bir kentsel mekandır. Toplumsal yaşama bağlı olarak farklılaşan sokak karakterleri toplumların sosyal, kültürel, ekonomik yapısını yansıtan mekanlar olmaları nedeniyle kent içinde önemli bir yere sahiptirler. Bu nedenle bu dış mekanlar düzenlenirken mekanda ikamet edenlerin ve yolcuların sosyo-kültürel özellikleri, gereksinimleri, talepleri ele alınmalı, mekanın çevre ile uyumu sağlanmalıdır. Çalışma bu noktada merdivenli sokakların fiziksel yapı itibariyle her dış mekan aktivitesinin gerçekleştirilmesine olanak verecek kentsel mekanlar olmamakla birlikte kullanıcılar için düşey sirkülasyan elemanı olmaktan çok daha fazla fonksiyonu barındırdığına dikkat çekmektedir. Tasarımların farklı yaş ve kullanıcı gruplarının birbirlerinden farklı davranış biçimleri, ihtiyaçları ve talepleri olduğu göz önüne alınarak yapılması gerekliliği vurgulanan bir başka konudur. Taşıt trafiğinden tamamen arınmış durumda olan bu mekanlar engelliler, yaşlılar için kullanıma ilişkin engeller oluşturur. Zaman zaman rampalı çözümlere rağmen kullanımın mümkün olmadığı durumlar

ortaya çıksa da çocuklar için belirli oyunların oynanacağı bir oyun alanı olma özelliğine sahiptir.

Çalışma alanı olarak belirlenen İzmir - Güzelyalı semtinde farklı tipolojilere sahip olduğu belirlenen merdivenler gruplanarak her birinin geçmişte sunduğu imkanlar gözden geçirilmiş, artan kentsel nüfusla oluşan yapı yoğunluğunun ve fiziksel eskimenin bu merdivenli sokaklara etkileri, fonksiyonlardaki değişimler belirlenmiştir. Bir yaya ulaşım ağının parçası niteliğinde olan bu sokakların gözlem, anket vb. yöntemlerle mevcut fiziksel ve sosyal yapısı analiz edilerek; kullanıcıların da katılımının sağlanacağı çalışmalar ile onların ihtiyaç ve taleplerini karşılayacak bir çevresel kalitenin oluşturulması için mekana ilişkin tasarım önerilerinde bulunulmaktadır.

Çalışma zorunlu aktivitelerin güven içinde gerçekleştirilmesinin yanısıra kullanıcıları tercihli ve sosyal aktivitelere teşvik etmek için merdivenli sokakların yayada hareket arzusu uyandıran, heyecan verici, diğer kamusal alanlarla ilişkilendirilmiş, çevresel kaliteyi arttıran kentsel mobilyalar ile desteklenmiş tasarımlar olması gerektiğini ileri sürmektedir.

Anahtar Kelimeler: kentsel mekan, kamusal mekan, merdiven, basamak, yaya, merdiven aktiviteleri, erişim, sosyal etkileşim, çevresel kalite

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CHAPTER 1
INTRODUCTION

1.1. Nature and Scope of the Study

The main purpose of this study is to clarify the special characteristics of urban stairways, and to provide some urban design guidelines for improving the existing physical and functional qualities of stairways placed in the Mithatpaşa district, İzmir. Urban stairway, by definition, is a common spatial element, outdoor room or corridor, of urban environment. It is basically a stepped street between buildings or a stepped path into green areas. Sometimes, it may be a part of urban squares on which the greatest amount of human contact and communication takes place.

Urban stairway is an art object, a structural idea, a manifestation of pomp and manners, a determinant of our gait, a political icon, a poetic occurrence, or the locus of an epidemic of cruel and injurious traumas. This space may therefore be an image for the city, a meeting place for various activities improving the built environment. Stairway, according to the elder, may be an obstacle, while children may see it as a playground.

Each mask stated above is a fragment of its nature revealing a character. It can be stated that a stairway's potential can be missed when it is only used as connector between levels. This partial vision tends to limit the design and effective use of an urban stairway. Because, the spatial character of an urban stairway is an outcome of not only the overall form and enclosure of the surrounding space, but also the nature of the uses and activities existing in it.

During the last few decades, particularly in developing countries, like Türkiye, because of the increase in urban population, rapid rise in car-ownership, and inefficient pedestrian movement system, the design and effective use of urban stairways have been neglected. They became enclosed in multi-storey buildings

creating dark corridors of claustrophobic space, losing their individualities. Nowadays, on the other hand, dwellers can not access their buildings by car because of the lack of parking lots in the area they live, and can not move in safety and comfort because of the lack of efficiently organised pedestrian routes. However, for this reason, the effective design and efficient use of urban stairways can perhaps help to (re) create urban spaces that are livable, safe, comfortable, and democratic.

Urban stairways are pedestrian areas by being physically not suited for motor vehicles. Regarding the use of urban stairways, however; they may not provide users with their needs and expectations from the urban environment due to the potential hindering factors related not only to physical but also to psychological aspects. These factors could be divided into two main groups:

Hindering factors related to physical aspects are lack of safety, lack of comfort, lack of order, and length of stairways.

- Lack of safety. It seems that there is a relationship between safety and environmental quality. For instance, some urban public spaces lack the necessary standards. They are often not accessible to various age groups, particularly children and the elder. However, there are three key issues, which can easily render an urban stairway unfriendly: visibility, sizing, and handrails.

  Visibility relates to stairways being easy to perceive and differentiate by not being camouflaged. Stairway entrances, street furniture (a potential obstacle element), and particularly steps should be visible during the day and night.

  Stairways' dimensions should be determined according to anthropometric data. When stairways have too little tread depth for adequate footing or riser height is too high or low, injury risk increases. They should be based

appropriate percentiles. Riser height and tread depth should be uniform and consistent.

Handrails are vital. They should exist on all stairways, even stairways of one or two steps that traditionally do not have handrails. Handrail height is also an important issue for users, especially for children. Handrails should be appropriate for various age groups.

- Lack of comfort, another problem for pedestrian movement, reduces desire of outdoor activity. Whereas, the quality of stairways encourages potential users. So, stairways supported with visual and functional design elements like street furniture, and colour become more attractive for users.

- Lack of order. Conflicts between moving and stationary people are problems that require solutions. On streets, people do not tend to move out of the main pedestrian flow even when they conflict with it. They stop on the walking route or move into it. A great volume of the conversations occur in the centre of the flow (Whyte, 1980). Another potential conflict can occur between pedestrians and children who choose stairways as play area. User conflict in the street may be greatly reduced by separating the distinct uses and there by limiting the potential for conflicts

- Length of stairways. Long flight of steps is tiring. So, it may be hindering factor for using. A least pause along the long flights should be provided.

Hindering factors related to psychological aspect are negative proportion of stairways, lack of claim feelings, lack of security.

- Negative perception of stairways. Too long flight of steps is boring and hindering for pedestrians. Aesthetic values and visual integrity are usually neglected on stairways. Dull facades or disordered street furniture create messy and chaotic spaces. Observations considering aesthetic values showed that users complain monotony in space organisation and lack of

green or colour contrast. Visual and aesthetic complexity increases quality of space. Urban spaces with higher intensity of use are those with greater variety of colour, textures, landscape elements, seating places, and so on.

- Users do not feel that they belong to urban space or they do not feel as the owner of the stairway because of its design. Even dwellers do not claim their streets.

- Lack of security (vandalism). Unfortunately urban public spaces have sometimes been taken control of by groups such as teenage gangs, or homeless people, with the result that many parts of the public have been effectively excluded from gaining access to them.

These hindering factors cited above may prevent the use of stairways as an efficient, safe and user-friendly environment. If new sets of objectives for caring about urban areas are prepared, however, the decline of the public realm can be avoided. Proposed development should enhance the public realm and provide, where appropriate facilities and amenities for pedestrians and other outdoor space users at the street level. We need a fresh look at what really matters in cities and who uses urban spaces. We need also look at urban space as a whole, not a stand-alone part of a series. For this reason, definition of the urban stairway concept is important in order to determine its role within a city and evaluate of its potential. But, there are also many non-technical factors involved. Such as economics, social, and political issues. This study will focus on physical factors that improve design quality of stairways.

1.2. Aims and Method of the Study

A major purpose of this study is to clarify existing and special characters of stairways and to provide some design guidelines, for improving their physical qualities. It is to arrange data as a basis for designs of stairways and for understanding their physical features. The aim is also to create a document that

is the guideline and the case study will be useful for local government as well as for designers and students.

The point of view and interest of this study has mainly to do with the useful stairways for people. We take for granted that the functions of stairways include gaining access to adjacent facilities and getting from one level to another within urban environment. Good stairways have to do that, and the best, for passers-by and residents, make the experience comfortable, safe, and pleasing. Therefore, this study intends to improve stairways through good design, and to make these urban spaces a more comfortable and convenient to use. It aims to define urban stairways and their design approaches through history, to examine general design considerations and to offer design recommendations for livable urban stairways.

Urban stairway can be determined as a lost space[1]. It is lost because of the dangers and inconveniences. Because, pedestrians do not prefer to use these urban spaces if the alternative exists and residents spend minimum time on stairways. These urban spaces which reduce motorised traffic can provide easy movement opportunity and enhance other outdoor activities. Nowadays, urban stairways have transformed into footprints that are merely used to go from one point to another like other streets instead of lively spaces. However, it seems that there are a lot of special characters except the simple function of stairway, which is connecting different levels.

Pedestrians want to get somewhere in comfort and safety. But, especially in the last decades, some obstacles to pedestrian freedom have come up. Thus, people prefer using vehicles instead of going on foot. Pedestrians face injury risks because of inadequate considerations on safety. This study is about how to improve the quality of public life on stairways as much as how to evaluate the

[1] Trancik explains lost space as follows: “It is the left over unstructured landscape at the base of high rise towers or the unused sunken plaza away from the flow of pedestrian activity in the city.”

physical features of stairways. For these purposes, the potential role of stairways should be considered to improve city life. Planners and designers should recognise the advantages and added value that stairways provide in the urban fabric.

Although stairway design has been known for ages, it is almost a forgotten issue, particularly in Turkey. It is difficult to find comprehensive studies on implementation projects related to stairway design in Turkey. When the potential of urban stairways are thought, studies related to them are too few. One of these studies is called as “Stairways in Beyoğlu District of İstanbul”. This master thesis was prepared by city planner Evin Köse in İstanbul Technical University - Faculty of Architecture in 1998. Unfortunately, that study was concentrated on public space and street concepts rather than urban stairways. Whereas, the present study aims to reach some design proposals to stimulate urban stairway as circulation space and interaction space. It is to propose many practical suggestions to solve physical problems of stairways.

When we looked at the existing urban design strategies for stairways in our cities, design strategies for “pedestrian movement and open space”. However, stairways in sloppy areas or risen platforms, sometimes need specific strategies because of their difficulties. All over the country, stairway arrangements are limited nearly with covering stone steps with concrete or placing coloured handrail. Except a few situations, approaches for stairway design are not different from other urban public space. Existing stairways in built environment left unattended as ownerless areas. In İzmir, for improving the urban space including stairways. The Municipality of Konak has just started an evaluation study for stairways in Güzelyalı district in October 2001.

The theoretical framework of the thesis comprises the detailed literature survey about the definition and history of stairways, determination of its activities, and basic principles of stairway design. First, existing types of stairways are analysed and samples of them were studied from different

cultures and geographies; second, the relation between the stairway and the user is analysed; finally, there are the suggestions, followed by a case study.

The case study focused on stairway analysis in Güzelyalı District and design of the chosen stairways according to the recommendations. The determination of the case study process includes three phases: definition of the problems, analysis of stairways and users, and the adaptation of the design recommendations for the chosen stairways. Initially, the problems that reduce the pedestrian usage in that area was examined and classified in two groups as physical and psychological aspects. Secondly, the number of existing stairways according to classification related to pedestrian movement were surveyed. In this study, stairway types are classified mainly as three types according to pedestrian movement. These are as follows:

- Stairways as connectors
- Stairways as access ways
- Stairways as connectors and access ways

For this research, two types of data were then determined to reach aimed results: Data regarding the spatial characteristics and data on user experience

Data collected, regarding the spatial characteristics; are actual, quantifiable spatial features and images. These are sense of direction, spatial proportion, and step's position on stairways, colour and so on. But, data on user experiences, the importance of people is a key consideration to improve quality of stairways. Inquiries were carried out with people using stairways. This data is necessary to provide specific answers that express perception needs and expectations of respondent. The problems of vulnerable users were also considered. At the end of the study, design recommendations were proposed.

1.3. Organisation of the Thesis

After giving a general information about the scope, aims and method of the study at the first chapter, chapter two starts with understanding the meaning of urban stairways in built environments and it examines the environmental perception and human-environment interaction were examined. Urban stairways were researched as circulation space and communication space depending on their context. In addition, types of stairs were classified according to location and functional aspects as stairways in soft urban spaces, and stairways in hard urban spaces.

Chapter three explores different approaches to urban space, particularly stairway concepts applied in different periods and cultures. The symbolic meanings of stairways were researched to understand their meanings in a different perspective. The aim is to explore what can be deduced from the stairways' past and the theories of design that were influential.

Chapter four is about outdoor activities on stairways and also potential user habits. Physical characteristics of the pedestrians were also explained in this chapter. Different samples were given to explain the relationship between physical features, the quality and activity variations of urban stairways. Some design guidelines were also determined in this chapter.

Chapter five is then related to case studies from the Mithatpaşa District in İzmir. A detailed pilot survey was made in the district in where stairways are an important part of pedestrian the circulation system. According to the determined criteria, existing structure of the study area was evaluated and some proposals were made to improve physical conditions and social lives of stairways. In short, some design studies were prepared to realise design goals.

The sixth and last chapter is an evaluation of all the study. It goes through the results of the thesis.

CHAPTER 2
CONCEPTUAL FRAMEWORK OF THE STUDY

2.1. Introduction

Everyone wants to escape everyday worries and have fun, but no one wants to sit in a traffic jam for hours. Citizens want to live in convenient and human habitat, yet containing elements of aesthetic value that can inspire them and lift one's spirit towards ambition and adventure. They also want roots, security, and more attractive urban space where they are. Stairways can thus offer great opportunities to urban people, providing them with independent movement chance without considering vehicle traffic in short distance and becoming points of encounter, meeting places, and the other type of contact and communication. That as why, with the revival of interest in use of many levels, the stairway has today taken on its importance again. Its status still derives from a combination of utilitarian or functional considerations, with an inherent aesthetic potential.

2.2. The Meaning of Urban Stairways in Built Environment

Stairway means a flight of steps outside a building. This word, actually, derives from “stair”[1] and “way”. The stair is defined as an ascending series or “flight” of steps leading from one level to another. The word itself derives from Old Teutonic staigri, and the term stairway has come to be the established usage for the collective element, incorporating the steps, supporting framework and handrail. The element as such is therefore “the stairway”, abbreviated in common usage to the “stairs” or “stair”. “Urban stairway” can be determined as a stepped component of urban space that provides connection between different levels in built environments. According to Krier, they are human structures act as markers in urban environments, and communicate public uses. Urban stairways also create their own space, become points of encounter, meeting places, or simply points from which beautiful can be enjoyed (Krier 1983).

In general, urban stairways are partially veins of a city settled in sloppy areas. They are living and meeting places of the cities. Sometimes, a site for markets, celebrations; and the place where people go to hear the news, talk politics, or watch the world go by. For this reason, some cities could not function without their stairways and other public open spaces. Stairway is an ordinary line of vertical circulation for pedestrians. Or it is any stepped path to some end. It is a special part of the street pattern of cities in sloppy areas. So, it should be considered within the pedestrian circulation system. But, the most peculiar feature of the stairway is the lack of vehicle traffic.

Sometimes, stairways are segmented intersecting with vehicle roads. This type of stairways allows limited vehicle traffic (Figure 2.1). Curbs, bollards, signs are suggested alternatives to warn drivers against prohibition of vehicle traffic in segmented stairways.

Figure 2. 1: 180th street in Güzelyalı - İzmir (October 2001)

Although they often used in sloppy areas, stairways are not only results of topographic conditions. They have also been constructed in flat plain as symbolic or aesthetic elements. The use of changing levels as a positive element in the urban design composition is an important issue for user satisfaction. Ascending and descending from one level to another can satisfy

[1] Stair: A stair is a flight of steps.

people. They can sense the joy of running up a flight of steps, or the muscular effort to reach the higher level and the satisfaction when this achieved. Descending a stairway and anticipating the unfolding forms of the level below can also give an equal sense of satisfaction. In history, in Ostia which is an ancient port of Rome, built on a flat plain, prominent buildings were set upon very high bases that had great flights of steps, providing the citizen with the pleasure of a change in level (Bacon 1992). It seems that there are a lot of special characters except the simple function of the stairway. These roles may modify or even dominate completely the mundane purposes of safe, comfortable, and convenient ascent and descent. Typical roles of stairways are classified as functional, symbolic, and aesthetic:

Functional Role includes circulation from one level to another, access to private properties, communication, recreational activities, and so on. Such as other types of streets and paths, stairways have a beginning and an end, defined places and nodes along their length in where special uses and activities occur.

Aesthetics Role of stairways is to enhance the visual quality in cities (Figure 2.2). They offer some positive benefit to the urban environment: delight, fantasy, and also joy. Stairways are photographic spaces. They can solve some problems of dull spaces. Considering aesthetic effect of the stairway improves physical quality and user satisfaction.

Symbolic Role of stairways has been used to express symbolic thoughts since their development all over the world. People in different belief have given different meanings to stairways. Some people have seen it as expression of power. Some of them have used it as religious space. Elevation changes related to the use of stairs may be used to bring people close to the sky and give us a sense of reaching God (Figure 2.3). The reach the top of the stairway may give a satisfaction to user.

Figure 2. 2: Aesthetic stairway in Villa Lante, Italy (Source: Templer, 1994)

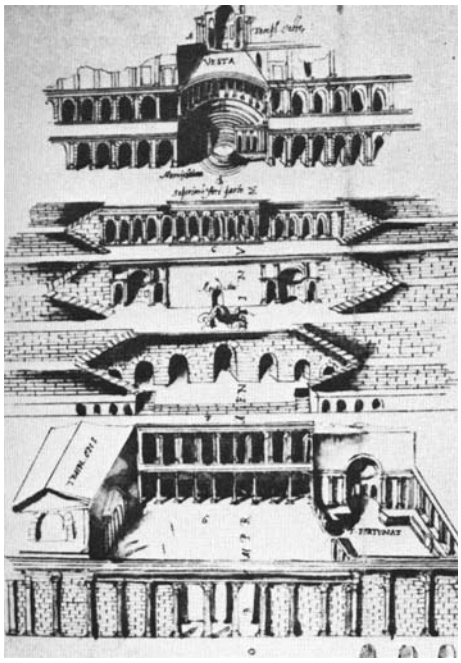

Figure 2. 3: Temple of Fortuna, Praeneste (Source: Templer, 1994)

In spite of some difficulties, (such as causing tiredness and requiring special solutions to provide some community services), stairways provide lots of reasons for people to like using them. The point is how to design stairways for

the people. Change of level with steps can constitute important visual, functional, and psychological results in urban spaces. In a very elemental way, stairways allow people to be outside, as they are places of social and commercial encounter and exchange. The stairway is movement: to watch as well as to pass. It is possible to stand in one place or to sit and watch the show, which is not always pleasant, not always smiles or greetings or lovers hand in hand. There are cripples and beggars, and like the lovers, they can pause: they are reasons for reflection and thought. Everyone can and should be able to use the stairways.

The stairway can be treacherous as well as a beautiful siren with many facets to its complex overt nature. Designers recognised the many faces of the stairway and their treatise evidence a concern for the comfort and safety of those who use them. Although ascent and descent tire pedestrians and failed designs can cause hazards such as falls; stairways generally give positive effects to the space. Advantages of stairways can thus be listed as follows:

- Stairways provide connection between different levels, and integrate spaces and facilities. Thus, they may be a significiant part of the pedestrian route on hilly terrain, providing access to buildings.
- In too steep sites they may be used instead of ramps. Steps may protect pedestrian from slipping, and can be used as seating elements.
- They provide free movement without vehicles. Thus, pedestrian movement can be safe and comfortable.
- Existing samples show that very large open spaces can be subdivided into more human-scale “outdoor rooms” by differing levels. Stairways naturally have this separation between places or/and activities without physical distance and isolation because of their character.
- They accentuate the separateness of spaces, with the stairway acting a bridge and having the effect of focusing attention and activities on one centre, at the edges or along a line.
- Well-designed stairways create improved physical and social environments. They support social communication in cities. They provide protective areas

for outdoor activities. Stairways may provide a place for plays, exhibits, concerts, fashion shows, flower shows, etc.

- The top provides an opportunity for observation and viewing the whole street. The upper steps can function as observation platforms. People who stand on upper steps have an opportunity to look down at the people and activities below.
- Stairways can be proposed to keep out motorized traffic. In some situations, a flight of steps may be used to forbid vehicle access to site.
- Stairways may provide sensual satisfaction as stimulus, sensual delight as much as functional satisfaction. They add a visual wealth and variety in urban environments.

To clarify the meaning of urban stairway completely for urban environment, it can be analysed under three titles considering the main functions:

- Stairways as part of urban public space
- Stairways as place for circulation
- Stairways as place for communication

Each one explains a different aspect of the stairway in urban environment. It is necessary to examine the function and the role of the stairway within urban pattern so that planners and urban designers can understand its importance. Thus, they are able to form and furnish this space.

2.2.1. Stairways as Part of Urban Public Space

Urban space is common outdoor rooms and corridors of the urban environment. Outdoor rooms are all types of spaces between buildings without imposing aesthetic criteria in cities (Krier 1991). The most obvious public spaces in cities are streets, squares, playgrounds, and parks. These basic types of space can be enhanced to support urban life. Stairways are one of these types. They are often inevitable parts of public space components because of their special character. This section reveals the relationship

between stairways and social life that is restricted with the equally important concept of the public realm[2] in urban environment.

Stairways are more than linear physical spaces that permit people to get from here to there. Like other public spaces, they do not have only one role. Circulation may be primary role of stairways but we will not concern merely this role here. We will also mention other roles of the stairway.

Urban stairway is not only a place for people to ascent and descent but also a place to go for shopping, relaxing, or viewing (Figure 2.4). These specialised stairways provide the flavour in cities. They may provide the opportunity to fulfil a specific purpose of users. Like early samples, recent stairways are facilities related to circulation, commerce, government, and places for assembly (Figure 2.5 and 2.6). They may be political places. It is important to note that public spaces are still a very important setting to show of the power numbers behind a movement for political change.

Figure 2. 4: A general view of ceremonial stairway at the Court Complex, Vancouver (Source: Blanc 1996)

According to Jane Jacobs who is an apologist for the street thought that pedestrian ways are the main public spaces and the most vital organs of the

[2] Cities contain not only private realms (private households) and parochial realms (local neighbourhoods) but also public realms.

city. If a street look interesting, the city looks interesting. In contrast, the city looks dull, if the street looks dull (Jacobs 1965). The stairway is a particular type of the street gives a vivacious effect to urban environments. It may become tourists' attraction because of its attractive famous identity.

Figure 2. 5: The general view to stairways in Morocco (Source: Kostof 1991)

Figure 2. 6: A street stair, Moulay-Idriss, Morocco (Source: Templer, 1994)

2.2.2. Stairways as Place for Circulation

Pedestrian movement system in European cities is dominant. Visitors find an opportunity to stroll through the streets without vehicles, particularly in traditional patterns. Although some cultures have less public space use, people tend to use these spaces to get connection (Marcus and Francis 1990).

Nowadays, a primary role of the stairway is to serve the functional needs for access into or through the landscape or townscape in urban environments. The stairway is seen as a place for public circulation in residential areas or other recreational areas. This stepped channel for pedestrian movement and access to private property is a part of the pedestrian system. The stairway offers a link between buildings, both within the stairway, and in the site at large. It is used to ensure a link between buildings and activity nodes. It facilitates the movement of people because of lack of vehicle traffic.

Most stairways can not accommodate three forms of circulation:

- Passing through
- Access to buildings adjacent to the stairway
- Access to seating and viewing areas

In the first circulation form, people use the stairways as part of pedestrian network or pleasant walking-through space, while the second one is created by residents or their visitors to access adjacent buildings on stairways. People who want to use the stairway in order to sit in the sun, see a view, or only observe its surroundings make the last circulation form on stairways.

2.2.3. Stairways as Place for Communication

One of the primary purposes of the urban space is to heighten the drama of living. The stairway is also an area for social expression. It may support socialisation more than other circulation spaces because it is protected from vehicle traffic and its negative effects such as noise, and pollution. The scale, form and design of the stairway influence the type of social communication that may occur within the space.

Stairways have the less perceptible function in facilitating communication and interaction between people and groups. Its meaningful function includes its use as a place for casual interaction, including recreation, conversation, and entertainment, as well as its use as a place for formal observances (Gutman

1991). According to Gehl, seeing and talking are most typical communication kinds in urban spaces. He explains these communication types in “Life Between Buildings” as follows:

Seeing: The opportunities for seeing other people are supplied with providing convenient distance between observer and objects. If the stairway is too wide, the opportunity of being able to see the space and the events going on is lost. Large public spaces are only appropriate to arrange wide range of activities. Everyone can see easily and use these spaces.

Talking: The quality of urban spaces is influenced by opportunities for talking with other people. Outdoor conversation consist of three different categories:

- Conversation with people one accompanies
- Conversation with acquaintances one meets
- Conversation with strangers (Gehl 1987)

Each category makes different demands on the environment.

Conversation with people one accompanies -friends, family, husband and wife, mother and child, and so on- takes place while walking. There are no important special requirements for talking with companies except requirement of an adequately low noise level (Figure 2.7).

Conversation with acquaintances one meets occurs when friends and acquaintances meet. In this category, conversations take place without any big dependence on place and situation. People stop to talk where they meet. When the longer the outdoor stays occur, the chance that friends and neighbours meet and talk increases. Contacts develop where the meeting takes place such as across the hedge, at the garden gate, at the front door and landings.

Figure 2. 7: People in communication in Zeki Müren Park – Karataş (September 2001)

Conversation with strangers consists of conversations between strangers who do not already know each other. This type of conversations happens less frequently. These conversations can start when the participants are occupied with the same thing; such as standing, sitting side by side, or while interesting in the same activity. Unexpected and unusual events cause conversation as well as common activities and experiences. While unacquainted persons require a reason to talk, acquainted persons require no reason to enter into a face engagement with each other.

2.3. Classification of Urban Stairways as Spatial Elements

Stairways could be categorised in many ways: by size, use, style, form, predominant function, location, relation to street and so on. Here, the classification is based on use and location. Because this section is concerned with the interaction of use and location. Considering this issue, urban stairways can be classified into two primary types as:

- Stairways in townscape
- Stairways in landscape

2.3.1. Stairways in Townscape

Stairways in townscape as generic and pervasive vertical circulation elements of cities can be grouped in hard urban spaces[3]. Stairway can also be defined as a generally hard-surfaced, public outdoor space with steps between buildings from which vehicles are excluded. They are bounded by man-made enclosure elements. Although there may be trees, flowers, or ground-covered plants, the predominant surfaces are hard (Figure 2.8). If grass exceeds the amount of hard surface and planted area is the larger part of the way, stairs are defined as stairways in soft space rather than stairways in hard space.

Figure 2. 8: Hardal Street in Istanbul (Source: Kayra 1991)

Stairways are often intended to function as a major circulation places for pedestrian circulation and gathering place for social activity (Figure 2.9). These

[3] According to Trancik, hard spaces are bounded by architectural enclosure elements. These are often intended to function as a major gathering place for social activity and circulation places for transportation. (Trancik, 1986)

hard spaces generally take part in residential and commercial areas. There are both flight of stairway marking plaza entrances and stairways that are part of streets in this group. The stairway in hard spaces is closely connected to the pedestrian circulation pattern. Their physical features in (dimensions, materials, and so on) are similar to pedestrianized spaces in hard spaces.

Figure 2. 9: Stairway near Federal Offices – Seattle (Source: Blanc 1996)

2.3.2. Stairways in Landscape

Stairways in landscape are those dominated by the natural elements in urban environment. They are in parks and public gardens stairways that provide circulation opportunities for recreational facilities in urban soft spaces[4].

Stairways, walkway with steps, may be required in recreational areas such as parks, children playgrounds in neighbourhood units (Blanc 1997). The soft stairway is located in urban green areas that is more heavily planted. It has developed a decorative role in landscape architecture like steps placed around a pool or in a kerb.

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[4] Soft space: Trancik explains soft space in “Finding Lost Space” as an urban space which is dominated by natural environment. This space offers opportunities for recreational facilities or retreat from the built environment

This type is generally broken off from pedestrian system. It works alone. It is often popular for strolling more than sitting and watching (Figure 2.10). It should permit people to walk at varying paces, including most importantly a leisurely pace, with neither a sense of crowding nor of being alone.

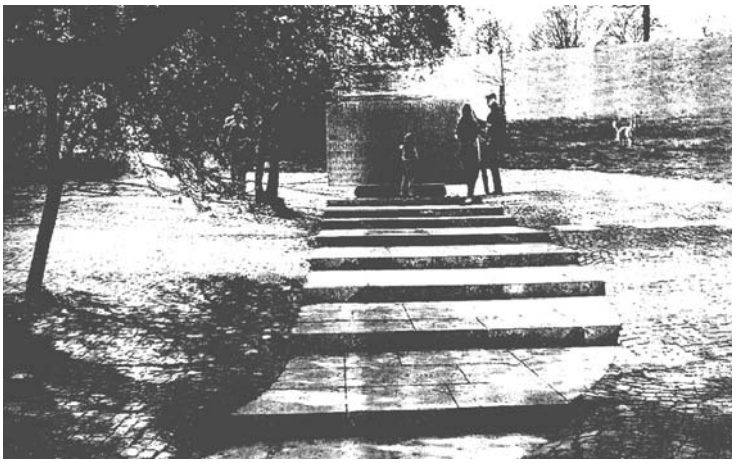


Figure 2. 10: Formal Stairway and memorial (Source: Blanc 1996)

2.4. Classification of Stairways Related to Use Aims

Stairways can be classified into two groups considering use aims. These are as follows:

- Stairways as a Destination
- Stairways as a Path

2.4.1. Stairways as a Destination

Some stairways work as a destination more than a route. Location of the stairway, its design quality, visual wealth, offered opportunities for outdoor activities will lengthen the time spent on stairways. These types of stairways have special characters that attract people. People prefer to stay instead of pass through. They become a meeting place and a centre of various citywide activities that improve the physical and social environment. The essential purpose of the stairway, which gives the destination stairway its special character, is sociability: people come here to see and be seen, and to

communicate their vision to one another, not for any hidden purpose, without greed or competition.

This type of stairways is generally grandeur stairways, located in important points of the city and connected to plazas or urban squares. Stairways as a destination create an image for the city. Sometimes, it may be the symbol of a site or a city. Aesthetic considerations have a big role in their design. They may add visual quality and wealth to the urban environments.

Destination stairways house a great variation of activities. They are meeting points of different people for several activities. They are crowded in good weather conditions in addition to being active all year round. They are a place for children to play, the young to court, and the elderly to sit. These are places where tourists, beggars, and street traders gather to pause for breath or ply their trade, or to view the city's panorama. In special days such as celebrations, they are used as a ceremony area. These steps may use to dramatise events, to create places from which to address the crowds. The Spanish Steps and The Campidoglio in Rome are the best known samples.

The Spanish Steps in Rome is an elegant solution to a change of level, transforming a necessity into a pleasurable experience. Its articulated stepped form, with rhtymic variations broken by platforms where curving stairs meet like dancers of some magnificent minuet, presents, to Roman and visiter alike, a stage set of magnificent proportions. It is an attractive place in every day of the year. Outdoor activities are the by-product of a design that delights vertical movement enhanced by continuous flights and counter-flights of flowing curves. So beautifully has the Spanish Steps achieved several different several objectives (Figure 2.11 and 2.12).

Steps, ramps, platforms/landings, and long sloping planes contrast with the horizontal plaza, the place for rest, conversation, and meditation. By that contrast the sense of drama is enhanced. Emphasizing tha variation in level,

Figure 2. 11: Looking up the Spanish steps (Source: www.downloaded)

Figure 2. 12: Spanish Steps (Source: www.downloaded)

using ornamental stairways, adds to the quality and grandeur of the urban scene so that it does indeed take on the qualities of dance and theatre.

2.4.2. Stairways as a Path

The public street as the part of the pedestrian networks requires a different design approach according to location. In sloppy areas, it transforms to the stairway where greater consideration should be given to pedestrian need for safety and comfortable space. Templer (1994) calls this type of stairway “street stairs”. This term emphasises its main physical character and function. It suits because this type of stairway resembles pedestrianized street in many aspects.

The pedestrian theme is predominant on stairways, because vehicle access is completely or partly forbidden (Blanc 1997). Norberg-Schulz’s defined path symbolically: "on the plane man choses and creates paths which give his existential space a more particular structure. Man's taking possession of the environment always means a departure from the place where he dwells, and a journey along a path which leads him in a direction determined by his purpose and his image of the environment… The path therefore, represent a basic property of human existence, and it is one of the great original symbols" (Moughtin 1995).

These stairways irrigating the city and are a part of the pedestrian circulation network. The most important function of these stairways is pedestrian circulation although it provides opportunity for the other outdoor activities. Greek and Italian cities have great samples of these groups (Figure: 2.13, 2.14, and 2.15).

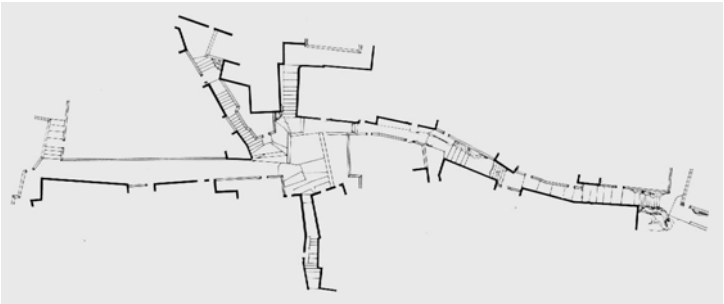


Figure 2. 13: Layout of the stairways in Hydra (Source: Philippides 1983)

Figure 2. 14: Stairway in the Skyrian lanes in Greek Islands (Source: Philippides 1983)

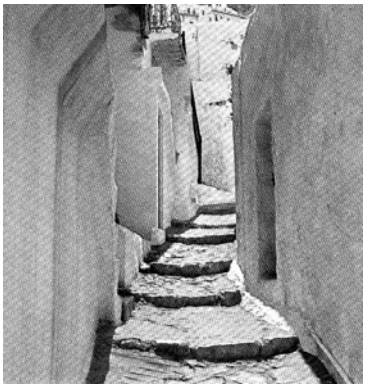


Figure 2. 15: Narrow stairway in the Skyrian lanes (Source: Philippides1983

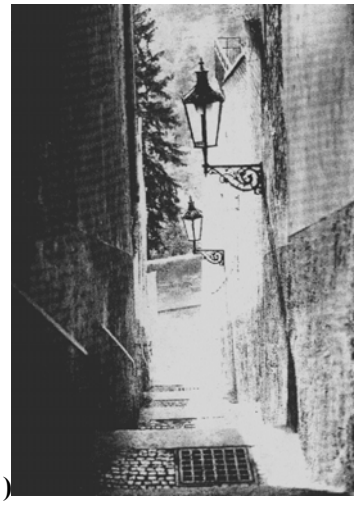


Figure 2. 16: Stairways in townscape in Praque, Czechoslovakia (Source: Blanc 1996)

Stairways as a path sometimes extend under arcades or building parts (Figure 2.17, 2.18). Covered stairway type in Mardin is called as “abbara” is interesting samples. In summer, these spaces are protected from sun. At the same time, the shaded spaces are also protected from the hegative effects of the weather.

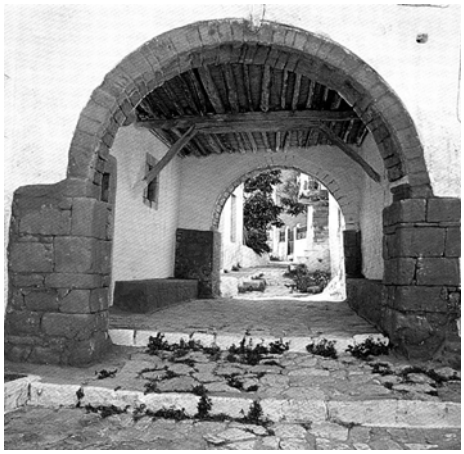
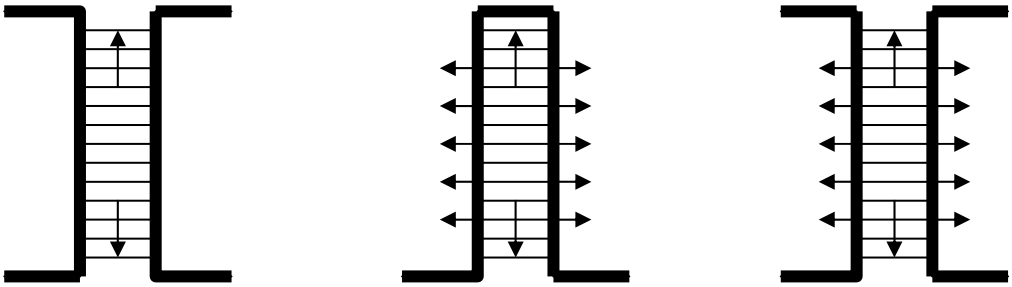


Figure 2. 17: Covered stepped passageway in the Archontoyeitonia (Philippides 1983)

Figure 2. 18: Covered sample of stairway in Old Town – Sanremo (Source: www.downloaded)

Stairways as a path can categorised three basic groups. These are:

- Stairways as connectors (I)
- Stairways as access ways (II)
- Stairways as both connectors and access ways (III)



(I) (II) (III)

Stairways as connector (I) serve pedestrian only to provide pass from one level to another. They do not have access to buildings. Kamondo stairway in Istanbul can be given as example for this type (Figure 2.19).

Figure 2. 19: Kamondo stairway – Istanbul (Source: www.downloaded**)**

Stairways as access ways (II) provide access to buildings and other areas that are located along the stairway. This type does not have distribution function. They can be called as dead-end stairways.

In general, stairways have both access and connection functions (III). Stairways with access function have the greatest potential to support human activities and social interaction because of user density.

2.5. Conclusion

Urban stairways take different shapes in urban environment depending on their role, location, and use. Each type of stairway serves a different functional role upon the varying needs and expectations of the user. They also have a self-definitive property relying on where they are constructed. The location may override the definition put forward by the role and usage, no matter how solid. The same principle is also valid and applicable for both role and usage individually. This intricate layout of interactions make up quite a challenge for the designer as all the considerations have some parametric relations to be taken into reference.

The guidelines and recommendations that will be the results of this thesis document are aimed to make the above explained process as foreseeable as possible.

CHAPTER 3
URBAN STAIRWAYS IN HISTORICAL PERSPECTIVE

3.1. Introduction

Stairways, steps and ramps entered the thesaurus of urban space components as spatial elements in prehistoric times. As new variations developed, the earliest known and simplest demonstrations are still constructed today in cities. The fundamental prosthetic nature of stairs encourages this conceptual longevity, as well as continual rebirth and replication. This functional destiny is so circumscribed by the boundaries imposed by human physical dimensions, and manner of walking, that the fundamental geometry of the stairway has changed more in response to shifting aesthetic and cultural goals from theoretical or empirical refinement.

This chapter is about development of stairways in historical perspective. Some samples will be given to explain physical and functional characteristics of stairways. Chapter is about the function of stairways as the spatial context for urban living in history.

Curiously, written Sources that comprise the history of urban design have comparatively little to say about the stairways as an aesthetic and functional element of cities. Many of the great architects from Vitruvius to Alberti have thought and written about stairs. Although in their writings they treat stairs as architectural elements, they mention about outside stairs (stairways). They think of stairs as the veins and arteries (Vasari, Scamozzi), as objects of beauty (Palladio), as symbolic (Alberti, Martini), as places of danger (Vitrivius, Palladio, Guadet), as places where should be concerned about the needs of the elderly and infirm (Palladio), about the necessity for good illumination (Vitrivius, Palladio), about the behaviour of people on stairs (Leonardo, Palladio). They talk about the dimensions of treads and risers, the steepness of stairs, and so on. They also sense that one can think of the stair in some holistic fashion (as

both subject and object, as piece of design and as design. Ponti (1960: 117) called steps as follows:

“Agile, youthful, quick, flying, running steps; light, rusting steps; modest steps, shy steps; important steps; old, heavy, grave, slow, creeping steps; hard, fateful, fearful, frightening steps that make your heart pound; loving steps, thoughtful steps, murderous steps, terrifying steps, fugitive steps”

These innermost, almost classic responses to stairways carry with them cultural memories embedded in the psyche; part myth, part religious mystery, part dream, part fairy tale. In addition to being a part of the city, stairways, although their meanings and functions may have varied, have always been and will be undeniably existent in art, as a reflection of life, through out history. The stairway has always been a conscious spatial element preference due its visual impact and images it involves in artistic set-ups (Figure 3.1and 3.2).

Figure 3. 1: Stairs home –Escher (1951) (Source: Hayalet Gemi 1996)

Figure 3. 2: Cicipark in İzmir (photographed by Erdal Merter)

Sometimes solidify as symbols, as in Ahmet Haşim'' poem where life is a stair climbed step by step.

> "Gradually you will be climbing these stairs
> Bunches of sun hued leaves at your feet
> Then abruptly you'll be looking at the heavens shedding tears..."[1]

Many Turkish literature artists have also told about stairs and stairways like Ümit Yaşar Oğuzcan, Nazım Hikmet. Murathan Mungan refers to, his hometown, Mardin's stone stairways as much as Refik Durbaş in his works. Stair is where weak falls tumbling where as the strong, the tedious work his way up to fetch the prize, reach the goal. Sometimes it is a holly path, which leads to Gods embrace. Possibly a person upon seeing the view descending the steep and narrow stairs fells the same way, as the Buddhist purified in holly water down the stairs in India does (Figure 3.3).

Figure 3. 3: Varanasi, India (Source: Kostof 1991)

Pınar Türen's tells of the meanings she projects on stairs in the following lines quoted from her story "A Tale From The Stairless Town". "…I was looking around in terror, seeking stairs. How did they manage? God, was this an evil

set-up or have they left stairs back in the pages of history with the aid technology, more over was it possible to construct a civilisation without stairs? My answer as an earthling was, “Definitely, no.”.

“… I was from earth, the other side of the galaxy, we use stairs abundantly on streets, parks, homes, buildings, in short everywhere. Not a day would go by without climbing some stairs. Elders, out of breath, would stare up remembering the good old days, when they hopped up, while the little kids remember their first stumbling experiences. The worst id being trapped on stairs without a light Source, oh, how incapable we look, loosing our confidence and sharpness only to be replaced by shaky hesitant moves seeking the next step. I recall the terror inducing suspicion of coming across, stairs while walking on a flat path, in the dark and feel a little relieved. Then the horror vanishes, bit by bit, into curiosity…” (Türen 1996: 41-42).

It is almost as if you live the ups and downs of real life. Stairs mean power; helplessness of the disabled is felt there, where the powerless meets terror. It awakens curiosity with its indefiniteness; in short stairs are a slice of life.

Ayşecan Terzioğlu, in her script telling what is common between life and stairs, says: “The stair is an assistance defining two logical options, but, it also imposes rules, faster descent versus slower ascent. It is indivisible, only steps, one following the other can become stairs. The stair owes its existence to the steps, without them it looses functions and, as a result of that, meaning or vice versa. Life is like stairs, it feels like there is a goal in the end, all the time, and that defines one’s moves, asks for plans. But, they are like life, easily one can turn back or get to new place tho-rough unexpectedly appearing doors.” (Terzioğlu 1996: 45).

Sometimes the stairway on a stage is the priceless meeting points of lovers. Majesty, holiness, fight, suspense, death and more is told through the stairs. It is an obvious alternative in visual arts when depth is to be punctuated. Due to

[1] These are lines of Ahmet Haşim’s poetry named “Merdiven/Stair”.

its descending nature it appear as a gracious way of reaching the emperor or God. It is the route to any summit. One of the impressive appearances of stairways in cinema is in David Wark Griffith's "Intolerance" (1916). The historic stairway ascending on a plane flooded with white animals (Figure 3.4).

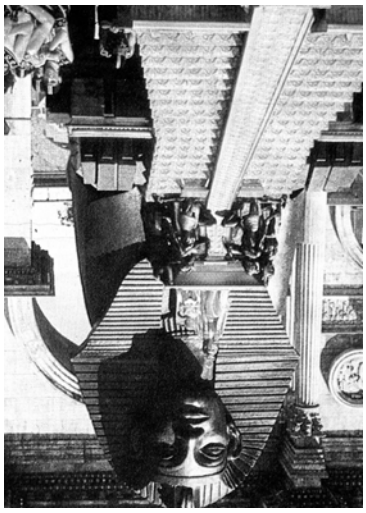


Figure 3. 4: The stairway "Intolerance" (Source: Templer 1994)

In 1925 an unforgettable appearance takes place, almost as an active element in "Bronenosets Potyomkin" (Figure 3.5). Where the riding public collide the Tsar's soldiers at the stairway of Odessa. A poussette goes down, ungelded, down the stairs during the massacre. The scene is so well known that it is one of the first to be repeated (Untouchables) over, a now fashionable trike in cinematography.

Figure 3. 5: "Bronenosets Potyomkin" (1925) (Source: Öztürk 1996)

In the early 30's with the introduction sound to the motion picture an era of musicals started where stairways were an inseparable element of the stage set up, as it was the most efficient element that provided the scene with depth, height, and majesty. "The Great Ziegfield" (1936) the queen spirals down the stairs. "Yankee Doodle Dandy" (1942) James Cagney dances on the stairs. "Hush Hush South Riding" (1942) Ann Todd climbs up the stairs, on horseback. In this same period unforgettable women appear on them (Figure 3.6) while man swing swords at each other. "Barefoot in the Park" (1967) stairways are where lovers get fed up with. "So Green was my Valley" the working class is placed on the stairways (Figure 3.7) (Öztürk 1996).

Figure 3. 6: Deep in my Hearth (Öztürk, 1996)

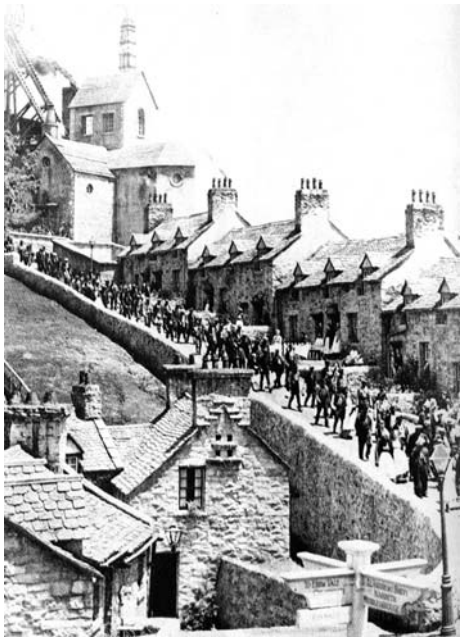


Figure 3. 7: So Green was my Valley (Öztürk, 1996)

3.2. Historic Precedents of Urban Stairways

In human settlements, public spaces have taken their shapes according to different objects. In Egypt, public spaces were mystic. In Rome, urban spaces were constructed according to military order. In Greek, these spaces were shaped according to social order. Both Middle Ages and Renaissance cities had urban spaces that were organised for common use. Lost public spaces where were inadequate for persons' needs came into existence at the beginning of industrial revolution. Nowadays, public spaces claimed new tasks in urban structure (Çubuk 1989: 15). New design studies are making to improve these spaces so that they support city life.

During the historic periods people have given shape to stairways considering different interpretation and manners in various cultural atmospheres. These manners are relating to social-economic and technological perfection of public. The stepped outdoor corridor is the most convenient description for the stairway. The precedent of the stairway stretches back in to the primary eras. In essence, the outdoor space is divided into ‘rooms and passages’ laid out across sloping land with stairways to delight movement from level to level.

Stairs are one’s only viable option to go up steep slopes if you omit wings, lifts and ropes, which require extensive infrastructure, energy and special apparatus. Climbing up stairs is a struggle. Struggle; by definition cannot be considered, as a concept, without notions of tiredness, exhaustion, being fed up, nonchalance or even laziness. The act of stair climbing with its rhythm and reduced rate is a special example of the relation between the existing and its existence and its controversy is due the act’s tiring and even sometimes repelling conceptual associations. Every step climbed is a next instant gained, standing up against exhaustion. No matter how young or fresh one is, with every step up one runs out of breath, pulse quickens, speech becomes inconsistent and then one is exhausted, dizzy, and unable to keep up and climb (Direk 1996).

Freud sees stair dreams as sexual manifestations or representations, sexual fantasy transmuted into metaphorical icons. He says: “We … began to turn our attention to the appearance of steps, staircases and ladders in dreams, and were soon in a position to show that staircases (and analogous things) were unquestionably symbols of copulation. It is not hard to discover the basis of the comparison: we come to the top in a series of rhythmical movements and with increasing breathless and then, with a few rapid leaps, we can get to the bottom again. Thus the rythmical pattern of copulation is reproduced in going upstairs. Nor must we omit to bring in the evidence of linguistic usage. It shows us that ‘mounting’ is used as a direct equivalent for the sexual act” (Freud, 1948: 34)

In every culture of the world, stairway is an expression of symbolic meanings. People have given different meanings to stairways. (Kocabıyık 1996 :14). Some people have seen it as expression of power. Some of them have used it as religious space.

3.2.1. Religious Space

All over the world religions have different symbols. Religious manner affect themes and design of public open spaces. Historically, stairways have carried symbolic meaning in different cultures. Followers of different religions could be given the opportunity to design and manage stairways in a religious manner. Some religions describe sacred rivers and mountains. Pyramids and temple stairways are examples both as sacred mountains and sacred roads to the heaven. In many religions stairs are associated with the role of taking up to the heavens or deep into the crust.

For the ancient Egyptian religions stairs were the perfect link connecting the earth and the sky. It is holy path that crosses the sky at the paradoxical point where transfusion from one type existence to the other takes place. Man passes on to real from the unreal at that point. In scripts on ancient Egypt funerals it says; “Ra owns real stairs that connect the heaven and earth and it is called “asket pet” (Kocabıyık 1996).

In the Koran it says; The Prophet Mohammad went to Jerusalem from Kaaba then with Gabriel's (archangel) guidance he passed the seven levels of heaven. In his mirac Mohammad met Adam on the 1st, Jesus on the 2nd, Joseph on the 3rd, İdris on the 4th, Harun and Yahya on the 5th, Moses on the 6th and Abraham on the 7th level. From here he got to Sidre-I Münteha which bonds the known and the unknown realm. Beyond where Eden begins (Kocabıyık 1996).

Mirac, in Arabic, means stairs or ascent device. In the 33rd of Zührut, multiple stairs crossing the heavens are referred to as mearic (plural of mirac). In the 3rd of Mearic it is stated that Allah has mearic (multiple stairs) (Kocabıyık 1996). Mirac is also referred to in the Old Testament. Jacob dreams of mystical stairs into heavens where angels climb up and down. At that instant he hears God say; "I am eternal, I am Abraham's God.", when he woke he said, "The real God is here and I did not realise it.". Stairs became holy by becoming God's evidence.

Ramon Lull, the Medieval Christian mystic, describes "the creation" as a ladder of ascent and descent in the Liber de Ascensu et Descensu Intellectus (Figure 3.8). According to him, each steps represents a level of creation, from senseless stone at the bottom, to flora, plants, brute animals, humans, firmament, the angels, and, at the summit God and House of Wisdom where the intellect may enter (Templer 1994).

Figure 3. 8: The creation as a ladder of ascent and descent, from Ramon Lull's Liber de Ascensu et Descensu Intellectus (Source:Templer 1994)

In the last section of Dante's "Eternal Comedy" called "Eden": The stairs to Eden are described as laid on the Saturn skies, which only the lucky can climb to reach the holy circle. Different levels (steps) of perfection and spiritual enhancements are frequently elements in this work of art.

Temple stairs are constructed to refer reach to heaven in Buddhism. Another example in China, is sacred road up the mountain of Thai Shan in Shantung. A flight of steps is as the ascent of life itself in holistic aspect (Figure 3.9).

Figure 3. 9: 6660 steps of sacred mountain of Tai Shan (Source: www.downloaded)

Southern India and Sri Lanka have similar stairways up the sacred mountains like Shantung. (Blanc,1997) Adam's Park is one of the most important places of religious veneration and pilgrimage in Sri Lanka for over a thousand years. The Budda is believed to have visited this beautiful mountain during one of his visits to the island. The huge footprint on top of the mountain symbolises this visit, and hence this holly mountain is named 'Sri Pada' – The Sacred Footprint. Others believe that it is the footprint of Adam when he first set foot on this earth – hence the mountain is also 'Adam's Peak'. The Hindu's belief that it is St. Thomas the apostle from India who set foot here. So, this Sacred Mountain brings many religious beliefs together. The climb up to temple at the top of this 2225 metre high peak along its seemingly limitless stairway is a very special experience. The climb takes 3-4 hours. So, the well-lit steps are got importance to offer safer climb at night when it is cool and more comfortable.

3.2.2. Power Space

The stairway has always been used to represent human aspirations; to demonstrate secular power and authority, prestige and status. Secular demonstrations of the great and impressive stairways are constructed for wherever autocratic power is exerted. The act of ascending a stairway is as meaningful as reaching the top or power. So, exhibition of the puissance of the king, the empire, the state, and latterly the corporation and institution may be demonstrated with large formal stairways (Figure 3.10). These stairways generally resemble access ways that are reached the special point or building.

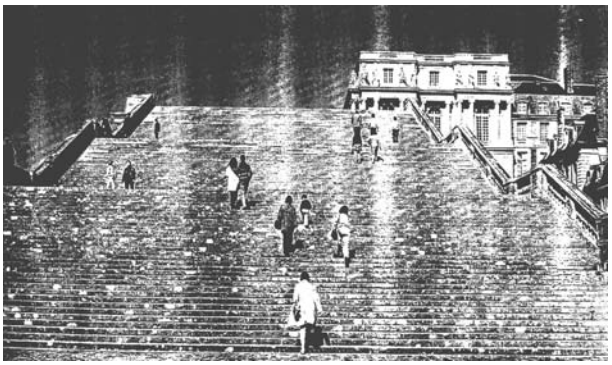


Figure 3. 10: Great stairway, Versailles (Designer Le Notre) (Source: Blanc 1996)

The monumental stairways appeared for the first time in the ziggurats of Sumer around 2000 BC. Pyramidal flights of steps are noticeable features of pre-Columbian Mexican architecture. They formed the plinths of temples and processional approaches to sunken courts.

Monumental stairways became a favourite design device for emphasising significant buildings that generally symbolise power in Imperial Romans. They are short or long flights marking a plaza or significant building entrances. Roman stairways were the results not only of elevation requirements, but also of a need for declaring importance by means of height, for the quality of overlooking-ness. Renaissance period, the approach stairway to monumental buildings had been used to stress the religious power. Perhaps one of the most

memorable approaches to any group of buildings is Michelangelo's stepped ramp for the Capitoline Hill in Rome (Figure 3.11).

Figure 3. 11: Cordonata, Capitoline Hill, Rome (Source: Templer, 1994)

The Campidoglia is an early demonstration of Baroque design principles. Michelangelo uses a grand approach stairway to form what was to become a model for the typical baroque vista. Viewed from the top of the flight, the vista is exaggerated in scale by a subtle increase in the perspective formed by narrowing the stairway as it recedes into the distance (Figure 3.12 and 3.13). This repeats the arrangement of the two side wings of the Campidoglio, which are not parallel. They are closer together the further they are from the Palazzo del Senatore. A lesser designer would have hesitated before risking this trapezoid shape. However, he was compelled to accept the condition that the quattrocento Palazzo del Conservatore and the medieval Palazzo del Senatore were to be retained and covered with new facades, and they were not at right angles to each other. Michelangelo chose to complete the court with a matching wing on the other side and to accept the trapezoid ground plan (Templer 1994).

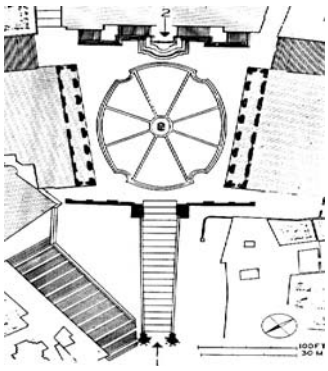


Figure 3. 12: Plan of the Campidoglio in Rome. Michelangelo's masterpiece of urban design (Source: Templer 1994)

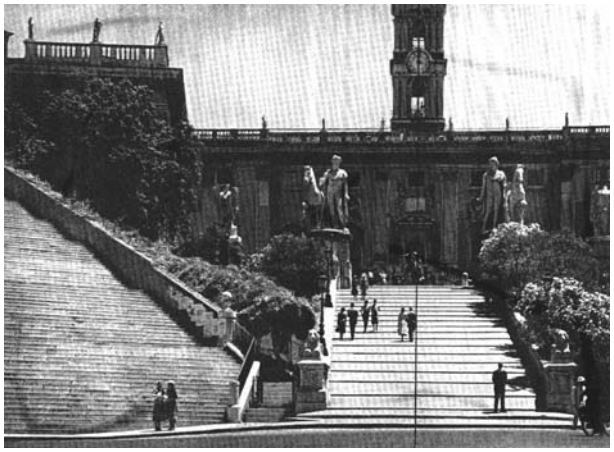


Figure 3. 13: Approaching the Campidoglio via the ramped stairway. The gigantic order unifies the facade from this viewing distance (Source: Templer 1994)

In approach from below, the reverse perspective caused by widening steps and the piazza does not seem to foreshorten the building visually. Widening the stairway simply makes the approach seem precisely sufficient for the scale of the court. A narrower stairway would have seemed mean. And widening the court as it approaches the focus makes the space appear somewhat larger than it really is. All of this is achieved almost imperceptibly; the stairway does not appear to narrow, and the piazza's sides at first glance appear to be parallel. The approach and the piazza form one of the greatest pieces of design theatre in a theatrical age (Templer 1994).

3.3.3. Circulation space

Stairways entered into the urban design as the passage of many feet since their invention. On a path that is steep and slippery, people used steps to make ascent controllable and safe. They provide both horizontal and vertical movement on sloppy terrain. Although their style and material have changed depending on society and design trends, their adaptation to street network always mandatory on steep terrains. Predilection of Roman cities for sloppy terrains brought about the need for stepped circulation spaces. Roman stairways were the results not only of ceremonial requirement. Tiddis and beside the Artemis sanctuary at Gerasa are good examples of these spaces. Long, stepped esplanades (Bulla Regia, Lepcis Magna) as circulation space

were also popular as much as grand stairways that led to elevated precincts and monumental buildings in history.

3.3. Stairways in Western and Eastern Built Environments

When public spaces and stairways compare in different periods, different approaches are noticed. This section aims to examine the extent to which urban planning principles and urban design trends of different historical periods have influenced outdoor activities and public spaces, especially stairways.

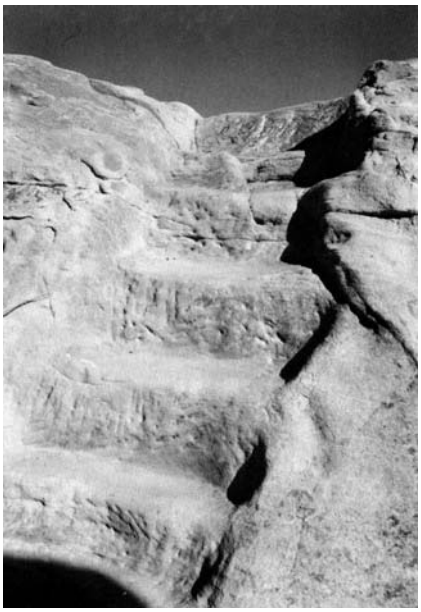


Figure 3. 14: Rock Steps at Sky City, New Mexico (Source: Templer 1994)

Figure 3. 15: Machu Pichu: Inka Town situated on a saddle between two mountains (Source: Templer 1994)

3.3.1. Classical, Medieval, and Neo-Classical Periods

In Greek cities, defining urban space and scale are important issues to achieve friendly cities. Much of Greek talents designed urban spaces considering relationship between man and nature as much as functional requirements. The Roman talent for design and planning contributed to the advancement of the stairways. The modified land stairway reaches its most developed form in the colonial cities of the Hellenistic world. For instance, at Priene in Sicily, the stairways represent much more than an adjustment of the natural topography an access occasioned by coincidences of encounter (Figure 3.17). Priene was planned before it was built; its stairways (stepped streets) are

Figure 3. 16: View of Priene, Hellenistic colonial town in Sicily (Source: Templer, 1994)

called on to satisfy all the sophisticated functional criteria of the Greek polis. The mandatory Hippodamian gridiron is carefully set down on a rocky promontory. The stepped stairways are regular in width, straight, not to steep to climb, well drained, and they intersect at predetermined levels to form uniform blocks of houses.

Priene's geometric regularity provides a typological turning point – at least for the simple classification that follows. The shape of the stairways begins to respond more to the deliberate decisions of the designer. Where the influence of topography becomes insignificant, then stairway shape typically takes on a

geometry quite different from the windings that are usual to modified land stairways.

A historical origin of the professional planning, in which experts design the city on paper and in models is in the Renaissance. In some earlier periods as Greek and Roman cities planners did it but the exception of a small group of planned late-medieval colonial cities, the cities were not planned from around AD 500 to AD 1500. Cities developed where there was a need and not based on plans. Evolution of cities and urban spaces took many hundreds of years because of the process in which continual adjustment and adaptation of the physical environment to the city function (Gehl 1990).

The city is a tool formed by use; it was not a goal in itself. Urban spaces in these cities still offer greatly good conditions for city life. Many medieval cities are still popular as tourist attraction as much as desirable residential cities in contemporary life. Streets and squares were arranged with concern for people's movements in outdoors.

The medieval period stairway seemed to be in the role of an awkward accessory. Nevertheless, it was elementary to the movement between levels. An early decision in construction had to be made by master reasons and their patrons, for example, as to whether to provide low step-heights (ie 'risers') to allow armour-clad knights to move easily up or down stairways, or whether to increase the dimensions of the step vertically to give defenders above a positive advantage over attackers below them in narrow streets. Such were matters of life and death rather than of convenience pure and simple. The late medieval public stairways signalled a new period of expression for the stairways. Curved flight of stairways had their heyday in the Middle Ages.

Renaissance movement is a notable turning point. This period includes radical developments in change stairway design as much as urban planning ideologies and changes in outdoor activities (Gehl 1990: 41). In this period, the radical change from freely evolved to planned cities and spaces was seen. A

special group of professional planners developed theories about how cities ought to be. The city became an art from a tool. Urban spaces like streets and squares were designed with consideration of artistic effects. The appearance of city became important in addition to obvious functional aspects in particular involved with defence, transformation and formalised social functions such as parades.

Besides bold handling of the surfaces of walls facing streets and squares, Renaissance designers made an effort to bring horizontal surfaces lying on different planes into relation with one another. They achieved that by the device of imposing monumental stairways left open to the sky.

The great formal compositions were constructed in this period. A wide, majestic flight of steps leads from the ground to the top level. Renaissance designers used monumental stairways and terrace formations Stairways and ramps of Belvedere at the Vatikan were evidence that stairways became a new element of urban design. Bramante used flight of steps as a mean of combining expanses of outlying space within his composition. Thus stairways took part in urban design as a new spatial element.

A drawing of Jacobo Bellini shows the purpose of stairways. "A barrel-vaulted church crowns the highest of three successive terraces ascended by a stairway which zigzags back and forth from one level to another up to the open church front. These terraces, like the numerous Figures dotted about the foreground and background, reveal the designer's object: to produce an impression of perspective in depth." (Giedion 1982: 62)

Straight flights of stairways have been used to create effects that are equalled and perhaps surpassed only by some of the more complex and extravagant layouts of Baroque Europe (Templer 1994). In this period stairways were ornamented with flowers.

3.3.2. Modern and Post-Modern Periods

The second radical change occurred around 1930 under the name of functionalism. In this period physical-functional aspect of cities were developed in addition to aesthetic concept. Light, air, sun and ventilation became an important criteria for healthy and physiologically suitable environment (Gehl 1990). The psychological and social aspects of the design of public spaces were not mentioned by the functionalists. The streets and squares disappeared from the new cities because functionalism was a physical planning ideology. The urban spaces transformed from positive spaces to negative spaces (Figure 3.18 and 3.19). This aspect influenced social life – meeting possibilities, play activities, and so on. The advent of functionalism, public spaces were not considered. Roads, paths, and endless grass lawns replaced them (Gehl 1990). Saint – Die is one of cities, which consist of negative urban spaces (Figure 3.20).

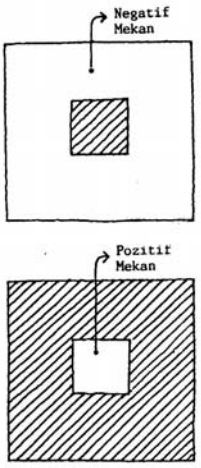


Figure 3. 17: Positive and negative space (Source: Trancik 1986)

Figure 3. 18: A city of positive space: Parma (Source: Trancik 1986)

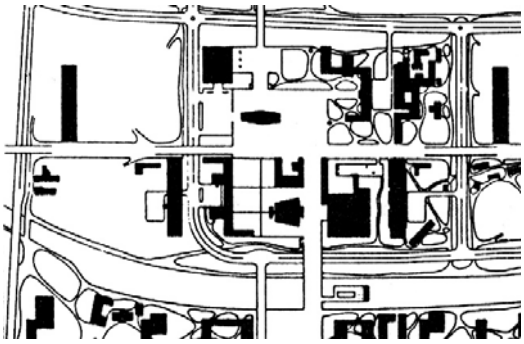


Figure 3. 19: a city of negative space: Saint – Die (Le Corbusier) (Source: Trancik 1986)

Like other urban spaces, stairways were careless in these periods. People preferred to spend their time in private spaces because of a changed city life and designed urban spaces.

Although lost urban spaces were built in this period, technological improvements and new materials supported stairway design and new samples were constructed. The use of mechanically driven escalators[2] (moving stairway) and ramps entered the urban life in modern period. They impose a new urban design discipline because of the perceptual sequences and easiness of ascent they provide. If economic cost is no object and, escalators can save a considerable amount of pedestrian energy and time. But, mechanical complexities of moving up and down on escalators seem to be multiply a thousand-fold once rain and wind and weather get to work. In addition, in areas with rates of vandalism (if constant supervision is absent), they make a very alluring and vulnerable target and relatively easy to immobilise. An escalator out of action is more hazardous than a normal flight of steps. So, into the open air, mechanical stairways have met with little success.

3.3.3. Stairways in Ottoman-Turkish Settlements

In traditional Ottoman – Turkish settlements that were established in sloppy terrain, curved stairways were parts of street network. They have been generally narrow and shady. All sizes on stairways are in human scale.

[2] Escalator: A stairway whose steps move continuously on a circulating belt.

Dwellings and stone walls of gardens have bended relating to curved streets Figure 3.21). These spaces were acting as social space as much as circulation space. Both functional and aesthetic requirements of people were considered to provide safer and comfortable steps. Decisions such as direction and dimensions of stairways, and materials of steps were determined considering social life, user requirements, climatic conditions, drainage (Figure 3.22) and so on.

Stairways can be protected from sun and precipitation because of their narrow character. Buildings, garden walls, covered plants and trees were protected users the negative effects of climate (Figure 3.23). Thus, traditional stairways where were cool in summer, and warm and nearly dry in winter have supported interaction between people (especially between neighbours) and enhanced social life.

Figure 3. 20: Woman kitting on steps in Manisa (photographed by Nevzat Çakır)

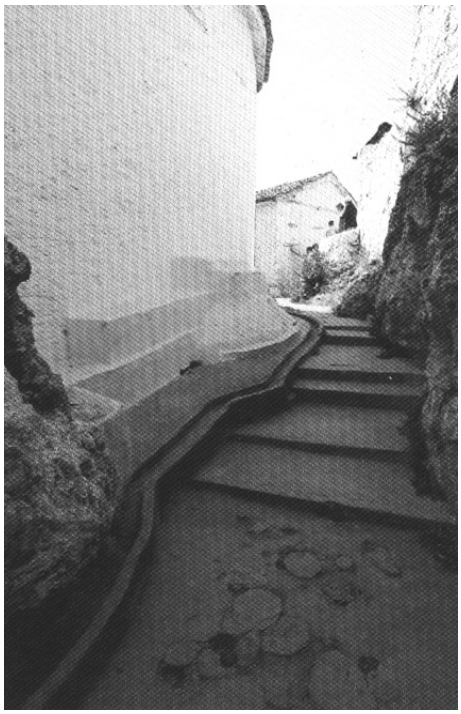


Figure 3. 21: Muğla. Drainage solution on the stairway is remarkable. (Source: Bektaş 1996)

Figure 3. 22: Kastamonu (Source: Bektaş, 1996)

People who were moving downward had a nice vista during their descent (Figure 3.24). Route of every stairway has included various surprises in every direction change in traditional cities. Plants and surfaced materials were both enhanced visual qualities. Stone steps were preferred as surface materials

(Figure 23). These steps have provided well drainage and easy reparation as much as safe ascent and descent.

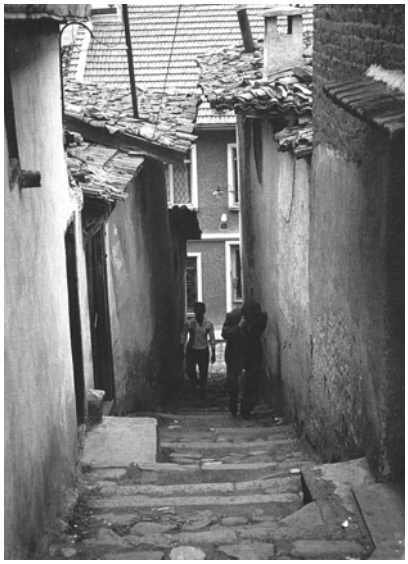


Figure 3. 23: Narrow stairway in Bursa (photographed by Şakir Eczacıbaşı)

Figure 3. 24: Akseki; Antalya (photographed by Nusret Nurdan Eren)

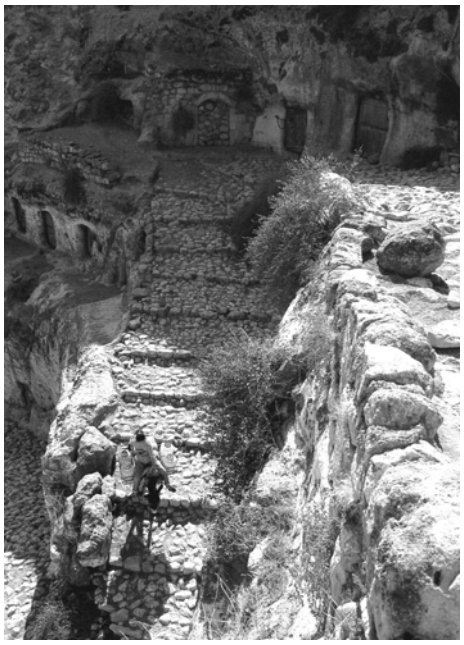


Figure 3. 25: Hasankeyf, Batman (photographed by İbrahim Zaman)

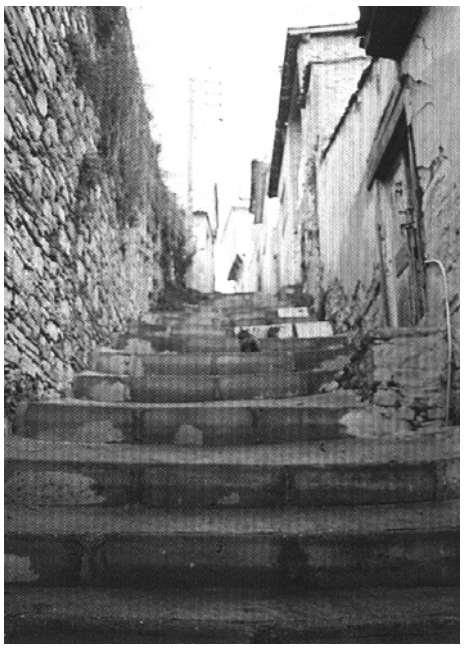


Figure 3. 26: Kuşadası (Source: Bektaş 1996)

Figure 3. 27: Akçaabat (Bektaş, 1996)

Mardin and İstanbul are two notable cities when we consider stairways as a part of the street network. Both cities were settled in sloppy areas. So, sloppy parts of cities have required stairways as paths. These stairways took a shape respecting topographic and climatic conditions and concerning cultural and aesthetic matters. They are still live and support their pedestrian network systems. Particularly stairways have great importance for Mardin. Because, stairway are the fundamental elements of city circulation system. All pedestrian activities (including social activities) and community services (including garbage collection with donkeys) happen on stairways. Although streets that are parallel to inclination lines are continuous, stairways are straight to the lines change direction so that steepness character of site is not feeling (Figure 3.29). Stairway profile consists of enclosure elements such as buildings or courtyard's walls. Narrow stepped street concept forms shady and cool spaces (3.30).

Figure 3. 28: Mardin (photogtaphed by İbrahim Zaman)

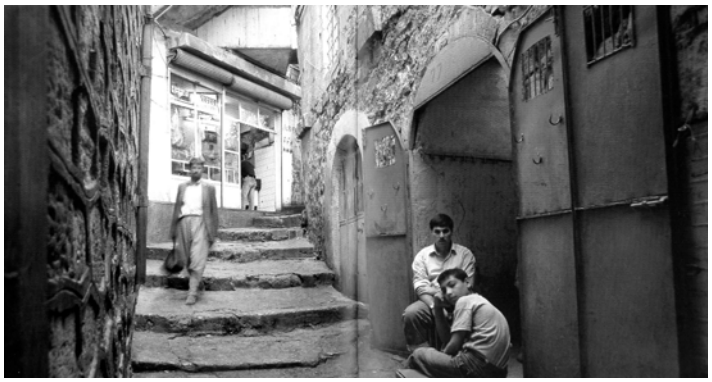


Figure 3. 29: A stone stairway covered by concrete in Mardin (photographed by İzzet Keribar)

Covered stairway is one of the uncommon types of stairways but they often seen in Mardin. They are called as “abbara”. Abbaras are original with functional (transition space), local (shady spaces considering dry-hot climatic conditions), semantic (obtaining imaginary and feeling of history), and spatial (feeling of enclosed space sense) features (Yücel 2001). The good solutions of old talents are still working although some wrong interference was applied (nearly all stone steps were covered by concrete despite of conservation trends and decisions) (Figure 3.31).

Figure 3. 30: covered stairway in Mardin (Source: www.downloaded)

Lots of districts are famous with stairways in İstanbul where settled on hills. These narrow spaces with steps and vistas are wealths of sites as much as support for pedestrian circulation system. Kamondo stairway is one of famous stairways in İstanbul (Figure 3.36). Beyoğlu and Cihangir are districts where street network are supported by stairways. Stairways both connection between different levels and add visual and spatial effect to the site are typical spatial elements in them. Street life is still alive on these stepped corridors.

Halit Refiğ described Cihangir with characteristic stairways in “Gurbet Kuşları” (1964). Long stairways in “Kötü Kedi Şerafettin Street”, after passing over Cihangir Street, extend in turn in order Uzunyol Street, Pürtelaş Street, Akyol Street, and Mebusan Ramp by unique strait view. Another interesting axis starts in Cihangir Street and ends Kazancı Ramp. This axis goes up firstly Ülker Street, seconly till İnönü Street. There are the best pleasant panoramas of İstanbul in these axes. So, these stairways are spaces inviting both wandering and photographer.

Figure 3. 31: Fındıklı Ramp in Istanbul (Source: Kayra 1991)

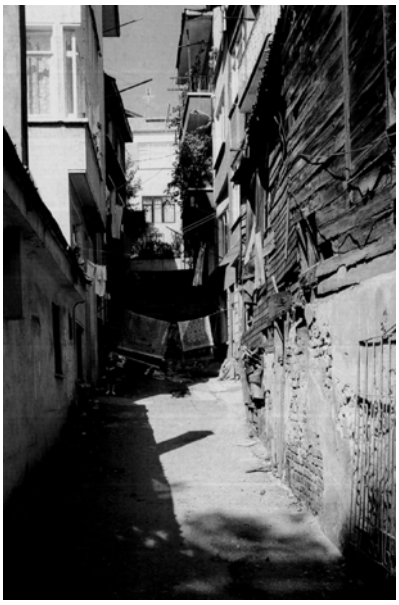


Figure 3. 32: Fıçıcı Kerim Street in Istanbul (Source: Kayra 1991)

Figure 3. 33: Merdivenli Mektep Street in Istanbul (Source: Kayra 1991)

Figure 3. 34: Kakmalı Kapı Street in Istanbul (Source: Kayra, 1991)

Figure 3. 35: Kamondo Stairways in Karaköy, İstanbul (photographed by Hüsnü Gürsel)

In İstanbul, stepped passageways, which are too steep and narrow, offer attractive views (Figure 3.37). The best impressive one goes down from Susam Street to Sanatkar Street in South Cihangir. Passageway going down from Şahkulu Street to Küçük Hendek Street is used as courtyard by residents.

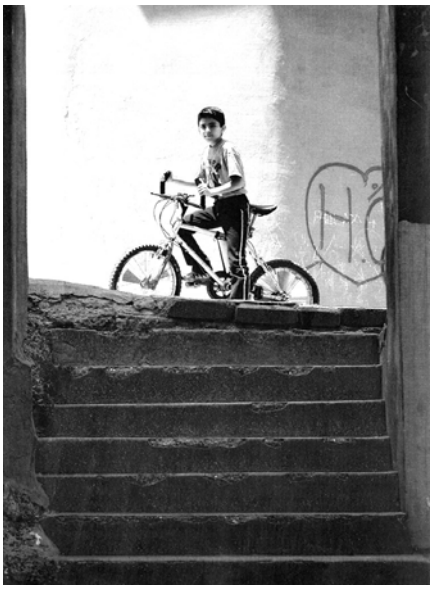


Figure 3. 36: Stepped passage in Fener, İstanbul (photographed by İzzet Keribar)

3.4. Conclusion

The evaluation of stairways; design and construction have evolved depending on their design and construction periods; cultural beliefs, and technical issues. All periods or styles explain different approaches and rules. We should focus on analysing each stairway solution that meets a functional and aesthetic requirement depending on its period. Structures that withstood the inevitable elimination introduced by the time factor carry an important value in addition to their cultural and historic significance. Because staying alive requires, in addition to build quality, a very strong conceptual background. In the contemporary world, forms and designs of the historic stairways should also be observed as Sources of inspiration and reference to create new stairways.

CHAPTER 4
THE DESIGN AND USE OF URBAN STAIRWAYS

4.1. Introduction

This chapter is concerned with the physical, physiological, and behavioural interaction between people and stairways. Various user requirements, expectations and habits, on stairways, were examined to determine the spatial standards for creating lively, safe and comfortable urban stairways. Finally, the last section sets out all the issues to consider when designing them. This is a not study only about stairways in “special occasions” such as festivals or major events. Its focus is, rather, on ordinary days and the stairways surrounding residential buildings.

4.2. Samples of the Use of Urban Stairways

Physical environment is one of the factors that influence types of activities and quality of public life in stairways. To improve quality of daily life and supply user needs and expectations, some standards should be provided. When a stairway is of poor quality, only the necessary activities occur. People do minimum activities and then hurry home or to work. When a stairway has high quality, necessary activities occur approximately the same frequency although they tend to take a longer because of the better physical conditions. In a good environment, place invite people for various activities; so a wide range of optional activities and social activities will also occur.

Although there are some differences depending on the sort of urban space, essential conditions are unchanged for all public spaces. Marcus and Francis believe that a public space should:

- Be located where it is easily accessible and can be seen by people who are potential users.

- Give a message that the place is available for users so that people use it without doubt.
- Be seen beautiful from both the outside and the inside.
- Be geared to response the needs of users and be furnished to support comfort and also to enhance activities.
- Give a sense of security and safety.
- Offer relaxation, and support the health of its users.
- Provide opportunity for different subgroups' using without each group's activities disrupting the other's activities.
- Offer comfortable environments at peak use times considering every climatic condition such as the sun, shade, wind, and so on.
- Be accessible by children and the disabled.
- Support to the philosophical program controlled by the manager of the space.
- Incorporate components that the users can manipulate or change. Thus, user participation can be provided. Interactive sculptures and fountains are appropriate elements especially in urban streets and plazas.
- Give users state of belonging feeling by using it special events or by temporarily claiming personal spaces within the place. Person as individual or member of a group should feel a desire for a part of its design, construction, and maintenance, shortly for caring it.
- Be easily and economically maintained. In the same time, limits of what is expected in a particular type of space should be considered. For example, in a park, concrete material might be easy to maintain but is not what a park is expected to be.
- Be designed with equal attention paid to space as an expression of visual art and space as social setting. If too much attention focused on one matter, space may be unbalanced or unhealthy (Marcus and Francis 1990: 6).

Carr mentions about three necessities for public spaces that support all types of outdoor activities. These can be summarised as following items:

- Public spaces should fulfil user requirements.
- They should be democratic. Belonging and justice concepts should be felt in space.
- Public space should have a meaning for users. People can built a relation between space and themselves (Carr 1992).

Like needs and expectations, the behavioural tendencies of all people are similar in urban spaces. So, investigation of activities on public space will help stairway design process.

4.2.1. Activities on Urban Stairways

According to Jan Gehl in “Life Between Buildings”; outdoor activities in public spaces can be classified into three categories: Necessary activities, optional activities, and social activities (Gehl 1990). Each of them has very different demands from the physical environment.

Necessary activities are more or less compulsory activities under all conditions such as going to school or work, shopping, waiting for a person or a bus, running errands, and so on. Everyday tasks and interest belong to necessary activities. Physical framework influences these activities because of their incidence features. Necessary activities are repeated during the year, under all conditions. When outdoor areas are poor quality, necessary activities still occur although other categories are not preferred (Gehl 1990).

“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 quite another matter” (Gehl 1990: 11). Taking a walk to get a breath of fresh air, standing around enjoying life, sitting and sunbathing can be given as sample in this category. All of these activities take place when exterior conditions are optimal. When physical planning is made and adapted to the site successfully, places invite people for recreational and other optional activities.

Existence of social activities depends on the presence of other activities. So, these activities could be determined as “resultant activities”. They develop in connection with the other activity categories because people in the same public space, meet, pass by one another or only see other people. Social activities occur spontaneously. If the quality of urban space is improved for necessary and optional activities, social activities are indirectly supported. This type of activities includes play, greetings and conversations, communal activities of various kinds, and passive contacts. Passive contacts - seeing and hearing other people - are the most prevailing social activities (Gehl 1990).

Stairway life is not only pedestrian activity (necessary activity). It is also recreational and/or social activities. Functional, optional, and social activities intertwine in combinations. Urban stairways may be used as circulation place, communication place, gathering place, relaxing place and so on. Particularly in residential stairways, social activities have extensive range.

Basic activities on stairways can be grouped as dynamic activities (walking -ascending and descending -, strolling, and playing) and static activities (sitting, standing, and seeing). Some urban stairways may be used for fashion shows, art exhibitions, ceremonies, and celebrations in special periods. When spaces make it attractive to walk, sit, stand, see, hear, and talk; it is also means that other activities such community activities will have a basis for development.

Walking is the essential type of locomotion. It is a way to get around. People walk to access somewhere, to see the surroundings, or just to walk… The act of walking is often a necessary act but sometimes it transforms into strolling. Some standardisation should be implemented to move or pause freely, safely, and comfortably on stairways. Simplifying the existing walkway line of stairways will improve the quality and appearance, make it easier for users to understand the function of various areas across them, and make maintenance more efficient. Special demands for space are also required by the “wheeled” walking movement: the baby carriage, the wheelchair, the shopping cart and so forth.

Factors that make people tend to do downhill or traverse:

- Although the same vertical displacement is attained exhaustion is minimal.
- It is safer as it si easier to stop as long as non-slip conditions exist.
- It is controlled reversion to a lesser energy state, harmonious with entropy introduced by gravity.
- It gives a sense of shelter.
- It introduces a sense of holding on to keep from speeding down.
- It gives sense of security (Figure 4.1).

Figure 4. 1: Mysterious descent with steps (Source: Cullen 1961)

Factors that make people tend to go uphill or climb:

- It requires power against gravity.
- It gives a new dimension, vertical, to locomotion.
- It is joyous and refreshing.
- It gives a sense of success in life.
- It si getting away from the earth related.
- It is step towards holiness.
- It is approaching the sun.
- It is departing from the crowd to a higher ground.
- It gives strategic advantages.
- It si reaching a summit
- It gives better view of wider scene (Aran 1977).

Sitting to rest or see surroundings is another common activity on stairways. There are three types of sitters in urban stairways: residents, passers-by, and visitors.

- Residents tend sit close to their dwelling entries. They may sit to see their children or take fresh breath (Figure 4.2).
- Passers-by who want to sit on the steps or low walls of the stairway for resting or looking out stairway action. This type is more likely to be single users rather than groups. Thus, designs do not have to include intimate arrangements, such as opposite to or right angles. People prefer to sit side by side (Figure 4.3).
- Visitors users tend to sit not too close to vehicle traffic or pedestrian movement and not too close to the building entries. These users can be groups or people alone. They may looking out stairway action or viewing.

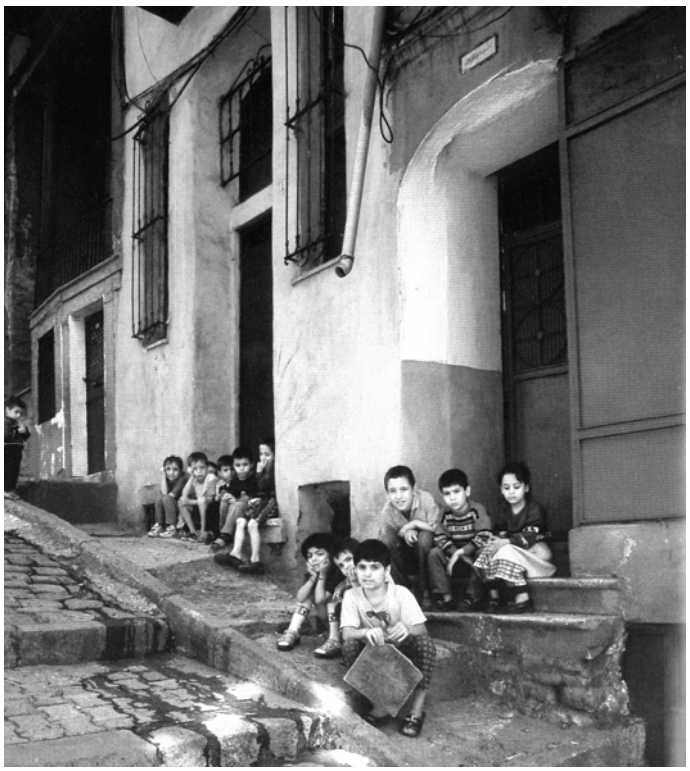


Figure 4. 2: children sitting on stepped entrances in Kumkapı – İstanbul (photographed by İzzet Keribar)

Figure 4. 3: passers-by sitting for resting on 304th street in Karataş – İzmir (August 2001)

Playing activity is fairly common, especially on stairways between dwellings. Because, they provide relatively safe and exciting place for playing without disturbance from vehicles. Children play active and passive games from sliding down using handrails or ramps to playing at families (Figure 4.4 and 4.5).

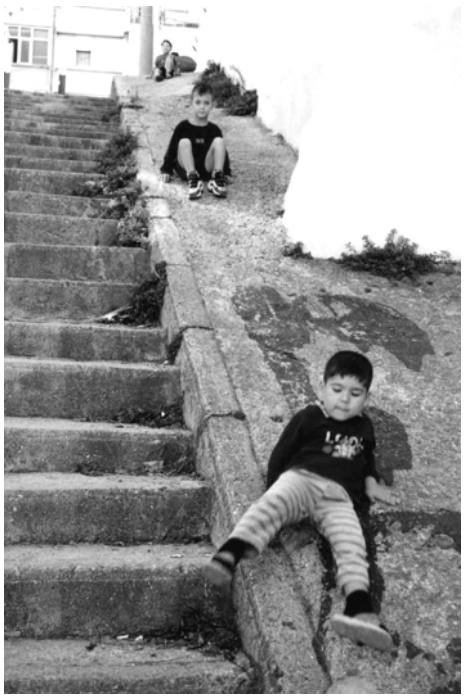


Figure 4. 4: Children sliding down on ramps of 185th street in Güzelyalı -İzmir (September 2001)

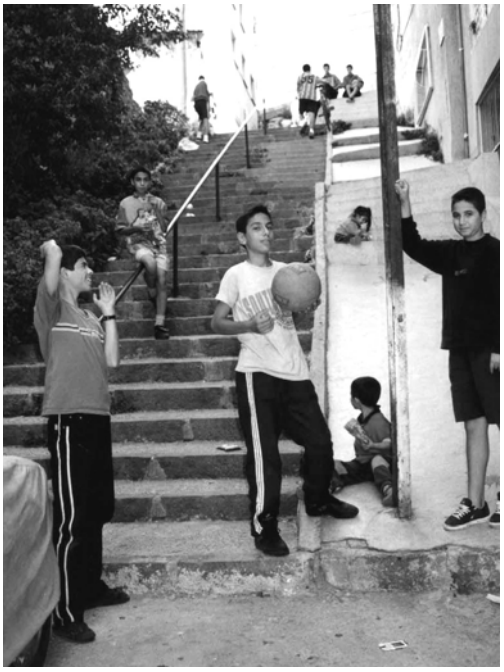


Figure 4. 5: Children playing various games on 190th street in Güzelyalı – İzmir (September 2001)

In this study, users are grouped considering their aims and activity types, as those people who pass through, as residents whose dwellings are locate on the stairway or visitors who visit the stairways due to its special attractive character. Although we would define a successful stairway in residential areas as one that supports spirit of the street concept, passers through as users would not be excluded. Residents, passers-by, and visitors share the qualities of stairways.

4.2.2. Stairways Used by Passers-by

To the passer-by, the stairway is a place to walk through on their way to somewhere else. They may use this space to go to work, school, or for strolling. Generally, strollers and passers do not prefer to use stairways if there is another alternative to reach the destination. The passers-by are not interested in stairway space except inordinate situations.

4.2.3. Stairways Used by Residents

Residents who live in adjacent buildings to the stairway have to use the stairways. Resident's requirements and activities on stairways are not the same as the passer-by'. Low quality of the stairway effects residents rather then other user groups. High quality of the stairway cause people to stay longer for activities. Thus, level of communication increases depending on resident's satisfaction.

4.2.4. Stairways Used by Visitors

Some stairways have special features, that make them destinations, attract people for spending more time on stairways. People may use them to have a good time, communicate with other people, or celebrate ceremony, and so on. Visitors expect more comfort from stairways because they do not have to use these spaces. Their aim of use is for optional and social activities. The stairway may provide a symbolic destination for the people or provide place for public ceremonies (Figure: 4.6). People may gather to hear speeches or music or to see a view. They tend to use these spaces rarely. The tourists can be grouped in this class. Historic stairways and also modern stairways may be decorated to attract people.

Figure 4. 6: Spanish steps as a photographic space. (Source: www.down loaded)

4.3. The Design of Urban Stairways

The extent and character of stairways are influenced by physical planning and design. It is possible through planning and design decisions to influence patterns of activities, to create better or worse conditions for outdoor events and to create lively or inanimate urban stairways. Some stairways are better than others to be on, to do what you came to do. It is not a coincidental event. Stairways lined with enclosure elements, ornamented with flowers and dancing lights is a much more pleasant to be on than a stairway that is somehow uncomfortable as either a walking or viewing place. This chapter is a focus on physical and designable qualities of stairways. It determines design criteria for good stairways. Stairway design is not easily discussed in specific terms because of the large variances in purpose between various types of stairways. So, stairways in townscape are the primary issue for this study.

Stairway design can be conceptualised in two ways: stairways as pedestrian circulation network and stairways as individual spaces. Planning stairways as networks that irrigate the city and its different parts is a more general study than design of stairways as individual spaces. The main decisions are made in this level. Providing connectedness and continuity between stairways and fluidity of pedestrian movement are this period's task. Design of stairways as individual space focuses on detailed studies that increase quality.

The primary objectives of improved pedestrian circulation system are safety, security, convenience, continuity, coherence, comfort, and aesthetics (Rubenstein 1992). Fulfilling one of these objectives generally increases the opportunities for social interaction or improving other tasks of stairways. Some general concepts for stairway design, departing from Rubenstein, may be as follows:

- Providing safety
- Providing comfort and ease of use
- Providing aesthetic effects

- Providing connections the rest of site
- Providing easy access to everywhere on stairways
- Providing opportunities for social activities

The basic ingredients of stairways consist of two main elements: mass (enclosure elements) and space (urban corridors). The essence of design is the interrelation between these two. Stairway design consist of basic design concepts such as order, unity, proportion, scale, harmony, symmetry, balance, rhythm, propriety, economy, etc. It should be a combination of these design issues:

- pedestrian movement design
- facility design
- lighting design
- furniture design
- pavement design

Factors influencing the stairway design are cultural, natural, socioeconomic, and political. Design issues and recommendations depend on region, climate, culture and so on. But, human dimensions and senses create common standards and necessities for stairways. These will be explained in this section.

Pedestrian circulation habits and needs change depending on various cultures. Cultural factors may influence design of stairways. Natural factors such as climate, topography, and vegetation modify the shape of a stairway. Cost and durability are the economic dimension of design. Budget dictates a direction to design. It effects the chosen materials for surface or street furniture. Although initially more costly, expensive pavement materials and furniture are usually more enduring, aesthetic, and much easier to maintain than the cheap ones. Approach of the political groups to the outdoor space is another factor. Political opinions, city laws, and funds may effect the design.

The importance of the **users** is a key consideration for stairway design. Good stairway design is the outcome for an understanding of the character of space and the habits and expectations of its users. At the same time, it demands sensitivity to the spatial requirements, preferences, needs, and concerns of age-related and vulnerable groups. People of different ages require different sorts of places and activities in urban space. For example, toddlers need play places, teenagers need sitting, talking and sports places, adults need grass and flowers, and retired persons need protected and well-detailed seating places. The success or failure of stairways depends upon its character, not just its facilities.

Stairways may be representing a very real problem for some pedestrians. All large movements upward and downward require more effort, additional muscular activity, and interruption in the walking rhythm. As a result some special groups should be considered to ease and support usage. Three groups are particularly sensitive to stairway impacts: small children, elder and handicapped people. These vulnerable groups spend the greatest part of their time in vicinity of their residences whether inside the house or out. So, physical conditions and activities on stairways effect them. Households with babies have a special problem on stairways. They must carry their child. For this reason, descent and particularly accent movement are difficult for parents.

It is very important that all urban spaces should be arranged according to handicap and the elderly so that they can easily adapt daily life. Urban stairways may be the problematic area in this situation. Needs of handicapped and the elderly who are mentally and/or physically disabled should be taken into consideration. To design stairways for older people requires an understanding the effect of age on how the older person perceives, interprets, and negotiates the environment. The elderly have a great diversity of physical and mental abilities, preferences, and lifestyles. Older people need a greater level of design detail than younger people due to their sensory interiorities. There should be some specific standardisation for safety and comfort aspects. Stairway design for the elderly includes special attention to the quality of and the quantity of

steps, light, and handrails. The use of colour and light effects may support perception of the stairs (treads). Providing higher contrast and improved visibility of stairways significantly improve these users ability to negotiate stairways. Brighter colours in the red and orange range are easier to differentiate than darker colours in the blue-green range. The solutions that limit perceptual and movement abilities and their adaptation to urban spaces should be avoided. Solutions should promote a sense of autonomy, independence, and usefulness. For instance the stairways with irregular geometrical shapes may cause danger for the blind and other handicapped people.

Children are another vulnerable group in stairway design. Children's special demands due to differing dimensions, abilities, and tendencies should be considered. They cannot predict the danger of steps. They use the rails as sliding and swing bars or may run down fast fearlessly. Children stay and play essentially where the most activity is occurring or where there is the greatest chance of something happening. Researches children's play habits in residential areas show that children tend to play more on the streets, in parking areas and near the entrances of residences than in the designed play areas at the backyards of dwellings or the sunny side of buildings (Gehl 1990). Generally, the existence of steps stimulates the spirit to play. Residential stairways are an area that can easily be overlooked. So, it is suitable for playing activities. Stairway's landing, dull facades of buildings, ramps adjacent to steps or steps themselves are used as play spaces by children. Children may gather and play with others or prefer play alone with toys. When locating play areas, children's noise should not be forgotten. Children play areas should not obstruct access to building entrances and walking lines.

Another classification that effects the activities on stairways and design can be made considering gender: female and male users. Their habits and needs may differ on stairways. Male tends to use urban open spaces more than female. Despite eastern and western society's changing values[1], women use

[1] Many years ago, housewives would walk to the shop, walk the children to school, or to visit their acquaintances. But, the housewife's role has changed and she may be breadwinner and

urban spaces in a group or one of a couple. Women being seen alone in urban open spaces like parks, is still an exceptional situation, especially in the evening (Marcus and Francis 1990). However, a study in Seattle showed that a large part of users was women in well-design urban spaces. This may be unusual sample but it warns us about considering traditions and other factors such as age, sex, or ethnic group (Marcus and Francis 1990). According to Whyte, women are more discriminating and sensitive than men are. If an urban space has a considerably lower than average proportion of women, something is wrong. The quality of urban space is high; the proportion of women is more than average (Whyte 1980: 18).

Another interesting difference between male and female was determined by Whyte's studies in plazas. He noted that men prefer front locations, whereas women who generally do not want to be on display and prefer the rear. This pretension was confirmed by Marcus's study in San Francisco (Marcus and Francis 1990). Another users survey of urban spaces in San Francisco in 1984 confirmed expected issue that women are more likely to use the public open spaces adjacent to retail stores (Marcus and Francis, 1990). In addition to all, men and women have different concepts of downtown open space. Women prefer urban open spaces to escape from stress. They favour to seek spaces that filter out urban stimuli and are secure. In contrast, men perceive public space as a place for human interaction. In other words, women seek “backyard” experiences (comfort, relief, security, control, and relaxation); whereas men seek “front yard” experiences (publicness, social interaction, and involvement). Mozingo stressed that designer need to see these as part of continuum, not necessarily as two separate kinds of space. The task of designers is to integrate both uses into one space (Marcus and Francis, 1990).

Climatic conditions are the natural factor that effects stairway design. There is a direct relationship among the width of stairways, height and bulk of buildings, pavement materials, furniture and comfortable climatic conditions for

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head of a single parent family or a co-working family partner. These changes cause more trips demands (Moughtin 1995).

pedestrians. A range of weather conditions should be considered to make users physically pleased on stairways. Temperature, sunlight, wind, and humidity are the main factors affecting outdoor space comfort.

The seasonal movement of the sun and existing or proposed buildings and other physical elements must be taken into account so that the stairway will get the maximum amount of winter sunshine and receive minimum amount of summer sunshine. Summer shade should be provided by using planting or from nearby buildings in hot summers. Building height and mass should be considered to permit to sunlight reach public open spaces. In addition, designers should consider construction materials that reflect sunlight such as (steel, glass, or marble). They brighten and warm an open space when direct sun exposure takes place (Marcus and Francis 1990).

Glare is another microclimatic problem that must be considered. On stairways with marble steps or when surroundings reflect the sunlight, glare can be a serious problem on sunny days. By contrast, dark surfaces can be gloomy and depressing when it is wet or overcast.

Studies in Manhattan and Copenhagen supported that when the temperature was above about 13 ^{0}C (55 ^{0}F) there is a considerable increase amount of pleasure walking, standing, and sitting in public open spaces (Gehl, 1987). So, when predicting locations of popular seating or standing areas and proposing seating areas, sun shade patterns should be considered for those months when the average midday temperature is 13 ^{0}C or higher. Some shaded areas or lines should be provided, where summer temperatures are uncomfortable hot. This limit is 24 ^{0}C (75 ^{0}F) for some people. Especially, the elderly are sensitive to the sun. In this respect, they require protection from direct sun lit and glare (Marcus and Francis 1990).

Wind may be a problem in a site. It may hinder walking and/or sitting on stairways. Table 4.1 shows the effects of different wind speed on pedestrians. “cornerflows”, “downwashes”, and “wakes” are the strongest wind conditions.

They are also the most problematic wind effects (Marcus and Francis, 1990). Considering wind effects guide to decide the location and size of the buildings and other constructions. Sometimes landscaping helps to prevent problematic wind effects although it is less effective than modifications on to the buildings. When possible, the size and shape of the existing buildings near the problematic area should be redesigned. To get icy may be another consideration in cold climates. It may determine rate of inclination, pavement materials, and so on.

Table 4. 1: Effects of Wind on Pedestrians (Source: Francis, 1990)

Wind Speed	Pedestrian Discomfort
Up to 4 mph →	No noticeable effect is felt
4 to 8 mph →	Wind is felt on the face
8 to 13 mph →	Wind disturb hair, flap clothing, and extend a light flag mounted on a pole.
13 to 19 mph →	Wind raises dust, dry soil and loose paper and disarrange hair.
19 to 26 mph →	the force of the winds is felt on the body
26 to 34 mph →	Umbrellas are used with difficultly, hair is blown straight; and pedestrians have difficulty in walking steadily.

In addition, the role of the stairway is one of the significant determinants for the stairway design. Different functions cause different physical needs. So, the essential function defines the form of the stairway, its size/scale, materials, and so on.

4.3.1. Physical Characteristics of the Users:

Basic information on physical characteristics of human Figure is useful to make rational decisions about required dimensions of stairways and other details of a proposed pedestrian environment. Human physical capabilities and familiarity with human senses are important prerequisites for designing and dimensioning stairways. Spatial conditions and human perception determine the urban space usage and limit of outdoor activities. A large stairway that is devoid of street furniture or planting intimidates people. People prefer to be “enclosed” rather than “exposed”. Their feelings direct their decision between passing through or staying there to pass the time.

4.3.1.1. Dimensional Criteria

Dimensions of human Figures change in various activity positions. Use of this information depends on the purpose for which it is being used. Also, spatial requirements may be differ between various cultures as well as function of accustomed densities of people in various heritages, social and environmental values, and so on (Harris 1988).

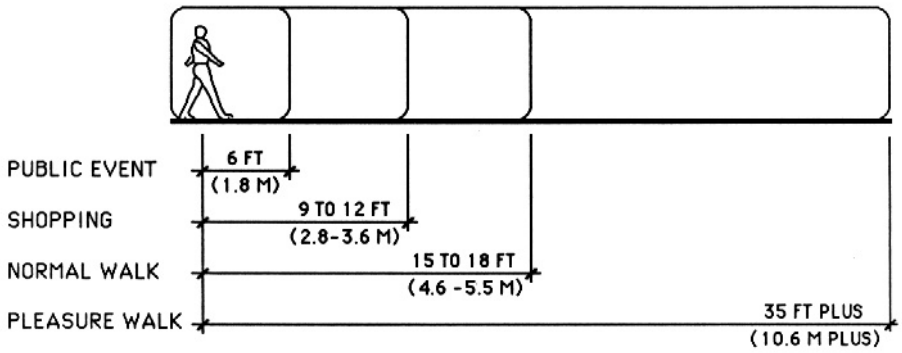


Figure 4. 7: Forward spatial bubbles (Source: Harris 1988)

4.3.1.2. Movement Criteria

Pedestrian walking rates are affected by level changes. Grade changes of 6 percent or less and stairways slow down average walking rates. The average walking rate of a pedestrian also decreases when user density on a stairway increases. Table 4.2 shows average walking rates of adults pedestrians, expressed in various units of measurement. Most people walk faster downwards than upward.

Table 4. 2: Average Walking Rates of Adult Pedestrians (Source: Harris 1988)

Type	M/min	Ft/min	Km/hour
Average adult	72	260	4.3
Elderly (75 yrs)	67	215	4
Bunching	61	200	3.7
Stairways (going down)	46	152	2.8
Stairways (going up)	34	113	2

On stairways, acceptable walking distance also decreases. Like other walking paths, average range of acceptable walking distances varies depending on the purpose of trip, cultural differences in various regions, climatic conditions (people move more quickly in cold), etc., but most people are not willing to walk distances greater than about 220 meters (700 feet) (Harris 1988).

Pedestrian density is another criteria that determine physical characteristics of pedestrians. Pedestrian density may be high at certain times of the day or during the day depending on land uses that attract people. Particularly the primary people generators such as religious buildings, education buildings, office towers give a shape to stairways how they are used and determine user density. Figure 4.8 shows pedestrian flow volume, speed, and density for stairways. This information can be used as a visual guide for estimating existing or proposed pedestrian movement volumes and speed and for determining

minimum stairway widths by use of the mathematical formula given in “Stairway width” of this section (Harris, 1988).

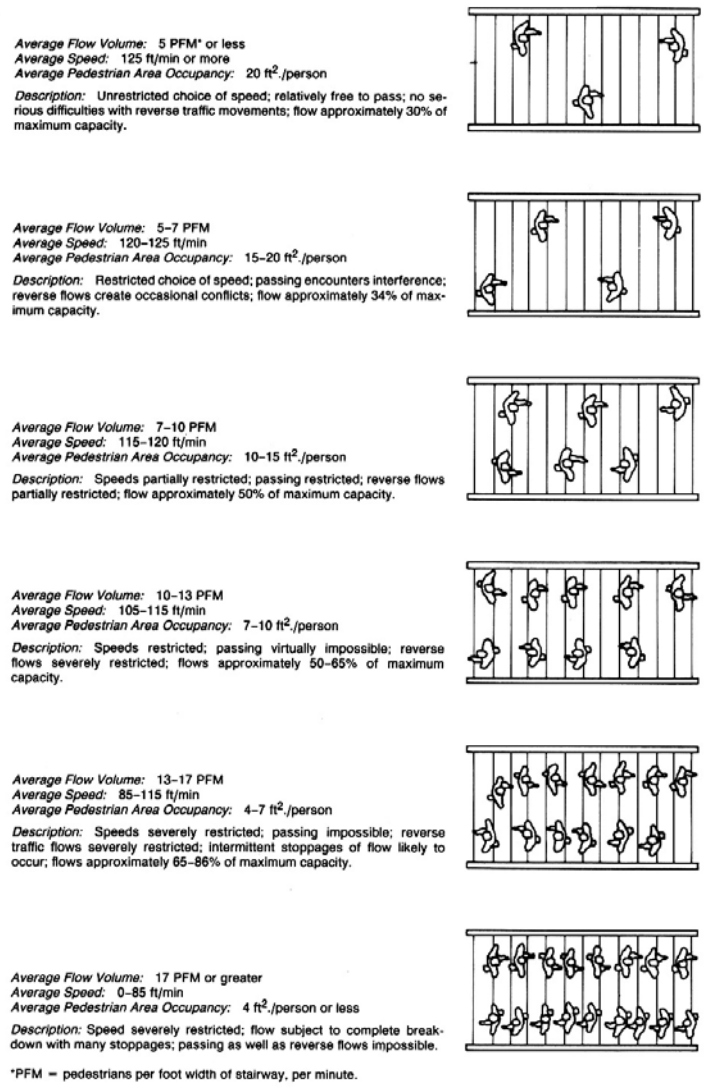


Figure 4. 8: Average flow volume, speed, and density for stairways (Source: Harris 1988)

4.3.1.3. Visual Criteria

Familiarity with human senses is an important prerequisite for designing and dimensioning stairways like other forms of outdoor spaces. Because sight and hearing are related to the most comprehensive of the outdoor activities, how they function is, naturally a basic design factor. A knowledge of the of the senses is a necessary requirement also in relation to understanding all other

forms of direct communication and the human perception of spatial conditions and dimensions.

Eye levels and cones of vision are particularly important in terms of the size determination and placement of enclosure elements and other visual items on stairways. Pedestrians will focus most of their attention at eye level and below during normal perception of their surroundings. Figure 4.9 shows the eye level of an average adult in a standing position and a sitting position. The vertical, downward field of vision is much narrower than the horizontal, and the upward field of vision is narrower still. The normal human cone of vision is approximately 30 degrees vertically and 60 degrees horizontally (Harris, 1988). It is illustrated in Figure 4.11.

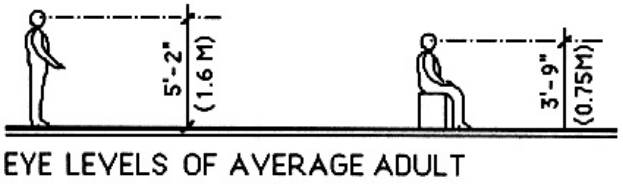


Figure 4. 9: Eye Levels of Average Adult (Source: Harris 1988)

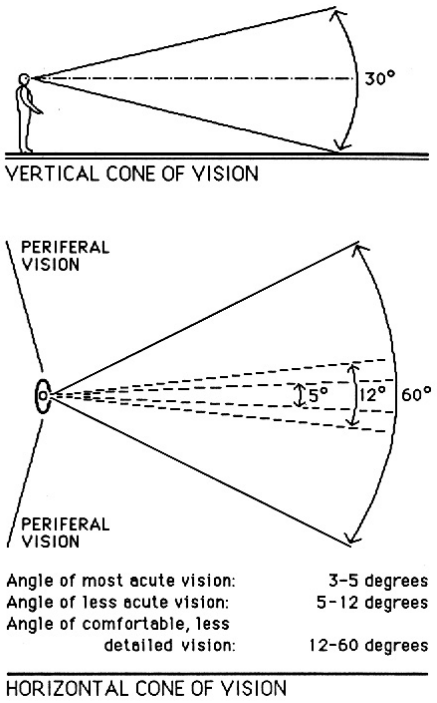


Figure 4. 10: Normal Cone of Vision (Source: Harris 1988)

Sense of spatial enclosure is important criterion in visual perception aspect. Spaces between buildings should stimulate human feelings. A sense of place in a stairway design, like street design, is achieved if the spatial volume defined by the frontages is perceived as the positive form, the Figure seen against the general ground of the surrounding architecture. Volumes of urban space what generally is defined by architectural forms should be established for sense of safety. Degree of enclosure can be listed as follows:

- Little sense of enclosure
- Partial enclosure
- Strong enclosure

There are two extremes of sense of enclosure: Exposure and exhilarations. Both too little sense of enclosure and too strong sense of enclosure may cause negative feelings. An external enclosure is most comfortable when its vertical planes are one-half to one-third as high as the width of the space enclosed. If the ratio becomes less than one-fourth, the space begins to lack a sense of enclosure (Figure 4.11) (Harris 1988).

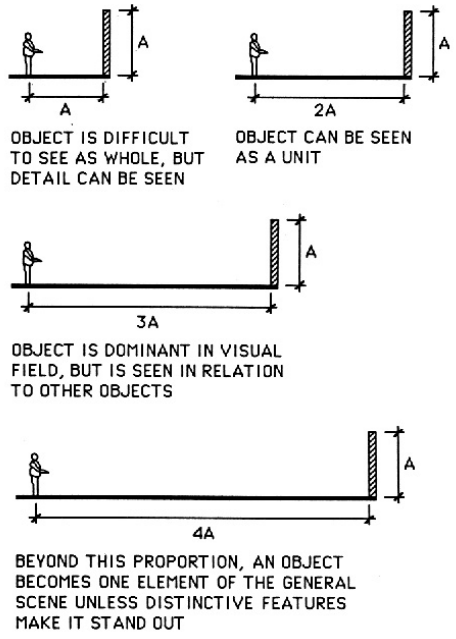


Figure 4. 11: Sense of Spatial Enclosure (Source: Harris 1988)

The enclosure of urban space, to make strong outdoor spaces is important not only to achieve of human scale, and also to provide a sense of protection and well being.

The Social Field of Vision is another criterion for design. The scale and form of the stairway influences pedestrian behaviour and the type of social communication that may occur within the space. Physical distances can bring into close proximity, or separate people who are using the space at any given moment. In this regard, understanding of the capabilities and limitations of normal human vision is helpful to support social communication.

One can see others and perceive that they are people at distance from ½ to 1 kilometres, depending on factors such as background, lighting, and particularly, whether or not the people in question are moving. But, at approximately 100 meters (325 ft.), Figures that can be seen at greater distances become human individuals. According to Gehl, this range can be called the “social field of vision”. At a distance of between 70 and 100 meters (250 to 325 ft.), it begins to be possible to determine with reasonably certainty a person’s sex, approximate age, and what that person is doing. The 70-100 meters limit affects observer situations on stairways. The distance from the farthest step to sit or stand to the middle of the attraction area, for example, should be 70 meters (250 ft.). Otherwise observer cannot see what is going on. At a distance of approximately 30 meters (100ft.), facial features, and age can be seen and people met only infrequently can be recognised. When the distance is reduced to 20 to 25 meters (60 to 80 ft.), most people can perceive relatively clearly the feelings and moods of others. At this point the meeting begins to become truly interesting and relevant in social context. At even shorter distances the amount and intensity of information is increased greatly because the other senses can begin to supplement the sense of sight. At distances of 1 to 3 meters (3 to 10 ft.), at which normal conversation usually takes place, the experience involves the degree of detail generally necessary for meaningful human contact (Gehl 1987).

Paul Spreiregen mentions different but, close measures to the Gehl's measures in his study "The Architecture of Towns and Cities" (Figure 4.12). According to him we can see people up to 1200 meters (4000 ft.), beyond which they are too small to see at all. We can discern body gesture up to about 140 meters (450 ft.). The intimate spaces of a city are usually not much greater than 25 meters (80 ft.) across (Spreiregen 1965).

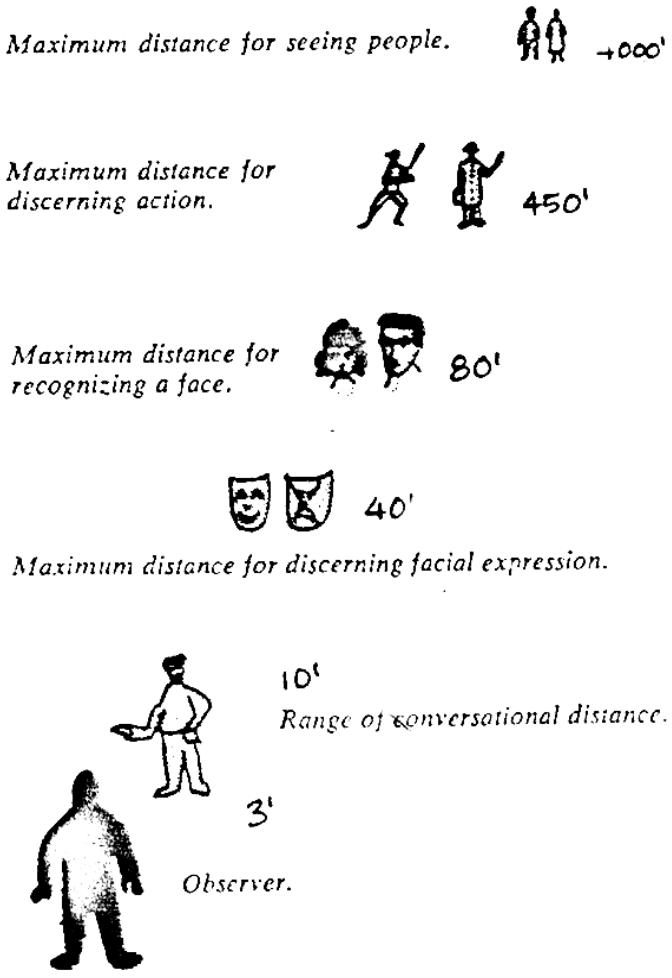


Figure 4. 12: the social field of vision (Source: Spreiregen 1965)

Of course, there are examples where these rules are broken, but not without purposeful design intention and the addition of key design elements that make these instances plausible, all with the aim of producing a unique effect.

4.3.2. Spatial Standards

Spatial items to consider in the stairway design are sizes (width and length of stairways) and dimensions of stairway elements.

Size of the stairway is dependent on the type, volume, and the frequency of the use. So, it is difficult to make recommendations about common size of stairways. Every location and every different context can require different size although size is limited with capacities of the human. The width, length of stairways and the height of enclosure elements should be proportionate with the type and amount of the movement.

Ascent and descent demand enough **width**; it is necessary to be able to ascend and descend reasonably freely without being disturbed, without being pushed, and without having to maneuver too much. Widths of public stairways vary depending on the purpose of the stairway and the existing and/or expected intensity of use. Minimum width for public stairways should be 1,5 m (Figure 4.13) (Harris 1988). When pedestrian flow and user density are significant and a greater precision is required in the determination of stairway width. Minimum acceptable width of stairway can be calculated using the formula given below.

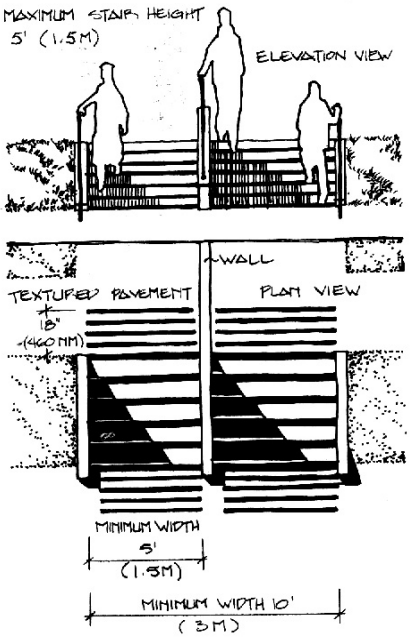


Figure 4. 13: Minimum widths of stairways. (Source: Harris 1988)

It is important to remember that users, as a group, do not use the whole width of most stairways. Lines on both sides adjacent to buildings are avoided by pedestrians, as are the edges of the stairway along the building facades (i. e., 0,50 to 0,75 m). The edges are used only under conditions of high pedestrian density. The presence of street furniture and features such as plants, telephone boxes, sculptures, kiosks, and trashcans also reduce the effective width of stairways.

Minimum width for a stairway can be determined by mathematical calculation as a function of the expected pedestrian volume, acceptable density, and desired rate of movement. The number of pedestrians (volume) passing through is expressed by unit measurements of time, such as “pedestrians per minute” or “pedestrians per hour”. Density refers to personal buffer zones, expressed in terms of square centimetre per pedestrian. Given these criteria, stairway widths can be calculated using the standard flow theory show below.

In this formula, pedestrian volume (V) refers the number of pedestrians that are expected to pass across a fixed border on the pathway each minute. (Refer to Figures 4.8 for information on pedestrian flow volumes.) Space modules (M) typically range from a minimum of 0, 015 m^2 (5 ft^2) per person to 0,105 m^2 (35 ft^2) or greater. (Refer to Figure 4.8 for information on space modules.) Going up speed (S) typically averages about 36 m/min, but of course can vary significantly depending on the predominant activities in the area, the types of users, etc. (Refer to Table 4.3 for information on going up speeds.) Expected loads of user traffic are determined through observation of similar projects in other areas and professional judgement.

Stairway width = V (M) / S

V = volume, pedestrian / minute

M = space module, cm^2 / pedestrian

S = going up speed, cm / minute

It is important to recognise that this formula does not take into account the spatial requirements of street furniture, social gathering places, minimal use of stairway edges, and the like. If such features or circumstances are involved, then adjustments have to be made to the overall width of the stairway. Once the clear width has been established, remember to add on space for these elements 1 m will accommodate most obstructions, with the exception of seating elements which requires 2,5 m minimum. This formula produces minimum functional stairway widths, not optimal widths based on aesthetic criteria. Very often, stairway widths are designed to be much greater than necessary for reasons of scale, proportion, etc. Therefore, this formula is more often used as a check against a proposed design scheme rather than as a rigid method for determining stairway widths.

Length of the stairway should be considered because of its difficulties. Observations show that walking capacity of pedestrians on stairways and public service accessibility to buildings limits the length of the stairway. Perceptual limits also determine the stairway's dimension.

Long stairways consisting of a great flight of steps are often boring and tiring. There are many design rules to reduce psychological effects of stairway's length on the pedestrian. The ratio between width and length is crucial. Some experts accept this value between 1:30 and 1:80 for pedestrian ways. When the ratio of way is higher than determined value, using change of direction and/or locating plastic elements, trees, buildings or other construction can be appropriate to prevent negative effects of long stairways (Arseven 1937).

The form of the stairway can be classified in terms of a number of polar qualities such as straight or curved, long or short, wide or narrow, enclosed or open, formal or informal. Stairway form can also be analysed in terms of scale, proportion, contrast, rhythm, or connection to the other public open spaces. But the main characteristic directly relates to the form of stairways: route and place.

It is significantly relevant to its function, location and other physical conditions on sites. The form of stairway can vary according to how:

- Its boundaries are defined
- Its topographic structure (inclination rates)
- Its form relates to the form of the spaces it links
- Its qualities of scale, proportion, light, and view are articulated
- Entrances open onto it

There are common forms of urban stairways despite the stylistic range already referred to. These are:

- Straight stairways
- Curved stairways
- Zigzag stairways

Straight Stairways have direct route for linear movement. The straight flight stairways seem to be oldest proper stairway. This is the most basic form of stairway, a series of parallel treads with or without risers, with no change of direction. Although they usually allow a most pleasant view, they may be physically tiring as well as psychologically forbidding.

Curved Stairways having slight curves are far more interesting to pedestrians than straight ones. They also supply a longer path from the top to the bottom so that the inclination rate can be reduced.

Zigzag Stairways seem rarely in outdoor spaces. They can be used to reduce the inclination rates of space in steep slopes. This type can be called as 180º return stairway.

Major design elements of typical stairways are:

- Flight of steps
- Landings
- Ramps
- Stairway entrances
- Building Entrances

Steps are essential elements of the stairway. They are used where slopes are too steep for a footpath to be safely negotiated by normal pedestrians i.e., anything steeper than 1:12 (8 %) (Cartwright, 1980). Each step consists of a horizontal portion or tread connected to a front part known as a riser. The going of a step is the horizontal distance between the faces of two consecutive risers. The rise of a step is the vertical distance between the tops of two consecutive treads.

For ease of ascent or descent, and for safety reasons, tread-riser ratios are always held constant within any particular stairway or set of stairways. On rare occasions riser height in stairways varies, but these are hazardous and should be avoided whenever possible. On very gentle slopes of 0,5 to perhaps 2,0 percent, a stairway can be built to slope with the grade rather than remain level, in order to repeat the bottom riser dimension. In addition, or alternatively, the bottom of stairway grade can be warped to maintain a constant going along the edge of the bottom tread. Sometimes, tread widths also vary for aesthetic or perceptional reasons, and this is generally found to be acceptable as long as it is understood whether ascending or descending, such stairways (referred to as terraced plazas) are often cumbersome. This is generally acceptable because stairways as destination are typically used as informal gathering places rather than as simply utilitarian transitional spaces.

In dimensionally constrained situations (ie., where the elevations of both the top and the bottom of a stairway, or a set of stairways, are given), an appropriate tread-riser ratio has to be determined that will allow a given number

of steps including landings to be fit into the space[2]. Wherever possible, steps in outdoor areas should have a shallow pitch. Table 4.3 is a quick reference chart of typical tread-riser ratios for outdoor stairways. As an alternative to tread-riser charts, the following formula is commonly used to determine acceptable tread-riser ratios[3].

2R + T = 65 TO 67,5 cm (26 to 27 inch)

Where R = riser

T = tread

Table 4. 3: quick reference chart of typical tread-risers ratios for outdoor stairways (Source: Harris 1988)

RISER / TREAD			
4.00	4.25	4.50	4.75
18.00-19.00	17.50-18.50	17.00-18.00	16.50-17.50
5.00	5.25	5.50	5.75
16.00-17.00	15.50-16.50	15.00-16.00	14.50-15.50
6.00	6.25	6.50	6.75
14.00-15.00	13.50-14.50	13.00-14.00	12.50-13.50
7.00	7.25	7.50	
12.00-13.00	11.50-12.50	11.00-12.00	

Measured on plan, the standard pace is assumed to be approximately 73 cm Figure 4.14). Stairways are suitable for slopes in area of between 5º to 10º (9 to 18 percent). The length of the pace between steps is assumed to be 65 cm. the slope of the steps and landings should not exceed 5º. On flight of stairways where ice may form, a slope of 1º to 2º (2 to 3 percent) should be provided (Mannes 1986).

[2] Palladio mentioned about steps in his book: “The Four Books of Architecture”. According to him, the steps ought not to be made higher than six inches of a foot; and if they are made lower, particularly in long and continued stairways, it will make them more easy, because in rising one will be less tired; but they must never be made lower then 10 cm: the breadth of the steps ought not to be made less than one foot, nor more than one and a half (Palladio).

[3] According to Mannes, where the pitch is below 20º, the rise/run ratio rule:
2 x R + T = 63 cm can no longer be adhered to (Mannes 1986).

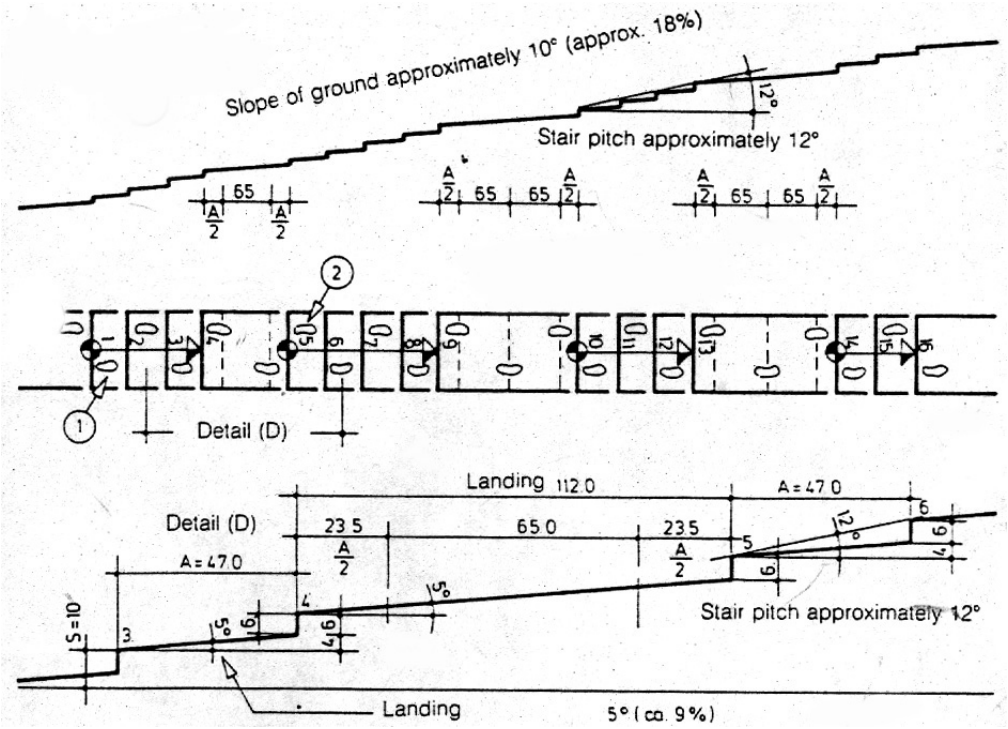


Figure 4. 14: Standard pace of pedestrian (Source: Mannes 1986)

The individual flight of steps between landings should be different length, i.e., not two flights of six steps each but rather one flight of seven and a second of five steps (Figure: 4.14). Individual steps can easily be missed and must therefore be regarded as hazardous[4] (Mannes, 1986).

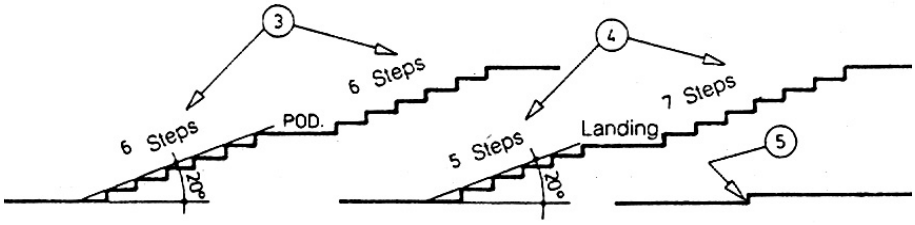


Figure 4. 15: Flight of steps (Source: Mannes 1986)

[4] According to Vitruvius the outside steps for temples always should be odd numbers. Thus, the right foot which one mounts the first step will be the first to reach the level of up. He thought that the rise of steps should be limited to not more than 25 nor less than 23 cm; for then the ascent will not be difficult. The treads of steps should be made not less than a foot and a half, and not more than 60 cm deep (Vitruvius).

Shadow lines are often included in steps for aesthetic reasons, used mainly to give a refined look to a stairway. It may be hazardous if large enough to catch the toes of pedestrians. Nosing may also catch toes unless they are rounded. Figure 4.16 shows various nosing and shadow line profiles. The left column represents some of that are potentially hazardous and therefore not recommended, particularly in urban stairways frequented by handicapped people.

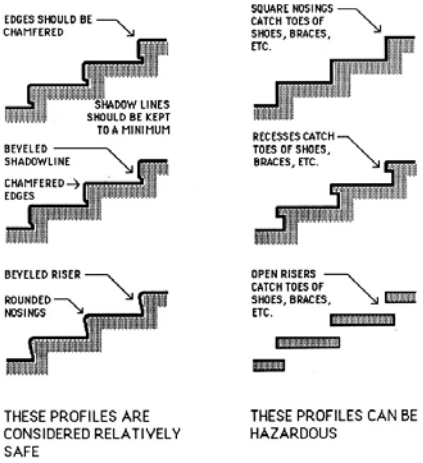


Figure 4. 16: Typical nosing and shadow line profiles (Source: Harris 1988)

Landings are periodic places between flight of steps to stop, rest, and prevent monotony. Although the primary task of the landing is to provide resting-places along the way up and down the stairway, it may be used as view terraces or play areas for children. In general, building entrances arranged in these areas.

Height between landings is an important criterion for both reasons of human endurance and psychological reasons (Figure 4.17). In terms of environmental psychology, it is known that abrupt changes in ground levels, even as little as 0.3 to 0.5 m (1 to 1 ½ ft) can decrease incentive to proceed. Although some Sources state maximum heights of 3.8 meters (12 ft), Harris recommend lesser heights between landings[5] (Harris 1988). Changes of 1.8 m

[5] According to Arseven, tiring can be decreased by using landings in each three or four steps when stairway's distance allow landing that is 3 or 4 meters length (Arseven 1937).

(6 ft) or more are found to be strongly discouraging. For this reason, height between landings are best designed so that an adult of average height standing on one landing can see the ground plane of the next higher landing, in example, 1.6 m (5 ft) or less (Figure 4.18). Conversely, in conjunction with other design elements, height between landings is sometimes made to be greater than 1.6 m to effectively control sightlines.

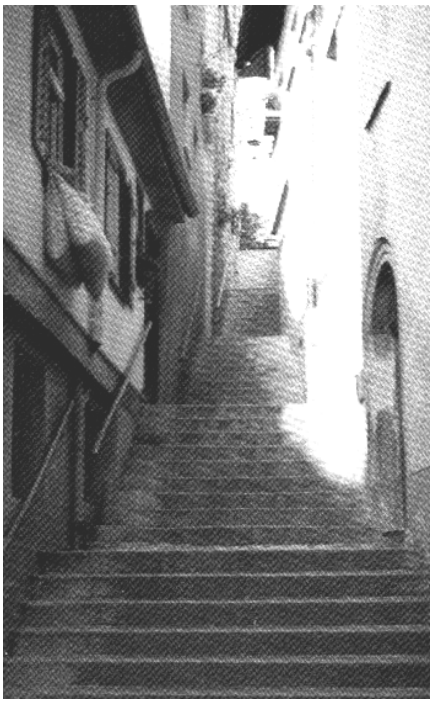


Figure 4. 17: One becomes less tired when the landing is placed at eye level and variety is added to the steps. (Source: Sato, 1992)

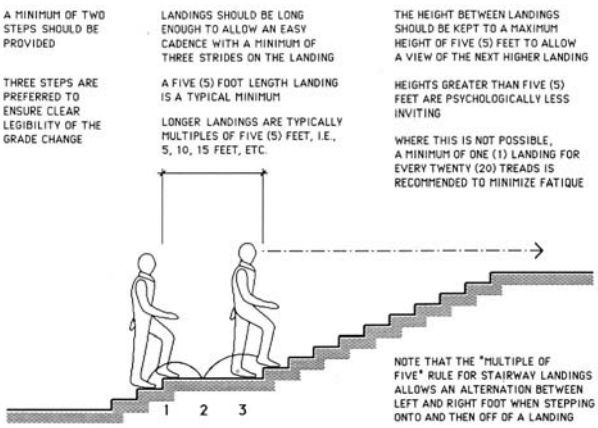


Figure 4. 18: Stairway height and landing proportions (Source: Harris 1988)

In terms of human endurance, it should be remembered that the elderly and handicapped use stairways, and their abilities are more limited than the average, physically healthy adult is. For this reason, all changes in elevation should be designed with an understanding of the diversity of human ability that exist among members of the population.

Ramp is one of the stairway elements that provide smooth transitions between the different levels. They are never a substitute for stairways; both should be provided. To have comfortably low slopes; they require relatively long runs. They are typically used to provide:

- Access for the handicapped
- Access for the wheeled equipment (the baby carriage, the wheelchair, the shopping cart and so forth)
- Smooth, continuous movement through or around space

Steps and ramps may be incorporated into a single design. Straight, zigzag or curved ramps may be combined with stairways. Ramps must be parallel - or be provided in conjunction - with stairways where changes of level occur. Ideally, the whole street with steps should be equally accessible to disabled persons, and the elderly. But, some slope ratios do not allow this requirement. Slope range in 5-8 % is appropriate for pedestrians. Although 15 % slope ratio is the top limit to construct ramp, over 8 % slope is not appropriate for disabled people (Morgan and Engler 1987). According to Disabled Access Guide published in 1990, for very low displacements if an avoidable 12% is stated as acceptable.

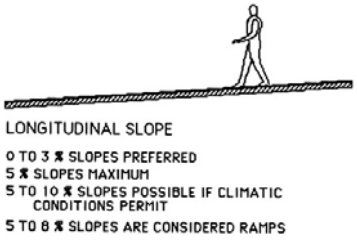


Figure 4. 19: Slope criteria for ramps (Source: Harris 1988)

Ramp width is determined according to the type and intensity of use. One-way travel requires a minimum width of 90 cm. (3 ft) clear, whereas two-way travel requires a clear minimum width of 150 cm. (5 ft). If turns occur at landings, adequate space for maneuvering wheelchairs, baby carriages or shopping carts must be provided (Figure 4.20).

Landings should be provided within every 9 meters (30 ft) or less of ramp length (Harris, 1988). According to Disabled Access Guide, for ramps over 6 m length a 150 cm landing is necessary as well as a minimum width of 130 cm. (Disabled Access Guide 1990). Landings are suitable in 130 cm for each break landings and 150 cm at the top and the bottom.

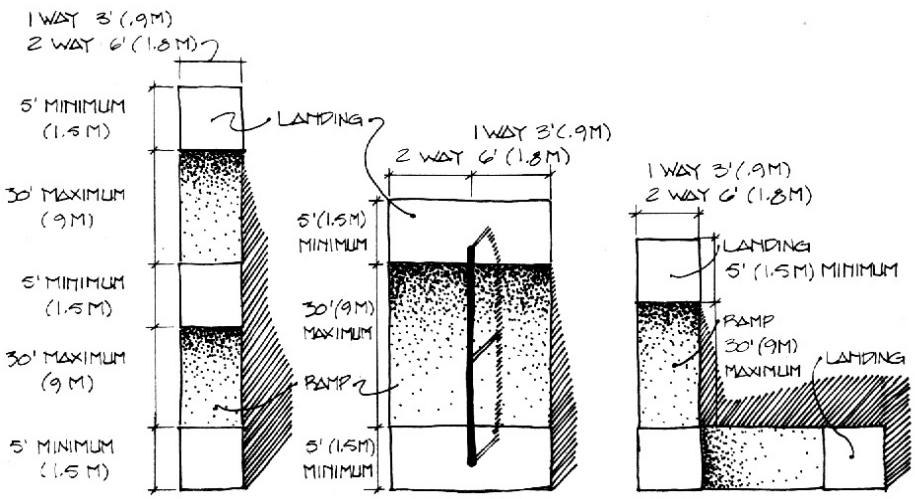


Figure 4. 20: Typical ramp configurations. Regardless of the ramp configuration, all inclines and landings should be sufficiently dimensioned (Source: Harris 1988)

Stepped ramps are used on ground slopes of between 8% (1.12) and 25% (1:4). The ramp going has a constant slope of 8% and the riser height is varied to suit the slope of the ground (Cartwright 1980).

Stairway entrances are the top and the bottom of the stairway. The primary function of the entries is to warn and prepare the pedestrians. Pedestrians, particularly the elders and handicapped require time to evaluate and prepare for

changes in the environment. Changes in paving, colour and texture in entrance area may warn stairway users about level changes. It may be necessary to give time to people for recognition of vehicle traffic. Lighting for safety and negotiability is a must at the entries. Bollards and warning strip also support safety. Stairway heads may be also furnished as a resting area for tired people. In some cases, the beginning and ending points (in destination stairways) may act as a meeting point. Sometimes, they may be used as a trading place. Street hawker tends to locate at the entry points of streets (with/without steps) (Figure 4.21). A canopy or cover offering protection from weather is a need for comfortable street sale.

Figure 4. 21: 342nd street in Güzelyalı – İzmir (October 2001)

Stairway entries are the entry points for emergency vehicles. A parking area for community services should be provided at these points to ease access to buildings along the stairway. These spaces may provide a service area for utility features (telephone box, garbage bin). The type and size of the stairway entrances change depending on function and location. But, the minimum size is 180 cm.

Building entrances along the stairway are the interface between indoor and outdoor areas. Safety and ease of access to the buildings are one of the primary considerations for design stairway enclosed by buildings. Unfortunately, this interface has generally received the least attention. Entrance to the buildings should be clearly identifiable. Activities and furniture should not obstruct the access to buildings. Many options are available for providing building access. These can be listed as follows:

- Direct access from the stairway
- Access with entry platforms
- Dedicated for building entrance

In addition to stairway elements, types of pavement materials and furniture should be evaluated. They vary according to the character of the space. But, like dimensional standards, there are some comfort and aesthetic standards related to surface materials and furniture.

Pavement materials are important design elements of stairways. The materials for constructing steps should be the functional and aesthetic materials that are relatively easy to acquire, considering the technical aspects. No one had so far paid attention to the design of manhole covers. Pedestrians complain that pavements are slippery, and that the heels of high-heeled shoes were caught in small gaps in pavements. It is also pointed out that it is difficult to clean pavements. Most of these problems effect pedestrians' motivation and their way of using public facilities. Before beautifying stairways with good designs, ways to help a sense of public task also is studied, while carrying out technical improvement. Surface materials should not be perceptually chaotic. They should be easy to negotiate. Non-slip and non-glare surface materials are imperative for steps and ramps. Surfaces should be stable, firm and slip resistant. Proposed materials should be easy to maintain. Reasonably, priced materials, easy to produce should be mainly used in order to reduce costs, and provide obtainability.

Fairly large flat stones or logs can be used for informal and naturalistic stairways in soft spaces. For more formal types of stairways, cut stone, brick, concrete or a combination of brick and flagstone are suggested (Figure 4.22) (Ortloff 1959). Stone paving slabs provide a surface, which is more functional and visually durable than the brick and concrete paviour. Whether the material chosen for steps be fieldstones, cut stone, brick, flag, or some combination of two or more materials, the whole construction should be set in mortar and adequate foundations be provided to a point below frost line.

Figure 4. 22: Curved line of tread to improve visual effect, Renishaw (Source: Blanc 1996)

Certain combinations have become accepted through long association: Brick walls and brick steps seem right. Stone walls with flag or brick steps are pleasing (Figure 4.23). Stucco walls with brick coping seem harmonious with brick steps, but not so much with flagstone. Usually two materials a easier combine harmoniously than three or more. Brick and stone used together in a wall call for brick or stone steps and the coping should not be cut stone. Flagstone treads and brick risers are another frequent and pleasing combination - than flagstone and fieldstones risers (Ortloff 1959).

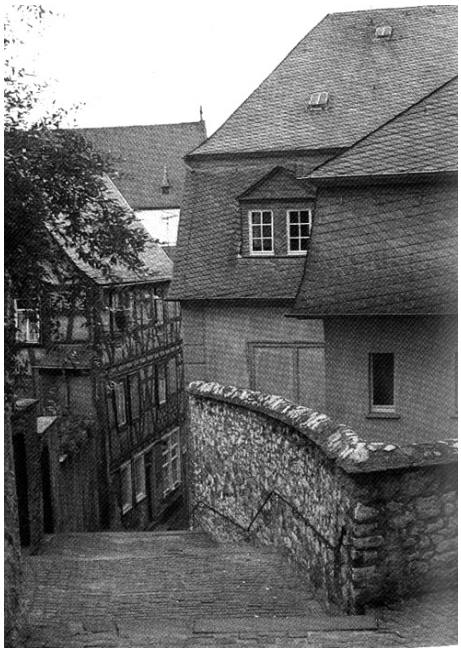


Figure 4. 23: A declining space. It is fun when there is rhythm and horizontal variety and harmony (Source: Sato 1992)

The material used for treads should usually overhang the riser and cast a shadow upon it, and it must be thick enough so that the projection does not appear to be too fragile. For flagstone steps the tread material ought to be not less than 5 cm thick and project 2,5 cm. Stone ramps must be at least 30 cm thick. For brick steps, use the brick on edge (this makes the tread 10 cm thick) and either let it project an inch and a half beyond the riser or, for more formal effects, be flush with it. Brick ramps must be at least 20 cm thick.

Surface drainage is an important issue on stairways. It should be considered to avoid overflow in rainy seasons. Cross-slope criteria are based on the need of positive drainage (depending on paving material). For example, porous paving does not require as much of a cross-slope for drainage as does a non-porous paving material (Figure 4.24). Treads and landings should be pitched downgrade 2 percent for drainage (Figure: 4.25) (Harris 1988). Treads must be arranged so that rainwater can run off at the front and one side (slope of approximately 2 percent) (Figure 4.26) (Mannes 1986). Appropriate drainage grate also should be provided for rainwater to run off below stairways. Gutters may be an alternative solution on surface.

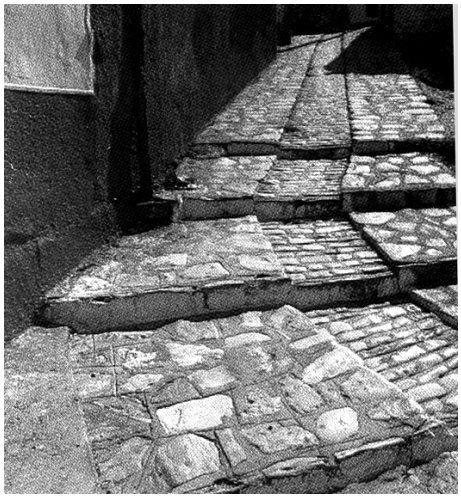


Figure 4. 24: Drainage system on stairways in Pano Vathy (Source: Philippides 1983)

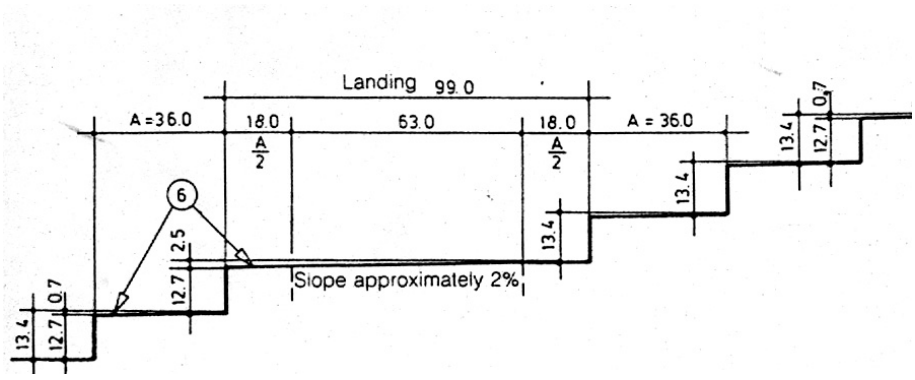


Figure 4. 25: Slope of treads for drainage (Source: Mannes 1986)

Improperly designed, constructed, or installed drainage structures may be hazardous to people who must move over them. They should be placed flush with the surface on which they occur and grates having parallel bars or patterns with openings larger than 2 cm should not be used. Grates should likewise be kept clean so as not to lessen the efficiency of the overall storm system. Obviously, surface build up water, especially in winter, may present a problem. For this reason, drainage structures should be located at the bottom of the stairway.

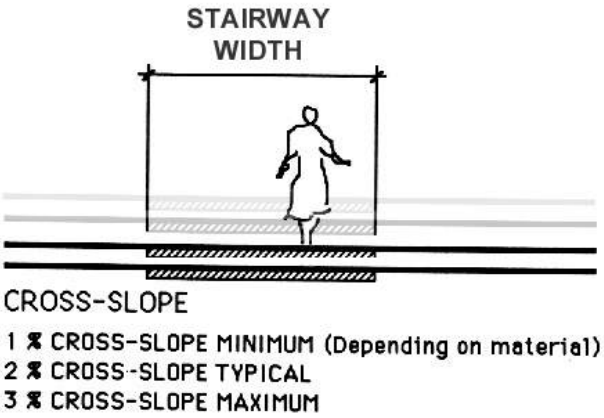


Figure 4. 26: stairway slope criteria for drainage (Source: Mannes 1986)

Street furniture should be installed for the city functions on stairways. They are tools for effective use of stairways as a space of life. In order to enjoy outdoor life, various kinds of street furniture are necessary, just as at home. People would like to see furniture with charming and witty designs. For this reason, it is necessary for furniture to be functional and, at the same time, artistic, witty, and entertaining. Refined street furniture that blends in with the stairway's design has effects of enhancing the beauty of the stairway. Furniture with better design adds atmosphere, acting as an accent of the stairway.

Furniture is to be placed in response to human needs or a need to address an environmental condition. But, the advantages of different furniture may become transformed disadvantages because of inadequate types or locations. The entire required width of sidewalk and pedestrian movement should not be obstructed with fixed street objects. A typical stairway includes items such as handrails, lighting elements, trash bins, phone booths, information signs, fire hydrants, utility boxes, and landscaping.

Handrails improve stairway quality. They provide easier circulation for users, especially vulnerable groups. It can also divide pedestrian path to arrange direction of flow. Both short and long flights of stairs should have handrails because a stairway that has one or two steps should have handrails. According to Cartwright, if the vertical drop at the side of the steps exceeds 60 cm, a

handrail should be provided (Cartwright 1980). Extra-wide stairway should have centre railings for convenience. Handrails should be no more than 6 meters (20 ft) apart. If it is possible, handrails should be located on both sides because some people have one-sided strength. They should continue across intermediate landings. Chosen railing should be robust so that it should be capable of supporting 114 kg of weight.

Handrail height for outdoor stairways typically ranges from 75 to 85 cm (30 to 34 inches). Below the top rail of handrails, a second rail at a height of 67 cm or lower for detection by cane users, children, etc. should be provided (Harris 1988). The ends of railings should extend beyond the top and bottom step by 30 to 45 cm (12 to 18 in) and should be rounded off or bending under for safety reasons. This detail is especially important for individuals with impaired vision (Harris 1988). Handrails cross section which allow safe and comfortable grip for maximum sport, are important an all stairways (Figure 4.27).

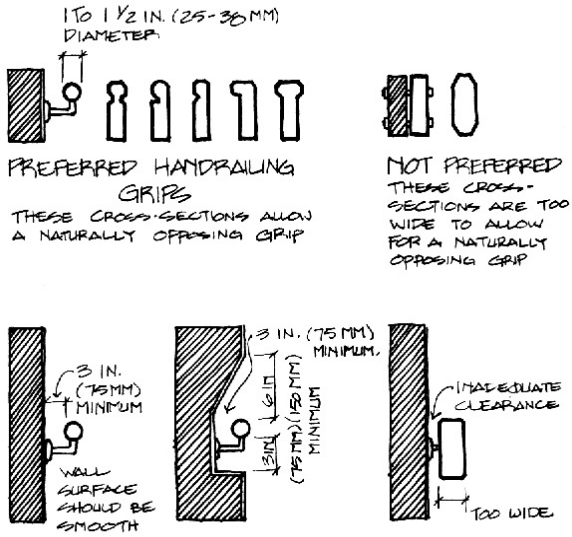


Figure 4. 27: Preferred handrail cross sections. The cross section of a handrail should be designed and chosen to allow a firm, prehensile grasp (Source: Harris 1988)

Lighting is an essential element for safety. Poorly designed exterior lighting can cause discomfort and hazardous situations. Wrong located lighting can cause glare or light may penetrate resident's private space: for example light

shining into bedrooms or living room at night. This situation can be described as light trespass. To avoid this resentful situation, designers need to ensure either the luminaries are not visible from nearby windows or that beams are completely controlled. The necessary intensity, quality, and quantity of light required in stairways may be greater than that for other outdoor spaces. Night lighting of stairways is important especially for older people whose eyes may not readily adjust to changes in illumination. It helps prolonged night-time activities, and is also essential for the prevention of crime and protection of public security. Why lighting stairways at night? Three sets of functional requirements force the design of night-time lighting of the open space. Basic reasons can be set forth: safety, security and protection, and visual beauty.

Safety: to make the outdoors useful after dark, whether for walking, sitting, or reading - in all, for "stairway living" at night. Visibility helps people see where they are going outdoors at night and to direct attention (to steps and obstruction elements, etc.). Recognition of the route ahead and avoidance of hazards are visual tasks of outdoor lighting for a person on the move. Good lighting is necessary to prevent accidents in potentially hazardous areas. These spaces with special features need to be illuminated with a direction of light that emphasises changes of level or material. The use of surface marking, such as changes of material or light colour lines (white lines), in conjunction with night-time lighting can be important in hazardous places. The pedestrians do not require a reaction distance as much as vehicles but they should be warning about hazardous places in advance.

Security and protection: to discourage prowlers and provide additional night security. Clear visibility is necessary to provide security. Light must fall so that people’s faces are recognisable also doorways, other objects and points of the street can be identified. Dark places on stairways can become area of opportunity for hostile actions. Spaces without light encourage people with bad intentions to commit a crime. Personal attack and burglary are possible dangers. Well-lit areas are less prone to criminal activities than dark and gloomy areas. People who use the street for walking or other activities fell secure

themselves bright in a bright environment. So, there must be continuity of illumination on the stairway.

Visual Beauty: to create an artistic ambience or to illuminate building or other elements. The natural appearance of a stairway is essentially different at night. It solicits attention or admiration in order enhances the stairway prestige. With regard to stairway lighting, our aim may be to create a moonlit effect. The main idea of stairway lighting is to give not only light effects for safety and security but to achieve an aesthetic effect. Designer is able to create the attraction and mystery of a stairway as in moonlight. The lighting may harmonise with the style of each stairway. Exterior lighting gives opportunity for new creativity, the chance to design in light and colour on a scale that extends from the distant view of the stairway.

Variety is important to create interesting route. At night, objects illuminated and lighting give some help to occur interesting routes. For example: Visual variation effects could be created by illuminating elements of the landscape such as trees and flower beds, or artistic features such as statues. Fountains and other water features give vivid effects and they are always popular so they prefer although they will require a high level of maintenance.

The basic design considerations are touched upon below:

- The designer must consider the function of the stairway. What is the stairway to be used for? Connection? Entertaining?
- Stairway lighting should harmonise with the style of stairway. Lighting elements should also harmonise with enclosure elements and stairway furniture.
- Activity areas - landings, beginning and ending points - should be enough bright. Eyestrain must be avoided.
- The observer’s viewpoints should be considered. Is the stairway to be seen from a fixed viewpoint or while moving within the stairway?

- The designer must estimate and understand the appearance of the stairway, both by day and night. Spatial expression of the relationships of lines tones, colours, and textures are the key to stairway lighting.
- Lighting units must be selected which are robust in construction, weatherproof and watertight, safe in operation (electrically), and tamper proof.
- Many small light Sources should be used rather than high-powered floodlights. Decreasing brightness increases the apparent depth. Do not be afraid of using shadow and areas of darkness if it is not a problem in safety and emergence aspects (Figure 4.28) (Watson 1990).
- The designer must consider cost and energy consumption.

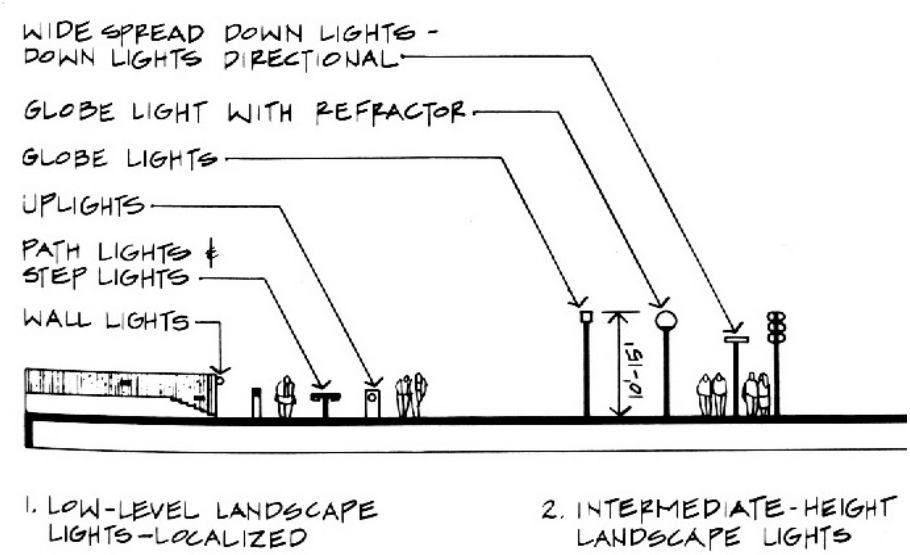


Figure 4. 28: types of light fixtures for pedestrian areas (Source: Harris 1988)

The amount of light required for the night-time depends on two important factors: the visual tasks involved, and the average luminance of the surroundings. Table 4.4 gives typical proposals for different conditions.

Table 4. 4: Typical proposals for outdoor space night-time illuminance (Source: Tregenza 1998)

purpose	lux	On which surface
Secondary pathways	5	horizontal with at least 50 % this value on vertical
main path	10	"
security areas around buildings, main shopping areas	20	vertical at 1,5 m. above ground
STEPS, FOOTBRIDGES, AND SIMILAR HAZARDOUS ZONE, ENTRANCE AREAS TO BUILDINGS	50	horizontal (vertical surfaces of steps should be differentiated)
covered pedestrian areas, arcades	75	vertical at 1,5 m. above ground
illuminated signs in low-brightness districts	100	vertical
illuminated signs in high-brightness districts	500	vertical

Bollards and other stopping elements are necessary where wheeled vehicles may roll into hazardous areas. For this reason, they should be located at the top of the steps especially on segmented stairways. They should be 5 cm to 7,5 cm high, 15 cm wide, and should have breaks in them every 150 cm to 300 cm to allow water drainage of the walk. These elements should be sturdy, but it would be even better if designs were creative and aesthetic.

Seating Elements should be designed and chosen to ensure greatest comfort for users. The design of sitting or standing places can influence the opportunities for conversation in public spaces. Bench arrangements, climatic prevention elements can have a direct influence on conversations. When benches are arranged back to back, conversation inhibited. If benches are arranged with a great deal of space in between, this arrangement make

conversations impossible. Seating elements placed close together around centre, it helps conversations start. (Gehl 1990).

Sometimes, pedestals, low walls, boxes may be used as sitting elements for resting. Steps can be also designed as seating elements to ensure comfort for users if it is desired. Especially on stairways as a destination, steps can be used instead of benches. These steps are especially popular, because they serve as good lookout points as well. They provide a wide range of sitting opportunities for observer and comfort for resting.

Trashcans provide place to trash and keep stairways clean. They are usually placed at the end and beginning points of stairway particularly in residential areas to ease garbage collection with trucks.

Public art can enhance the visual quality. They give stairways some positive benefit: delight, fantasy, joy, sociability and also amenity. They can solve some problems of space. For example, wall painting can be hide or enhance dull facades of buildings. Considering art and decoration –sculpture, murals, carving, pattern, mosaic, architectural graphics or many other forms – should be part of the design of stairways (Figure 4.29). It means that the artist should become part of the design team.

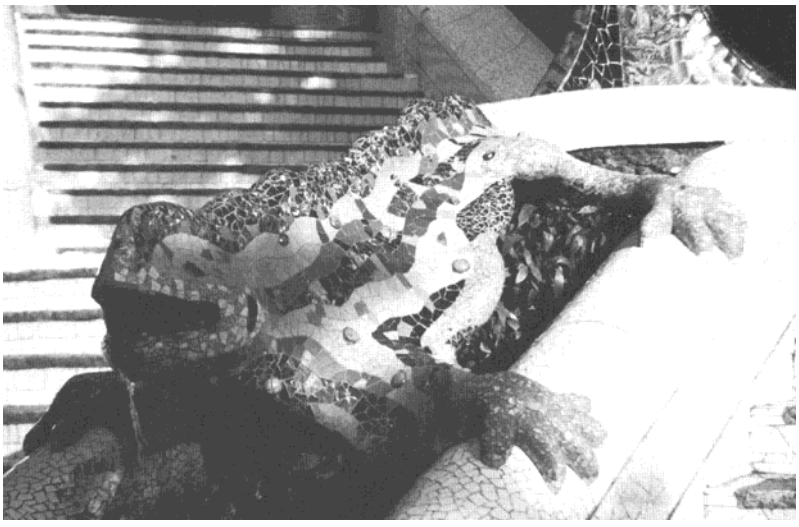


Figure 4. 29: Gaudi's step in the Guell Park, Barcelona (Source: Templer 1994)

According to Storr, Marcus and Francis public art in a public place should:

- Arouse interest in the life of the city and create a sense of pleasure.
- Stimulate play, creativity, and imagination. Creating intrigue objects; like drawing legend, mythology, or history or creating a form can be used to encourage people for sitting on, walking under and so on. Generally, adults interest in sculptures or fountain as much as children.
- Support contact and communication. Street sculptures or fountains that are visible can be used as a potential bridge between strangers who close each other in public places. Because they may encourage people to stop for viewing, waiting or only standing (Figure 4.30). In studies of Manhattan plazas, Whyte called it “triangulation”.

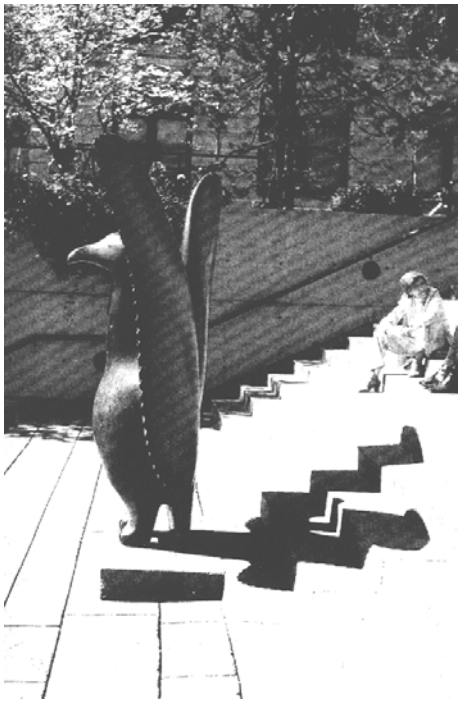


Figure 4. 30: art object on ceremonial stairs at the Courts Complex, Vancouver (Source: Blanc, 1996)

- Provide comfort and amenity by incorporating railings, ledges or steps for sitting and watching a public work of art. The sound and feel of a fountain or the texture of a “touch me” sculpture, shortly sensory experiences offer pleasure encounters (Figure 4.31).
- Invite interaction and cast people as actors rather than audience.

Figure 4. 31: Detail of water steps, Caserta (Source: Blanc 1996)

Planting supports stairway design. Charm of the stairways and other pedestrian ways which should be safe and attractive can be supported with arrangements of trees (Figure 5.32), plant boxes, flower gardens, fountains and plastic elements as aesthetic and functional elements (Aslanboğa 1986). Reasons of people liking trees on stairways can be listed as follows:

- Trees provide shade.
- They make the stairways more alive by their vivid features.
- Trees are soothing to the people's eyes.
- They purify the air and increase the oxygen content.
- They hide undesirable building facades or enhance dull surfaces. They give warmth as opposed to the hardness of cold materials such as concrete, steel.
- They can make the stairways look orderly and provide residents with an opportunity to show that they care for them.
- Trees provide contact with nature, especially for children who do not have another opportunities for contact.
- They add a sense of privacy.
- They cut down on noise.

- They provide an identity to the stairways if their species are unique or local (Appleyard 1981).

Although all positive thought, the few of residents who do not like them offer their reasons as follows:

- Trees block the view.
- They create maintenance problems (cleaning up leaves, falling branches)
- There is no area to plant them. They take up spaces that reserved another element. They may be obstacles for pedestrians.
- They provide a potential hiding place for muggers.
- They will be vandalised.
- Sometimes they give a feeling of claustrophobia.
- Birds in trees create a nuisance with droppings, noise, etc. (Appleyard 1981)

Figure 4. 32: the flowers of the four seasons decorating the stairway convey the blessing of nature to the people seeing them. (Germany) (Source: Sato 1992)

The choice of particular species of plants and the patterns of their placement may affect light and shadow, colour, views in order to all significant aspects of the experience of the stairway. If there is an existing fence, which causes physical discomfort, or proposed fence on public or private property, climbers will be planted along the length of the fence. The area between the pathway and building facades shall be planted with a combination of ground cover or low growing shrubs. If there is an existing facade on private property adjacent to busy stairways, then the area between the pathway and facade can be planted with a combination of low growing shrubs or ground cover with no additional fence to reduce noise and other impacts (Marcus and Francis 1990).

Colour effect is an important tool in urban design. All moods in the public realm of cities can be symbolised by colours. Humans can be solitary, gregarious, adventurous, amorous, aggressive, bored or excited. An urban pedestrian system can pass through spaces of many colours, each with a different mood. Colour can be used to give continuity and form to the experience of moving through spaces (Bacon 1992).

Effect of colour on the character of space can be as follows: *Red* is exciting. This colour symbolises excitement in every country. Times Square in New York City can be given as sample. *Blue space* should be calm, quiet, and cool, with water everywhere and sensuality beneath the surface. Fountains, waves and waterfalls release the sensuality. In spring, water can be most solemn thing on earth. In winter, it promises growth, waiting for a new season and new life. Blue space is to be wet. Cities cannot afford to be without visible, touchable, swimmable water, fully accessible to the public. *Yellow space* should stimulate one's curiosity, with a wealth of things to hear, feel, smell and touch. It heightens anticipation. Meadowland is often yellow ochre. *Orange space* should be cheerful with movement, laughter and fun. Shopping streets and markets are orange. So is busy waterfront. Sport fields are orange when they are busy. *Purple space* should be mysterious, powerful and scarce: calm but with drama lurking in the shadows. Since Roman times, purple has symbolised aristocracy. *Brown space* should be wholesome and satisfying. Urban space can be brown,

particularly when the used predominant materials are soil, wood, brick, or stone. Concrete, aluminium, and steel do not contribute to brownness. Rocks should be visible and touchable. *Grey space* is serious. It surrounds tombs and memorials, encouraging us to reflect on the transience of human life and the glory of the departed. *White space* is for the projection of one's soul. On a snow-capped mountain, your mind expands to the limits of your imagination. *Green space* should be relaxing in very way. People love green space. Amidst the noise and stress of city life, it is wonderful to come across and island of green.

According to age groups preferred colours are changed in urban spaces: *Toddlers* who cannot be allowed to stray far from their parents need pink spaces. These spaces look like exciting but are really safe. *Older Children* appreciate purple space, and brown space. Patric Geddes had different understanding. He observed that different tendency between the male, who loves dirt, construction and exploration and female. When *girls* may sit on the grass, boys prefer more attractive/interesting-coloured areas. *Teenagers* like red, yellow and orange space. *Yuppies* who are young urban professional persons also like red, yellow, and orange. *Families* like green space and blue space. They need calm, after chaotic week in the home and the office. Under the good weather conditions, they want spend a time in green spaces. This explains why the planners and designers tend to belief that green is paramount colour for outdoor planning and design. *Elder people* like spaces of all colours that give safety and comfort feelings. This space range may exclude red, purple, and brown space. They like to see green spaces that remind them of the world, as it was when they were young. Colour vision also changes depends on sensory perception of different age groups. The elderly who loss their sensory abilities; see yellow, orange, and red easier than darker colours or those in the blue-green range.

Selection of colours is an influential factor to decide an image of the stairway with their psychological effect. Considering surrounding nature, the climate, and

the nature support harmonious colours in the stairway. Colours should be used cleverly to give a clean impression. Colour effects may be listed as follows:

- Psychological effects of colours may be used to decrease dissuasive characters of the stairway. It may be used to make more attractive stair spaces.
- Properly applied colour schemes, in addition to introducing uniqueness to the environment, will provide the aid to make stairways perceived shorter and promote stairways. Red and orange hued, patches appear closer than ones with blue and green hues. Bright colours are also perceived easier. It is not recommended to use similar colours or conservation colours if the harmony with the scene is considered. Seeing the colours similar to the environment such as green to match the surrounding trees and the blue for the sky and the sea may create sense awkwardness.
- Using colours may support scene design. It may support a visual appearance of the stairway. The images such as calm, active and so on are often created by the selection of colours. How to determine the basic tone of the stairway and how to select a colour to create a sense of tradition are only a few of the questions. Colours can be mixed for different kinds of effects. So, they also can be mixed with other ideas to produce different kinds of space. Success or failure of an urban open space depends upon its character, not just its facilities.
- Its effects can be used to increase or decrease enclosure effects of the space.
- It may help marking special elements on the stairway such as buildings, plants, etc.

4.3.2. Some Design Guidelines for the Stairways

In this section, some design guidelines are outlined to increase spatial quality of stairways, its amenities, and detailing. These are divided into the following six sections: Sizes of stairways, dimensions of steps, dimensions of landings, dimensions of ramps, detailing, and others.

Sizes of stairways

Width of stairways

- Various combinations of long and short flights, angles and bends, can make a flight of steps pleasing in themselves and not just means of getting from one level to another. Good proportion of length to width, tread to riser, and the height of ramps or wing walls all go to make the design successful.
- Active circulation line on stairways should be wide enough depending on user density.
- Height limitation for enclosure elements should be determined to catch human scale on stairways considering width of stairways. A smaller scale and sense of protection should be offered particularly in residential areas.

Length of stairways

- Length of stairway should be acceptable. Short flights of stairways should be preferred to minimise effort waste.
- Slight curves, distinctive materials in the middle of a stairway, colour effects or pavements can be used to reduce feeling of longevity on long flight of stairways.
- Too-long flights of steps without a break are unsatisfactory and demotivating. The rise of a flight between landings should be of an appropriate height. The maximum height between landings should be approx. 1,50 m for visual coherence and psychological invitation between adjacent levels. Where this is not possible, a minimum of one landing for every twenty treads is recommended to minimise fatique.
- The individual flight of stairs between landings should be varying number of treads.
- Single steps in a stairway are very dangerous and should never be implemented (Harris 1988). A minimum of 3 risers for flight is recommended for safety. Stair sets of 10 maximum is recommended for negotiability (Carstens 1993).
- Odd dimensions of treads should be avoided because they give way to stairway hazards.

Dimensions of Landings

- Landings should be long enough to allow an easy cadence with a minimum of three strides on the landing
- 150-cm length landing is a typical minimum. Longer landings are typically multiples of 150 cm, i.e., 150, 300, 450, etc.

Dimensions of Steps

- Stairways are suitable for slopes in area of between 5º to 10º (9 to 18 percent). Critical angle is 20º for stairways.
- A flight of steps should have uniform riser and tread sizes throughout the sequence.
- Step risers of 15 cm with treads 30 cm deep are easier for the visually impaired; those with canes and walkers may find a 10 cm rise easiest; additional tread depth will assist those with walkers (many walkers are 48 – 50 cm deep at the base) - use standard formulas.
- Wherever possible, a flight of stairways should be of gentle gradient. Where the pitch is below 20º, the rise/tread ratio rule: 2 x R + T = 65 to 67 cm (Harris 1988).
- Treads and landings' slopes must be approximately 2 percent to provide rainwater run off (Mannes, 1986).
- Narrow treads should be level, but the wider ones may slope gradually to reduce the number of risers needed.
- Open treads and shadow line recesses can cause tripping and should be used with discretion.

Dimensions of Ramps:

- Whenever possible, ramps should be combined with steps on stairways.
- Ramps should not exceed 8.33 percent slope; alternative routes that are longer but more level should be available (Carstens 1993).
- A ramp should be wide enough for a wheelchair. A minimum ramp width should be 150 cm to allow two wheelchairs to pass cautiously (Carstens 1993).

- A maximum ramp length is 9 m; where longer ramps are necessary, a level resting platform (150 cm clear length) at 4,5 m intervals is suggested (Carstens 1993).
- A level approach of 180 cm is necessary top and bottom of the ramp (Carstens, 1993).
- Curbs or ramp guards (5 cm-min height) should extend the length of the ramp (Carstens 1993).

Detailing

- A total harmony should be considered in the stairway scene. Enclosure elements (buildings, walls, plants, etc.) and other street furniture elements create certain characters of stairways.
- Natural and artificial features should be utilised to increase quality.
- Furniture should not block pedestrian movement or views.
- Fixed (non-mobile) elements are desirable for stairways.

Surface materials

- Surfaces should be stable, firm, non-glare, and slip resistant.
- Fairly large flat stones or logs can be used for informal and naturalistic stairways in soft spaces. For more formal types of stairways in townscape, cut stone, brick, concrete or a combination of them are suggested (Ortloff 1959). No rigid rule can be laid down but it is better not to mix too many materials.
- Proposed materials should be easily maintained. Stone paving slabs provide a surface which is more functional and durable than the brick and concrete paviour.
- Pavement material choices should not be perceptually chaotic.
- Stairways should be well drained. The slope of the paving and the way in which water run-off is handled are important items should be considered. Treads and landings should be pitched downgrade 2 percent for drainage.
- Small pavement units can be used for good effects because they are more interesting and more sympathetic to the human scale than large slabs.

- Using the textures of the pavement, street furniture, bright colours and landscaping may help to break repetition and monotony of stairways.
- A textured code along the handrails is recommended to aid the visually impaired.

Handrails

- Physical strength is one sided for many people. Both left and right handrails should be provided. On exceptionally wide stairways, intermediate handrails should be provided at 2 – 6 m intervals (Harris, 1988).
- Handrails should continue across intermediate landings (except too-long stairways considering transition requirement between two parts).
- The top rail should be 80 cm (max. 90 cm.) above grade (Carstens 1993).
- Below the top rail of handrails, a second rail at a height of 67 cm or lower for detection by cane users, children, etc. should be provided (Harris 1988).
- Where they are not continuous (e.g., where the handrail stop at the top and the bottom of the stairway), they should be extended at least 30,5 cm beyond the top riser and at least 30,5 cm plus the width of treads beyond the top riser.
- If handrails are mounted adjacent to a wall, clearance space between the walls should be provided.
- Handrails should be in a colour that contrasts sharply with the surrounding area. To improve visual perception for the elder yellows, oranges, and reds may be used.

Lighting elements

- Stairways should be adequately illuminated to ensure visibility for safety and security.
- The top and bottom of each stairway should be adequately lit so that the first step is obvious to the pedestrian and the handrail is visible.
- Lighting on stairways should illuminate the periphery of the paved area and avoid dark shadows.

- Low-level lighting directed toward the stair riser and illuminating the tread increases safety, especially for those using walking aids, whose bodies will block light from higher-level fixtures.
- Decorative lighting for aesthetic concerns is ideal.

Bollards

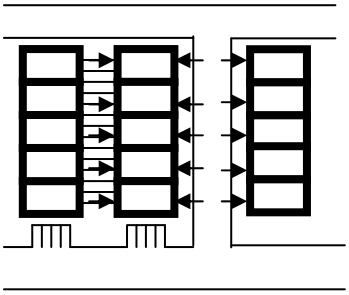
- Safe and convenient preparing area should be located at the top and the bottom points of the stairways (min 180 cm)
- Both visual and textural warning cues should be recommended at the top and the bottom of all stairways. Bollards, railings, lighting elements, and tactile warning strip may be used together.
- Wheel stops should be 5 cm to 7,5 cm high, 15 cm wide, and should have breaks in them every 150 cm to 300 cm to allow water drainage of the walk.
- Textured markers should be placed 60 – 120 cm in front of steps to allow pedestrians the visually impaired enough time to recognise the signal, complete their steps, and stop before arriving at the hazard.

Others

- The role or roles of stairways should be determined do define form, style, and size of stairways.
- An easily identifiable circulation path should be constructed. Geometrically unclear solutions that would be dangerous for the impaired should be avoided.
- Too-long straight stairways should be avoided due to physically tiring as well as psychologically forbidding. Slight curves are more interesting than straight lines. So, curves should prefer for long stairways to be more attractive.
- Direction of stairways should provide vistas to increase satisfaction while descent
- Inherent to a particular tread-riser ratio is the ease at which the stairway can be ascended or descended, and consequently, the sense of rhythm to be enjoyed by the user. Ideally, the kinesthetic character of a stairway should

be congruent with the character of the environment in which the stairway is a part.

- Stairways should not be isolated like other urban outdoor spaces. They should present some degree of visual and physical connection to other spaces and activity.
- Spatial hierarchy should be created from public to private, for a sense of ownership and control and to prevent user conflicts.
- Walking routes and other activity areas should be clearly defined. Changes in paving may be used. Conflict points of passers-by, players and residents should be minimised. But, design should be include flexibility depending on user preferences.
- Access to facilities and buildings along stairways should be provided with functional and aesthetic processes. If it is necessary, building entrances should be more than one depending on inclination ratio of stairways.
- Fire and utility access must be provided to dwellings but it is impossible for long stairways. One possible solution is providing service road behind the building. Another solution can be fit fire hydrants in streets.



- At the beginning of stairways, parking areas should be provided to minimise distance between buildings and service (include trucks for deliveries, shipments, and trash removals) and emergency vehicles (include ambulances, police cars, and fire trucks).
- Wherever possible, escalator can be used to make easy movement on special sites (high user volume, high cost).

4.4. Conclusion

The basic purpose of the design to create stairway spaces that allow free movement for various users groups. The stairway design requires special attention to reach predetermined standards. These consist of safety, comfort, aesthetic and technical issues. Opportunities for different outdoor activities can be provided using design elements. These activities are classified according to a general system used for outdoor activities in urban planning. This classification defines different focuses in design criteria. But the impossibility of vehicle existence on stairways makes design implications a lot stronger than they generally are. This provides the designer with the much-desired tools that can shape and define the characteristics of the stairway space. Without vehicle traffic interference the, designer defined, stressed elements of the space create the desired effect a lot easily. As a result stairways can become critical manipulators of environment personality.

CHAPTER 5
CASE STUDIES FROM THE MITHATPASA DISTRICT IN IZMIR

5.1. Introduction

Chapter 5 consists of five sections. The first section (5.1) determines the case study process and defines the boundary of the study area. The second section (5.2) mentions the existing physical structure of the study area and evaluates the general conditions. It is related to spatial data. Differences and similarities are analysed in this section. The third section (5.3) evaluates the inquiry results on the chosen area for design study. The fourth section (5.4) defines design goals and guidelines for stairways on 304th street. The fifth section (5.5) makes a general evaluation about this chapter.

Case Study Process occurs in five stages:

- The first stage decides the study area that offers a chance to examine general characteristics of stairways.

- The second stage determines gathering data types that offer general opinion about the site and support design study. According to Gillespies good urban design is born out of an understanding of the character of the place and the culture of its people. So, it was decided that two types of data are necessary:

    - Data regarding the spatial characteristics: quantifiable data regarding to spatial characteristics.
    - Data on user experience (for the design area): data regarding to user's perception, needs, and expectation

- The third stage describes the site analysis undertaken to understand the general character of the study area and to reveal the quality in a visual, understandable, clear, and coherent manner. Stairway's differences and

similarities are examined to show variety of stairways in this site. On site analysis stage; actual, quantifiable data regarding spatial characteristics were collected for all stairways. They were visited one by one. Necessary data were recorded and photographed.

A street by street on site survey has been conducted in order to prevent possible problems generated by the mismatch between the base map from the Municipality of Konak and the current layout in the case study area. Those mismatches occur in different instances such as:

- Some existing stairways are not shown on the plans
- Some shown stairways are not existent in reality. (Some have been transformed into ramps.)
- Some shown stairways on base map have been extended.

- The fourth stage describes the design area in order to perceive the stairway, identify problems, understand user's needs, and demands. A detailed visual analysis of the design area intends to reveal the character and quality of the space. In order to identify physical structure; a hierarchy of spaces and movements, dimensions of the space, access types to buildings, and so on. Current base map that displays existing situation on 304th street was created in this stage. Quantitative data gathered shows an average user density per hour and trends of activity types on the stairway. Inquiries explain problems, needs, and expectations of users, who had experience in using stairways. User needs and expectations are determined in this stage.

- The fifth stage produces an implementation project for 304th street after objective definition. It establishes principles and design proposals to increase the physical quality of space. The implementation project applies the base rules of the stairway design to reach the design objectives.

The study area is located on south part of İzmir. Its boundaries are defined by Mithatpaşa Street and İnönü Street on the north-south axis, and Konak and Üçkuyular on west-east axis (Figure 5.1). The primary reason of choosing Güzelyalı District as a study area is its abundant stepped character. In this region, dynamic structure of topography, which caused the necessity of stairways, effected the determination of the study area. Mithatpaşa axis contains lots of and also a variety of stairway types. High density of population and buildings is another factor, which had effect on choosing Güzelyalı District. These characters make the district more dynamic and also more problematic. Narrow and low quality stairways do not satisfy users.

This site is one of the old districts in İzmir. Improved transportation systems supported the development of the site. Karataş where took its name from old stone quarry were planned in 1865. Jews settled down in Karataş District. At the end of the 19th century, the district improved quickly after building of Halil Rıfat Paşa Street. Like Karataş, Göztepe was also a desired site in İzmir. It was a promenade area of the city. At the foot of a hill where had lots of vegetable gardens (were called as English gardens) was covered by single/two storey dwellings. Some foreign and Moslem merchants preferred district because of its wealthy natural features (Atay 1993). The scenic dwellings and blowy streets that opened to the sea were inviting the people. The attraction of Güzelyalı is still continuing. Nowadays, district has high density of population and building. So, the solutions on stairways get important.

5.2. Existing Structure of the Study Area

The analysis of the existing structure of the study area is divided into different subject areas, as follows:

- General evaluation of the study area. Including analysis of land use and buildings (as enclosure elements)
- The analysis of stairways

Figure 5. 1: Study Area

General Evaluation of the Study Area: The study area has a grid pattern despite the steep slope dominates a big part of the district. A big amount of pedestrian connections between parallel streets are provided by stairways. Stairways have a great importance because they are often only way to access the buildings and only connection line between different levels. The lift (Asansör) is an alternative solution for connecting different levels (Figure 5.2). Asansör is an extraordinary central reference point in the panorama, precisely defining the historical building in the cityscape. It has been built by the Jew who was called as "Bayraklıoğlu" in 1907 to provide easy connection between Mithatpaşa Street and Halil Rıfat Paşa Street for his workers (Atçalı 1988).

Figure 5. 2: the lift in Karataş (Source: The Municipality of İzmir Metropolitan Area)

The slope decreases approximately from west to east. So, the number of stairways is the biggest on west axis. Stairways are often too long, steep, and tiring. Some stairways rise from sea altitude to 35 meter. They are generally narrow. The width of stairways change between 3-5 meter (Atçalı, 1988). They consist of two or more continuous stairway parts. The continuity of these stairways is broken with streets. Especially, Halil Rıfat Paşa Street and Şehit Nihat Bey Street are important motorised traffic routes in the study area.

Obsolescence and inappropriate renewal decisions have effected functional and visual quality of stairways. They have inadequate quality. Lots of stairways have been paved by concrete instead of repairing the original pavements (cobblestone pavements and natural block stones). Although trees in gardens, climbing plants on stone walls are still struggling to enhance the image of

stairways, spiritless multi-storey building facades enclose a significanct part of the stairways. These insufficient environment conditions have caused another problem in addition to inadequate circulation conditions on stairways. Especially in Karataş, the economic value of buildings decreased and the now low-income groups live on stairways. The residents have preferred to leave their streets and dwellings.

The analysis of land uses show that it is variable. District includes residential, commercial, educational, health, and recreational land uses. The purpose of the land use study is to find the relation between stairways and the distribution of land use if exists. The result of the study shows that there is no definite relation between stairways and land uses. Although residential units have always been more common on stepped streets, trading units (grocery units under dwellings). Educational institutions and health units also exist on stairways. Despite they have a facade on existing stairways, their entrances are not from the stairways. Stairways have also been used nearly in whole considerable green areas. In these recreational areas, each advantage of steps has been use of.

Buildings have a great variation when considering number of storey, facades, form, and building entrances. Thus, the expected certain dependence could not be established between stories of buildings and stairways in the study area. Especially in Karataş, stories of buildings have large differences from single-storey to eight-storey on stairways. The results of development movement, desire of living in modern building, and investments; multi-storey buildings has replaced the traditional two-storey buildings. Buildings have improved in contiguous order because of narrow plot facades on stairways. Nowadays, four types of building exist in study area. The first type consists of Chios type buildings. This type of building is two-storey. The entrance to building is generally at the sides with a few steps. The second type has single-storey and a basement. The entrance to first floor is provided by at the sides with stairs. The third type is Republic period building. They are multi-storey buildings. Their entrances are at the facades. The fourth type consists of multi-storey, reinforced concrete buildings. They are 4-5 or more storey buildings. Their entrances show

variations on stairways. Traditional types usually have a direct access, some have indirect entrances. Rarely, the entrances to the buildings are provided by steps at sides.

The Analysis of Stairway: There is a need for systematic approach to assessment of physical characteristics of stairways. At first, stairways were separated into groups considering where they are. This separation consists of two groups as stairways in townscape and stairways in landscape[1]. The first group comprises stairways in urban green areas. The second group contains stairways that take part in street system. These can be called as street stairs because of their location and usage. Distribution of stairways relating to these groups shows in Figure 5.3.

Stairways in green areas ⟶ 5 districts
Stairways in residential streets ⟶ 5 districts

Secondly, the second group was subdivided relating to common physical characteristics (quantitative features such as the size of stairways, dimensions of steps, pavement materials, and so on).

5.2.1. Stairways in Green Areas

There are five parks, which include stairways in the study area. These are M. Yüce Sonkurt Park, Barbaros Park, Susuzdede Park, Yaşar Aksoy Park, and Zeki Müren Park. Stairways are providing recreational activities (strolling, sitting, watching, etc.) on these sloppy green areas. They are enhancing the visual character of these spaces and are making these spaces more delightful. Flights of steps are adding a dynamic effect to the urban environment.

[1] Extensive information about this classification exists into Chapter 2.

Figure 5. 3: Distribution of stairways' districts

Generally appropriate materials have been used. Dimensions of steps, pavement materials, lighting elements are optimal for all stairways when functional, technical, and visual aspects are considered. But, the lack of the handrails and ramps may cause difficulties for some.

M. Yüce Sonkurt Park is in Murat Reis District. In this park, six radial stairways are placed (Figure 5.4). Short flights of steps are broken with landings. Landings are placed in approx. every 5 steps. The type of the travertine steps is narrow tread. The enclosure elements of these stairways are shrubs. Lighting elements are appropriate and enough.

Figure 5. 4: Stairways in M. Yüce Sonkurt Park (September 2001)

Susuzdede Park is in Göztepe. It has different types of stairways. The entrance stairway has divided by a flower garden (Figure 5.5). Stairways in Susuzdede Park are more curve-linear than other parks' (Figure 5.6). Stone steps are changing direction relating to inclination lines (Figure 5.8). Natural stones and flat plane stones were used for steps. Both narrow and deep tread steps exist in this park.

Figure 5. 5: Main entrance stairway to Susuzdede Park (June 2001)

Figure 5. 6: Looking down the steps in Susuzdede Park (June 2001)

Figure 5. 7: Stone steps Susuzdede Park (June 2001)

Yaşar Aksoy Park is near Asansör. The narrow steps are coloured pocket stone (Figure 5.8). Straight flight of steps follows the other with alternating direction.

Figure 5. 8: The Stairway in Yaşar Aksoy Park (November 2000)

Zeki Müren Park is placed in Karataş. It includes various types of flight of steps, straight to curved, narrow to deep steps. The variety of steps has added a visual effect. While the deep tread at the entrance prepares user a space (Figure 5.9), the narrow steps access quickly to the upper levels (5.10, 5.11, and 5.12). The flat stone pavement has been used for all steps.

Figure 5. 9: Main entrance to Zeki Müren Park (August 2001)

Figure 5. 10: Stairway in Zeki Müren Park (August 2001)

Figure 5. 11: Well-lit stairway in Zeki Müren Park (August 2001)

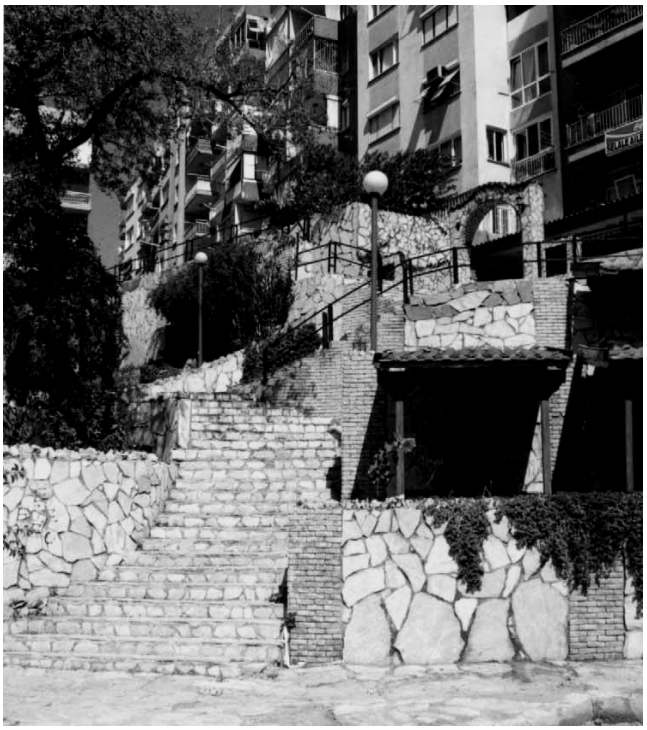


Figure 5. 12: Flat round stone steps in Zeki Müren Park (August 2001)

Barbaros Park is in Barbaros district. Its function is a little different to than. Park provides only movement activity through the green. The concrete steps rise to the upper level among the trees (Figure 5.13).

Figure 5. 13: The stairway in Barbaros (September 2001)

5.2.2. Stairways between Buildings

The chosen district descends to the sea altitude in layered terraces, which have great views (Figure 5.14, 5.15, and 5.16). Especially Karataş is characterised by its hilly terrain, and narrow, stepped streets. Stairways provide direct connections across difficult terrain and shorten walking distances significantly. In general, forms of these stairways are straight. Direction changing is not frequently. A big majority of stairways consist of two or more flights of steps.

Figure 5. 14: Stairways on 269th street offer a pleasant descent with sea view (November 2000)

Figure 5. 15: 391st street (September 2001)

Figure 5. 16: 334th street (September 2001)

There are 65 stairways in the study area. These were shown in Figure 5.17, Table 5.1 that describes each stairway considering the features.

Stairway Typology can be classified into three types considering movement types (Figure 5.18). These are: Stairways as connector (I), stairways as access ways (II), and stairways as both connectors and access ways (III). There are two connector and two access stairways on the site. Approximately 94 % of existing stairways have both access and connection functions.

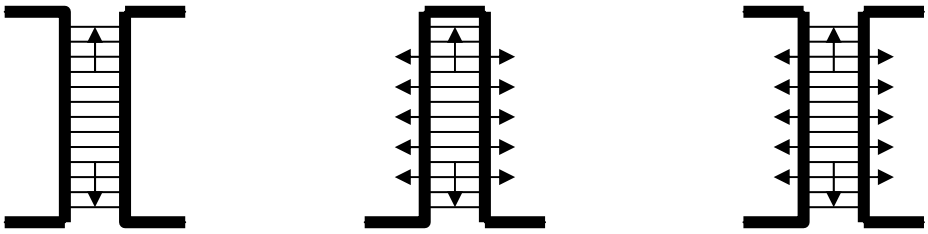


Figure 5. 17: Stairway typology

Figure 5. 18: existing stairways in study area

Table 5. 1: features of stairways

Stairways as connector (I) serve pedestrian only to provide pass from one level to another. They do not access buildings. The stairways on 167th street and 267th street are in this group (Figure 5.19, 5.20). The L-shaped stairway in 167th street offers connection between Mithatpaşa Street and the upper level. It is one of the narrowest stairways. The width of stairway in 267th street is also narrow. It rises through plant (5.21).

Figure 5. 19: The first flight of the stairway as connector on 167th street (August 2001)

Figure 5. 20: The narrow stairway as connector on 167th street (August 2001)

Figure 5. 21: The narrow stairway on 267$^{th\ s}$ street provides only connection between Mithatpaşa Street and Şehit Nihat Bey Street (September 2001)

Stairways as Access Ways - Dead End Street (II): Dead-end stairway provides access to the buildings along the stairway. Stairways in 39th and 268th streets do not have distribution function.

Figure 5. 22: Access stairway in 268th street (August 2001)

Figure 5. 23: 39th street in Güzelyalı – İzmir (Source: October 2001)

Stairways as both connectors and access ways (III): 61 of existing stairways have both access and connection functions in the study area.

Segmented stairways are special type of stairways that consist of both stairways and vehicle roads. This type allows limited motorised traffic (Figure 5.24 and 5.25). 24 units of all stairways (approx. 37 %) are in this type. These stairways are in 26th, 77/1st, 80th, 99th, 108th, 111th, 131st, 133rd, 138th, 176th, 178th, 179th, 180th, 185th, 190th, 282nd, 334th, 335th, 342nd, 346th, 347th, 367th, 376th, and 382nd streets. The lengths of these stairways, in general, are short and are placed at the end of the streets (Figure 5.26). The large amount of stairways (short flight of steps) does not have handrails (Figure 5.27, 5.28, and 5.29). On these stairways, warning for vehicles important to prevent hazards. But, the quantity of bollards and lighting elements are low. Residents' children prefer these spaces because vehicles use spaces only for parking and services (Figure 30).

Figure 5. 24: 131st street (October 2001)

Figure 5. 25: 179th street (October 2001)

Figure 5. 26: 341st street provide both pedestrian and vehicle movement (October 2001)

Figure 5. 27: 282nd street (October 2001)

Figure 5. 28: 178th street (September 2000)

Figure 5. 29: 138th street (October 2001)

Figure 5. 30: 204th street (August 2001)

Forms of stairways are generally straight. Except a few samples, stairways do not change direction. In addition to the straight forms, broken, L-shaped, and 180º return forms exist in this site. In some stairways, straight stairways are broken in landings (Figure 5.31 and 5.32). 267th, 304th, 341st, 349th and 353rd streets are in these forms. 100th, 167th, 204th and 272nd streets are changed direction in approximately 90º (Figure 33). The 180º return stairways are in 304th and 336th streets. These flights of steps provide longer distance to connect different levels (Figure 5.34, 5.35, and 5.36).

Figure 5. 31: 341st street (September 2001)

Figure 5. 32: Ending of the stairway on 304th change direction (September 2000)

Figure 5. 33: 100th street (August 2001)

Figure 5. 34: Surprise change direction on 304th (September 2001)

Figure 5. 35: 336th street (August 2001)

Figure 5. 36: The general view of the stairway on 336th street (August 2001)

272nd street is a special example in different aspects. The narrow stairway attracts people itself. The first flight of steps is enclosed by building facades and plants (Figure 5.37). It changes direction with landings. The second flight of reaches the nice courtyard decorated with plants (Figure 5.38). The third flight of steps is the most interesting part of the stairway. It passes under the dwelling like stairways in Mardin (Figure 5.39 and 5.40).

Figure 5. 37: Accent on 272nd street to approach the covered stairway (I) (September 2001)

Figure 5. 38: Accent on 272nd street to approach the covered stairway (II) (September 2001)

Figure 5. 39: The covered stairway on 272nd street (September 2001)

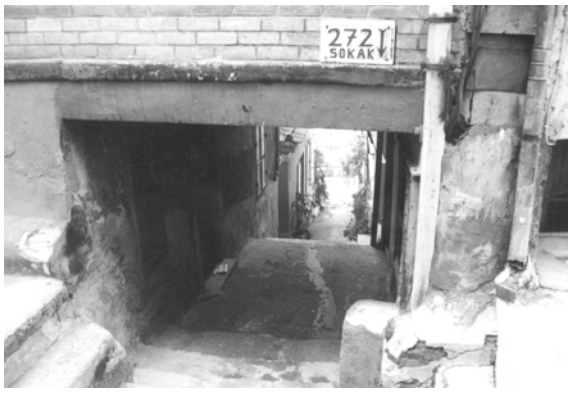


Figure 5. 40: Entrance to the covered stairway (272nd street) from Şehit Nihat Bey Street (September 2001)

Length of stairways shows variety in the site. 17 of all stairways are short (Under 15 m). But, 9 stairways are too long (over 100 m). Stairways in 269th, 270th, 303rd, 304th and 340th streets are the longest samples (Figure 5.41, 5.42, and 5.43). Length of stairway in 269th street reaches 250 meters. But, the average length of stairways change between 15 to 50 meters.

Figure 5. 41: 269th street (October 2000)

Figure 5. 42: 270th street (September 2001)

Figure 5. 43: Long stairway in 303rd street (Şehit Kemal Keser Street) (September 2000)

The beginning points of stairways do not allow preparation for steps for especially the elder and handicapped people. Both users and vendors have been neglected. Whereas, street vendors (flower sellers, green grocer) make use of the ends of the stairways as these are nodes in the circulation of the area in vicinity although this is not predetermined (Figure 5.44).

Figure 5. 44: Flower seller at the beginning of the stairway on 187th street (October 2001)

Landings are generally neglected because of the steep topography. Their frequency is mostly inadequate (Figure 5.45 and 5.46). So, they are generally dissuasive in psychological and physical aspects. But, some stairways provide appropriate landing frequency for pedestrians (Figure 5.47, 5.48, and 5.49).

Figure 5. 45: Stairway in 314th street without landings (September 2001)

Figure 5. 46: Steep topography does not allow appropriate frequency for landings on 341st street (September 2001)

Figure 5. 47: The length of 306th street is too long. But, landings that are eye level decrease its dissuasive effect (August 2000)

Figure 5. 48: 303rd street (September 2000)

Figure 5. 49: 307th street (August 2000)

Ramp solutions are not available when considering technical standards. There is no ramp in optimum conditions for the differently abled or human powered vehicles (wheelchair, bicycle, shopping cart). Although sidewalk of streets is often transformed into ramps, the slope, or materials are not appropriate (Figure 5.50 and 5.51). Building entrances often cut the continuity of the lanes. The beginning points of ramps do not allow transition to ramps (Figure 5.52 and 5.53).

Figure 5. 50: Ramp solution along the stairway on 349th street (August 2001)

Figure 5. 51: Cyclist using curb line between stairway and pavement as ramp on 190th street (July 2001)

Figure 5. 52: 387th street (September 2001)

Figure 5. 53: 335th street (September 2001)

The necessity for ramps caused some additional construction as individual solutions. Steps filled up to make narrow ramps for wheeled luggage and bicycles (Figure 5.54, 5.55, and 5.56). In some street stairways, all width of steps was transformed to the ramps (Figure 5.57).

Figure 5. 54: Existing concrete ramp solution on 186th street (September 2001)

Figure 5. 55: Existing concrete steps and ramps on 271st street (September 2001)

Figure 5. 56: Existing ramps on 353rd street (September 2001)

Figure 5. 57: Transforming stairway to the ramp in 282nd street (September 2001)

Step dimensions and materials show variation. A large amount of stairways has steps with small treads (approx. 30x17 cm). Only 13 of 65 stairways include steps with large treads (approx. 80x15 cm) (Figure 5.58 and 5.59).

Figure 5. 58: 403 street (August 2001)

Figure 5. 59: A part of 274th street's steps has large treads

The original materials of the steps are natural block stone and cobble stone (Figure 5.60, 5.61, and 5.62). But, in the study area, there is a tendency to use concrete as pavement material (Figure 5.63 and 5.64). In time, stone steps were covered with concrete. Some of them were paved with pocket stone (5.65 and 5.66). Changing stairways made of stone into concretes pavement has caused safety and aesthetic losses on stairways. Whereas stone pavement have lots of advantages. Its visual effect, durability and easy maintenance are some causes why it is preferred.

Figure 5. 60: Cobble stone pavements on 305th street (May 2001)

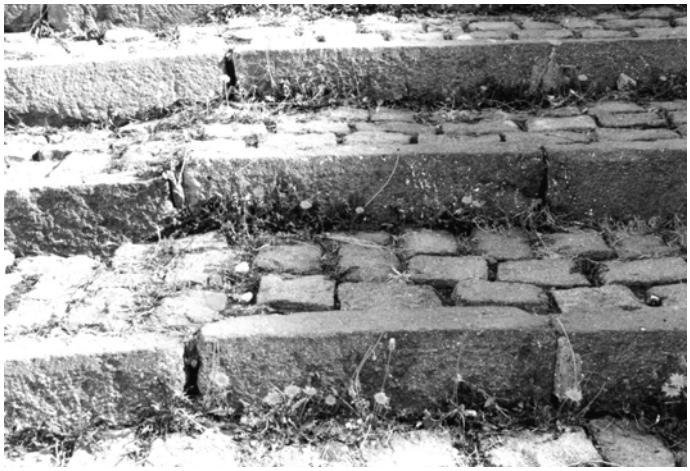


Figure 5. 61: Steps on 334th street (April 2001)

Figure 5. 62: Stone steps on Şehit Kemal Keser Street (September 2000)

Figure 5. 63: Concrete steps on 249th street (September 2000)

Figure 5. 64: Damaged concrete steps on 340th street (September 2000)

Figure 5. 65: Pocket stone steps on 100th street (August 2001)

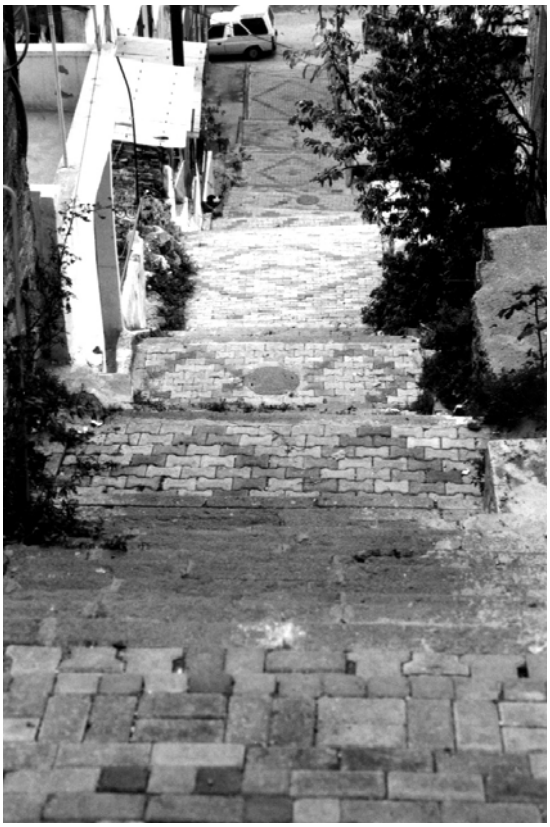


Figure 5. 66: Coloured brick paviours decorate landings on 306th street (September 2001)

Plant quantity is very little nearly in all stairways. Trees, flowers, or shrubs were rarely used (Figure 5.67, 5.68, 5.69 and 5.70). On some stairways, dwellers are sensitive in this issue. So, in general, trees extending from private gardens and plant pots in front of the doors support the green. 97th street is a exception, because, the plant elements are a part of stairway design.

Figure 5. 67: Covered plant adds visual effect stairway in 186th street (September 2001)

Figure 5. 68: Plants on 391st street (September 2001)

Figure 5. 69: The stairway enclosed by landscape elements on both sides (340th street) (April 2000)

Figure 5. 70: Tree effect supports stairway scene (313th street) (September 2001)

Street Furniture: In case study area, handrails and bollards are the most frequent used elements.

Handrails: 33 stairways have handrail. Site analysis study shows that single rail was preferred in the middle of the stairways more frequently (Figure 5.71 and 5.72). Whereas, handrails with double rails are more comfortable. Double rails take place only a few stairways (Figure 5.73 and 5.74). The perceptibility of handrails is high for the elder. Because, all of them have been painted with bright colours.

Figure 5. 71: Handrails that are broken up at landings on 309th street (September 2001)

Figure 5. 72: Stairway in 111th street has two handrails (September 2001)

Figure 5. 73: Double rails on 402nd street (August 2001)

Figure 5. 74: Handrail includes a rail for each direction on 274th street (October 2001)

Lighting Elements are not appropriate. The special requirements of steps have been neglected. The street lightings have been placed on stairways. Only two stairways have pedestrian lightings. These are 97th street and 100th street (Figure 5.75 and 5.76). The lighting requirements of the beginning points have also been neglected.

Figure 5. 75: Plants add visual effect to the stairway on 97th street (August 2000)

Figure 5. 76: 100th street (September 2001)

Bollards have been utilised in order to prevent accidental and intended motor vehicle access. Seven stairways have different types of wheel stops. These are 79th, 80th, 131st, 176th, 179th, 185th, and 204th streets (Figure 5.77, 5.78 and 5.79).

Figure 5. 77: Barriers at the beginning points of 80th street (September 2000)

Figure 5. 78: one of the various kinds of bollards of the study area on 185th street (September 2000)

Figure 5. 79: Bollards to stimulate driver and obstacle motorised traffic at the beginning of the stairway on 334th street (September 2000)

Trash bins are the basic elements of stairways' ends (Figure 5.80). In addition to garbage collection task, the other task is to prevent vehicle traffic as bollards.

Figure 5. 80: Trash bins at the beginning points of 307th street (September 2000)

Enclosure Elements of the stairways vary. Some are enclosed by buildings on both sides. Some of them enclosed by landscape elements on both sides. But, often, both landscape elements and buildings enclose stairways. So, stairways can not be grouped according to enclosure elements.

Building Entrances: Stairways' grouping was not possible by considering access type to buildings. Because, every stairway has different entrance types. As an outcome of topography, sometimes, separated building entrances were used to enter the same building (Buildings sometimes have single or two-storey basement because of slope ratio) (Figure 5.81, 5.82 and 5.83). Especially, old solutions are more successful in topographic adaptation (Figure 5.84 – 5.86). They tend to solve access problem with terraced platforms. On case study area, some entrance solutions may be listed as follows:

- From landings or steps (Figure 5.87 - 5.90)
- Parallel or straight steps to stairways (Figure 5.91 and 5.92)
- From ramps
- From platforms

Figure 5. 81: 270th street (September 2000)

Figure 5. 82: Connection between the building and the stairway on Şehit Kemal Keser Street (September 2000)

Figure 5. 83: Entrance to the building in different doors on 364th street (August 2000)

Figure 5. 84: 269th street (October 2000)

Figure 5. 85: 269th street (October 2000)

Figure 5. 86: 269th street (September 2000)

Figure 5. 87: Building entrances on 270th street (September 2000)

Figure 5. 88: Well-designed entrance to buildings on 100th street (September 2001)

Figure 5. 89: Entrance solution to buildings on 307th street (September 2000)

Figure 5. 90: Building entrances on 270th street (September 2000)

Figure 5. 91: Nice steps to enter the dwelling on 97th street (August 2000)

Figure 5. 92: Entrance to the building on 307th street (October 2000)

As a result, stairways generally consist of two or more flights of steps. They are too long to ascent and height differences between landings are too much. Slopes are very steep. Ramp solutions are unsuccessful. They are, generally broken with building entrances, straight except a few exceptions and narrow. Dimensions of steps are not uniform. A big amount of stairways paved are by concrete or brick. There are only a few streets that still have the original steps. Surface drainage is a problem for stairways. Furniture was located randomly. Lighting elements are inappropriate. Street lightings with high level are in adequate. Handrail types do not allow use by children. They are in bad condition. Aesthetic and functional effects of plants have not been used.

To increase the quality of stairways, firstly, we should catch up with the safety standards. Dimensions of steps should be uniform. The damaged materials should be replaced. Natural stones are recommended (It supports surface drainage). Low-level lighting elements should be located to increase visibility and warn pedestrian and vehicles about steps at night. Handrails with double rails are recommended to support easy use for both adults and children. Stairway entrances should be redesigned with furniture. Required sizes should be provided for both top and the bottom of stairways. Number of landings should be increased. They may be coordinate with building entrances. If it is possible, ramps should be provided for handicapped people, shopping carts, and so on. Plant effects should be used for all stairways.

Detailed Analysis of the Design Area: 304th street was chosen as design area. It is still called as “Ermeni Ramp” by the elder. Because, this site were preferred by Armenians as dwelling in past time (Küçük 1996). There are three main reasons of selection. First it seems to be busier than others. This route connects Mithatpaşa and Hatay Streets (Figure 5.93). The second is that it includes both access and connection functions. Variation of land uses on 304th street is the third reason. This special feature differentiates this path from other stairways.

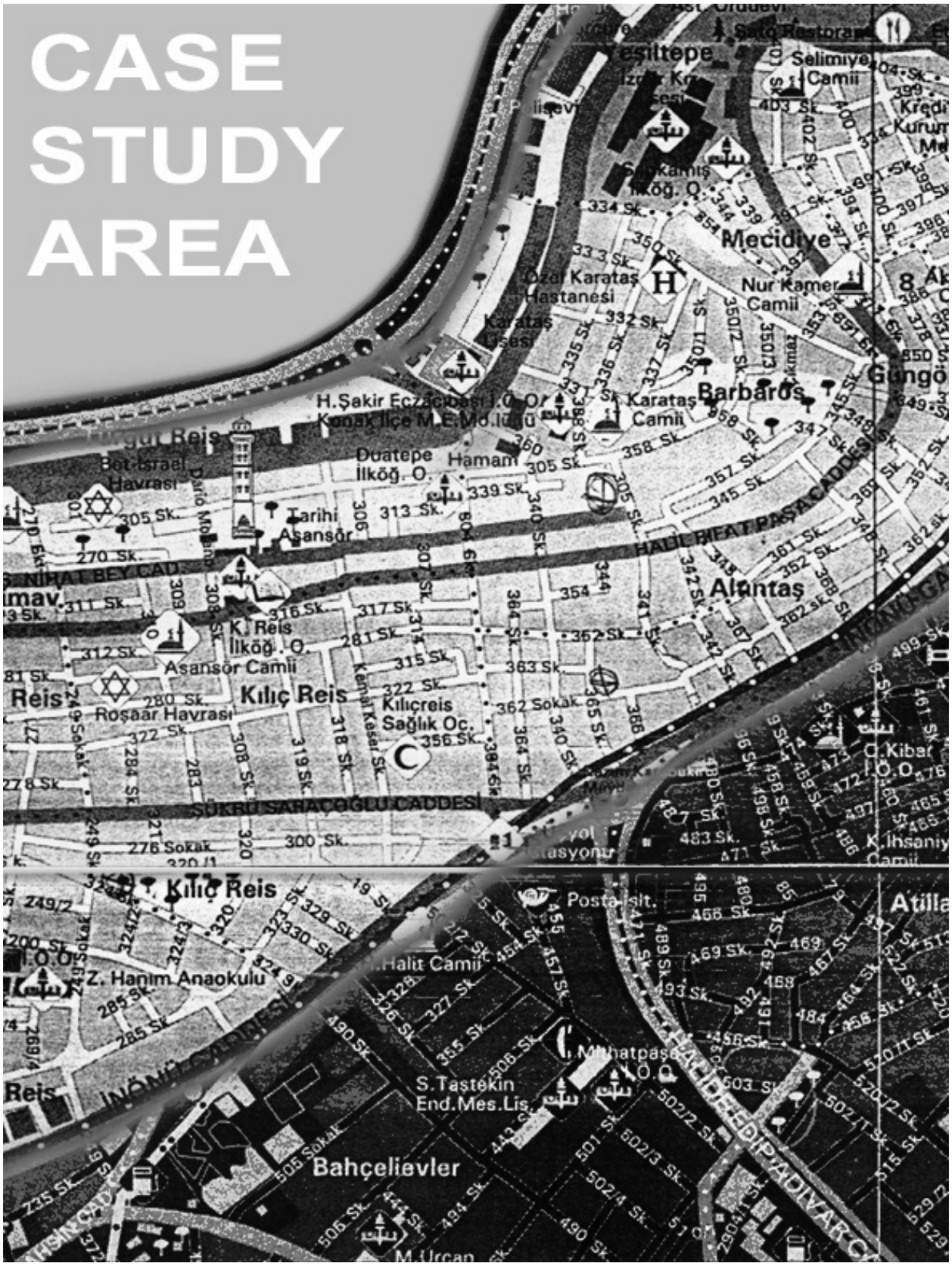


Figure 5. 93: Design area

Referring back to the “typology of stairways” earlier in this section, 304th street is a stairway in townscape. It consists of seven parts: The first five parts are stepped stairways, the sixth and seventh are without steps. So, the last two were not taken into account.

First various visible characters were determined to analyse 304th street. These are:

- The variation of land uses on the street
- The size of the stairways (length and width)
- The numbers and measures of steps and landings
- The variety of enclosure elements
- Types of building entrances
- The material of steps
- The quality and quantity of furniture
- The amount of plants
- The distinctness from other stairways (The quality of view, and so on)

Site analysis map shows physical features of the 304th street (Figure 5.94).

The variation of land uses on the street: Residences, educational institutions, retail units exist on this axis. Duatepe Primary School and Museum of Education in Turkish Republic increase the number of users.

The dimensions of the stairways (length and width): The forms of flight of steps are straight except the beginning of the first part and the end of the fourth part. The length of the first part is 36 metres. The third part is 30 metres. The fourth part is the longest part of the street (Figure 5.95). It is 80 metres. The last part of the street is 4 meters. All parts of stairways are approximately 6 meters in width. Setback on both sides is 1 meter.

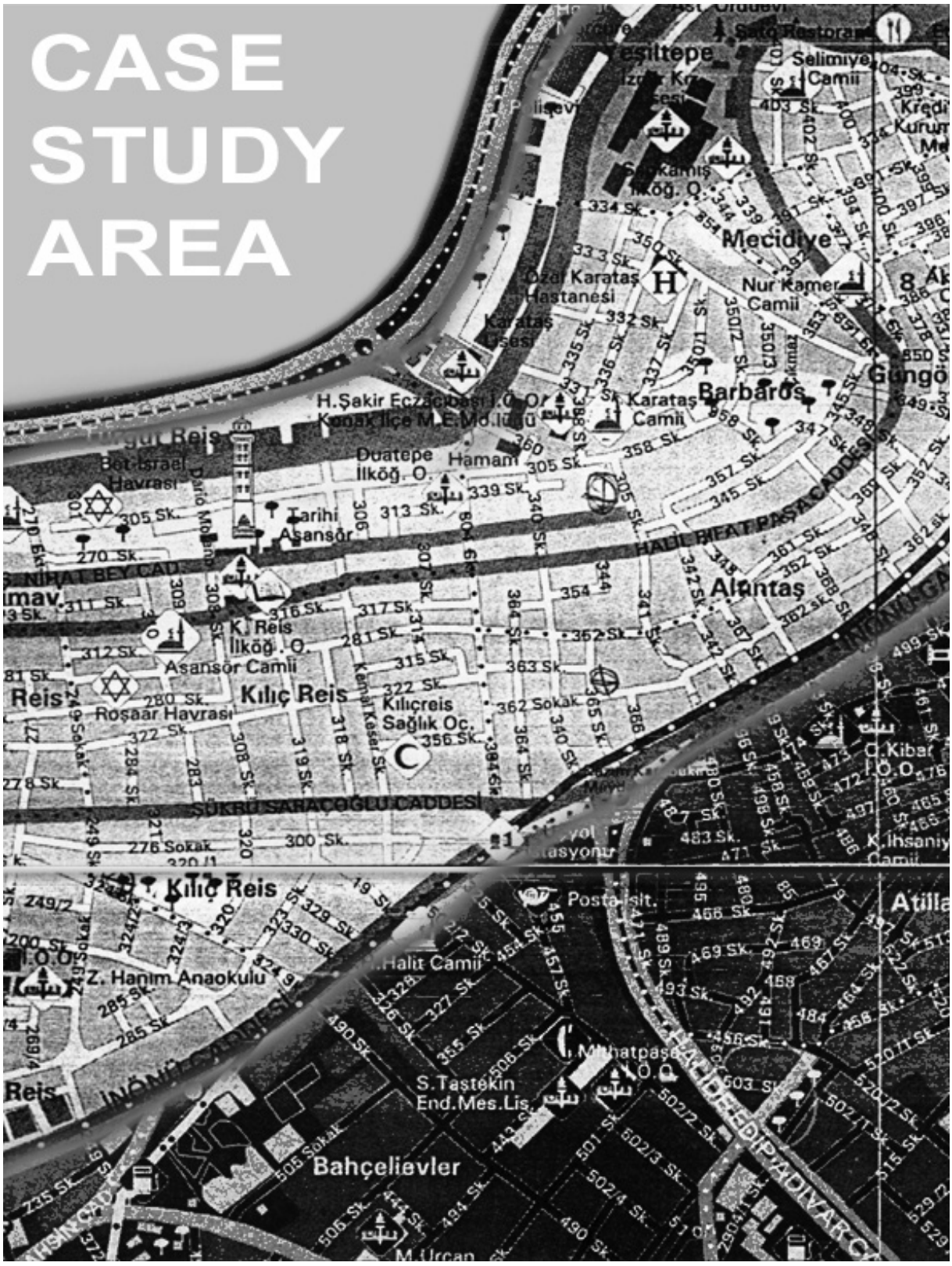


Figure 5. 94: Analyse map

Figure 5. 95: The fourth part is the longest part of the street (September 2000)

The number of steps and landings:

- The first part of the stairway consist of 72 steps and 5 landings
- The third part consists of 48 steps without landings.
- The fourth part includes 91 steps and 5 landings. Its is the longest part of the street.
- The fifth part consists of 15 steps without landings.

The measure of steps and landings: The measures of steps and landings are various. The first part includes different types of steps: (30 x 17), (40 x 17) and (50 x 17). The measures of the third part's steps are (95 x 15) and (40 x 18). The fourth part includes four types as follows: (30 x 16), (40 x 16), (48 x 16), (50 x 16). The segmented part of the street consists of narrow steps (30 x 179) (Figure 5.96). In design area, ramps are not available (Figure 5.98)

Figure 5. 96: Steep steps and ramps on the fifth part (September 2000)

Figure 5. 97: Landing providing access to the building (September 2000)

Figure 5. 98: Steep ramps obstructed with entrances (September 2000)

The variety of enclosure elements: The study area is a well defined, enclosed space. Stairways are lined with building facades on both sides. Buildings with special characters (historic buildings) are greatly influencing the image of the street and stairways (Figure 5.99). Building characteristics were examined considering height, entrance, facade quality and so on. Number of storey varies in each part. All of them are given as follows:

The 1st part: It is enclosed by 2-3 storey buildings and garden wall (Figure 5.100)

The 2nd part: It is enclosed by 5-6 storey buildings (Figure 5.101)

The 3rd part: It is enclosed by 5-6 storey buildings (Figure 5.102)

The 4th part: It is enclosed by 2-6 storey buildings (Figure 5.103)

The 5th part: It is enclosed by 4-6 storey buildings (Figure 5.104)

Figure 5. 99: Old architectural elements enhance the texture (September 2001)

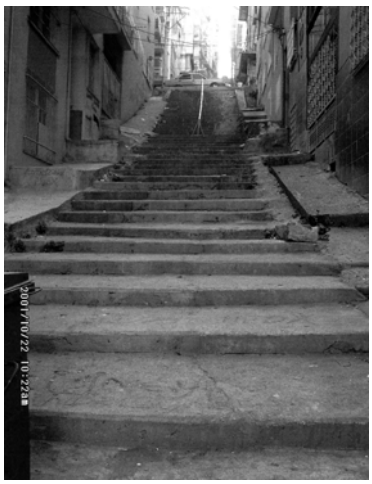


Figure 5. 100: The second part of 304th street (Municipality of İzmir Metropolitan Area)

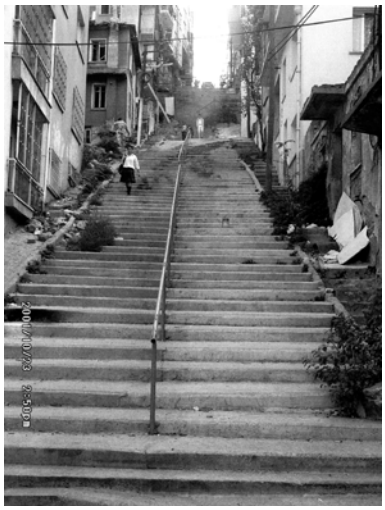


Figure 5. 101: The third part of 304th street (Municipality of İzmir Metropolitan Area)

Figure 5. 102: The fourth part of 304th street that is the longest (September 2001)

Figure 5. 103: The fifth part of a street (September 2000)

The surface is concrete. These steps are in bad functional and aesthetic condition (Figure 5.106).

Figure 5. 104: Damaged concrete steps (September 2000)

The quality and quantity of furniture: Availability of the street furniture and other public utilities were examined to determine the environmental quality of the stairway. Although there are handrails, but in bad conditions (Figure 5.107). Lighting elements, bollards and plant boxes are absent.

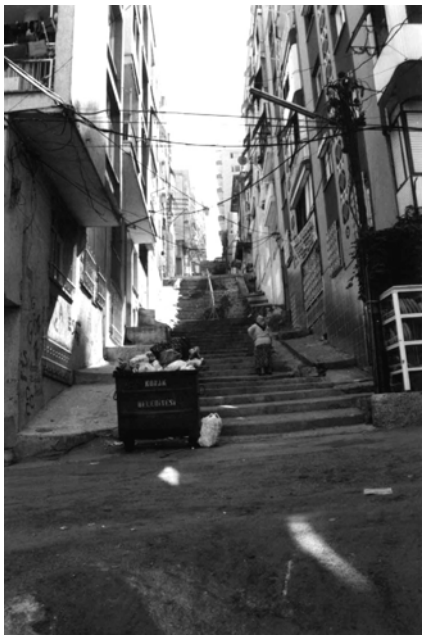


Figure 5. 105: Garbage bins are inevitable elements of ending points (September 2000)

Dynamic Data regarding to users' movements: After visible static data were drawn on a plan, the quantitative data regarding number of users per hour was gathered. In the third stage, user thoughts were collected to determine users needs and expectations.

User density according to age and gender were evaluated to determine a relation between these groups and stairway usage, if exists. Accent and descent numbers were collected to determine usage density, both ways. Population, number of dwelling units could not be evaluated because the study does not aim changes in existing construction condition. They were only observed at the beginning of the case study to determine design area.

Pedestrian volume was determined with counting process in peak hours (Pedestrian/hour). For a week in October 2001, pedestrian ascent and descent activities were counted three times a day at peak hours. The average of the sum of the each period was taken into account as a result for work days and weekends.

No relation related to aged and gender found in user density aspect. Because of the land uses on the street (educational area) and its strong connection character (from Hatay to Mithatpaşa Street) - these stairways are integral parts of the pedestrian system on this site -; the average number of users per hour is high. The number of students was approximately equal in all periods of the day during the workdays. At the weekend, the average decreased because children and young people did not have to go school or adults did not have to work. In general, the number of persons descending is more than the number of persons ascending. The inquiry results confirmed that people preferred to descent rather than ascent (Table 5.2. – 5.5). Number of pedestrians in ascent and descent are below:

Table 5. 2: Number of persons ascending per hour in workdays

age groups	ascending	
	Female	male
Children	68	72
young people	22	30
Adults	34	16
old people	2	3
Total	126	121
General total for ascending		247

Table 5. 3: Number of persons descending per hour in workdays

Age groups	descending	
	female	male
Children	31	49
Young people	31	52
Adults	42	60
Old people	4	15
Total	108	176
General total for ascending		284

Table 5. 4: Number of persons ascending per hour at the weekend

age groups	ascending	
	Female	male
Children	8	9
Young people	4	13
Adults	11	20
old people	2	0
Total	25	42
General total for ascending		67

Table 5. 5: Number of persons ascending per hour the weekend

age groups	descending	
	Female	male
Children	8	9
young people	15	25
Adults	37	60
old people	1	9
Total	61	103
general total for ascending	164	

5.3. Results of the Inquires in the Design Area

A concern for needs lies at the centre of approach to design. Inquiries were used to determine the needs, values and expectations. Residents and passers-by tend to be more interested in their own environments. For this reason, inquiries were with only people on the stairways. In 450 inquiry results[2], each group gave some clues on their prefers (inquiry form is in appendix). The respondents are classified into four groups:

- Children under 13 years of age
- Teenagers/young people between 13-20years of age
- Adults between 20-55 years of age
- Adults over 55 years of age

Distribution of age groups in inquiry study is in at Table 5.6. A large amount of people was chosen from adults. There were a few handicapped people (one person with limited vision and two persons with limited walking ability) in the study. Like old people, they expressed their problems.

Table 5. 6: Distribution of people whom took place in the inquiry according to their ages

Children (13^{-})	Young people (13-20)	Adults (20-55)	Old people (55^{+})	total
30	90	240	90	450
7 %	20 %	53 %	20 %	100 %

50 % of total number of people in the survey is male and 50% is female. Distribution of respondents relating to user types as follows:

[2] The small sample represented about 5 percent of the population in Turgut Reis District.

Table 5. 7: Distribution of people who took place in the inquiry according to user groups

	Number of respondents	Percentage (%)
Residents	180	40
Passers-by	270	60
Total	450	100

Six sets of issues were explored in the inquiries: purpose and frequency of use, their perceptions[3], needs, expectations, and proposals. In other words, the results showed that what each resident thought of this stairway and their suggestions for improvement. Most stairway residents have not felt street spirit on their stairways. A little part of the dwellers, who were born, and still live on 304th street, have seen their stairways as “home”.

Purpose of usage: Trip purposes found using inquiries. To know purposes and types of pedestrian movement on stairways supports design progress for better facilities. The most frequent reasons to use these stairways were access to residences and work (Table 5.8). Some respondents gave more than one answer so, the total of ratio is above100 %.

Activities: Usage purposes of people were determined to facilitate use of urban stairways. Pedestrian usage purposes are closely related to the type of land use adjacent to the stairway and its environment. The number of movement generated by an activity depends on its size and type. Inquiry results confirmed that both active and passive outdoor activities are seen on 304th street from walking (ascending and descending) to viewing. Sitting in front of the dwellings and play activities were determined as the most popular on the stairway. In addition to all passers-by and residents activities, sliding down the

[3] Perceptions are effected by their background and expectations. They are not necessarily accurate or correct. In this study, they were used to understand how do inquiry groups evaluate stairways.

handrails is a popular activity on stairways. Observations and inquiry results show that children under 13 years like this activity much.

Table 5. 8: Table of usage

Types of purposes	Number of respondents (%)
Access to residents	53
Access to school	13
Access to work	40
For Shopping	5
Visit	10
Strolling	12
Others	6

Figure 5. 106: Descending people on 304th Street (September 2000)

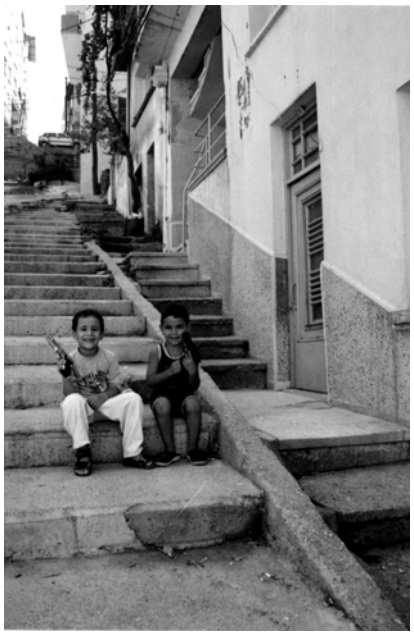


Figure 5. 107: Children sitting on steps (September 2001)

Figure 5. 108: Sea view attracts people to stand and watch (September 2001)

Frequency of usage: 60 % of total number of respondents use this path once or twice a day. The rate of respondents who use the stairway once or twice a week is 7 %. 18 % use it once a month and 15 % use it rarely. Data regarding to usage frequency were listed in Table 5.9.

Table 5. 9: Usage frequency of respondents

Once or twice a day (%)	Once or twice a week (%)	Once a month (%)	Rarely (%)	total
60	7	18	15	100

Needs, Values, and Expectations: Physical condition of the 304th street offered different levels of satisfaction, depending on user's desires and requirements. Three principal questions were the basis for the responses reported: first, "what is important for you when deciding what street to live on?" And the second "What is the positive characteristics of the stairway?" The third, "What is the negative characteristics of the stairway?" According to inquiry result, respondents expected security, comfort, cleanliness, attractive appearance, convenience outdoor life, neighbourliness, or other amenities from a residential street. Children wanted to play and adults talking, sitting, strolling, and neighbouring. Table 5.10 shows importance of street characteristics according to respondents.

Table 5. 10: Importance of street characteristics

Characteristics	Percentage (%)
Cost of housing	32
Prestige	18
Walking conditions	20
Safe from accidents	1
Safe from crime	2
Clean, unlittered	5
Attractive appearance	3
Greenery	8
Peace and quiet	2
Privacy	2
Pleasant view	1
Sociable, friendly	5
Community services	1
Total	100

The factors that affected the satisfaction of residents and passers-by can be listed as follows:

- Safety: providing a physical conditions to prevent accidents
- Comfort: providing comfortable paths and places for pedestrians and other users by furnishing and so on.
- Appearance: aesthetic quality and visual integrity of stairways.

User problems and nuisances were researched to determine design proposals for creating safer, more lively, and comfortable urban stairways in existing conditions. Most frequent sources of complaints are as below:

- Lack of safety
  Danger for the elder
  Danger for children
  Danger for the handicapped
- Lack of comfort
- Lack of services
  - Stairway cleaning
  - Garbage collection
  - Emergency vehicle access

Inquiries made in October 2001 confirmed that deteriorated steps were viewed as a major annoyance, followed closely by “handrails” and steep steps. According to respondents’ answers, these are tiring effects of the stairway. Danger was a concern on the stairways. Falling down was frequently mentioned as being dangerous not only for children, but also for the elder and the disabled. Most of the safety problems were experienced through seeing large numbers of damaged steps. Neglected steps and, steps with varying dimensions created the fear of danger, especially for parents on be half of their kids. Lack of handrail continuity was another problem in safety. Several users wanted the steps on stairways maintained. People thought more better cared steps would prevent accidents and tiring. At this point, safety was evaluated. Potential accident points were determined. The drainage of rainwater was another mentioned annoyance. Lack of green was another annoyance. People expressed that they wanted to more green space. The material of steps was not

found suitable. They complained about steps paved with concrete. Aesthetic quality and lack of service activities were the least mentioned issues. Fewer mentioned cleanliness, and the lighting.

If we look at the sample in terms of the respondent's ages, it is very noticeable that the oldest people are concentrated on the steep steps. People who witnessed the original stairways miss the user friendliness and the aesthetic qualities of the old time stairways. Time changed the stairways washing away the appreciated aspects due to insensitivity associated with the decisions made and applied. One cannot enjoy the view or the breeze as the towering blocks stand in the way. The stone tiles are replaced by concrete. "The gaps between the tiles that helped rain water drainage are gone, now we have puddles all the time", said an elder lady form the door of her home by the stairs. Their worst problems were the dangers of the steps.

People between 20 and 55 years of age were sensitive to annoyance by neglected steps and lack of greenery. The worst problems for the respondents between 13 and 20 were dimensions of steps, lack of activity areas. Children were not upset by very much. Lack of play area was their major annoyances.

Overall, 38 percent were never worried about ascending and descending on the stairway despite to 72 percent of those on the stairway were often worried. 80 % of total mentioned about view as a positive feature of the stairway. 40 % percent of respondents were satisfied because of its strong connection character. Lack of noise was a satisfaction reason for residents. Prevention from motorised traffic provides quieter space.

The general inquiry results are as follows: Inquiries' results revealed that there is a poor satisfaction of physical and psychological aspects in study area. It should be acknowledged that a positive attitude towards stairways is rather rare. Very often, the negative associations with the stairways that were built / maintained without paying special attention to the functional and psychological needs and expectations from these spaces are existing. The examples that are

the endless and poorly designed corridors of Güzelyalı district are numerous. These stairways should be seriously considered.

5.4. Design Goals and Recommendations for the Study Areas

The purposes of the design are to increase the stairway quality; to facilitate pedestrian movement, to increase safety and comfort, to provide activity variety and choice on the stairway, and to enhance visual effects of the space. Design objectives of the study are:

- Improve the conditions for walking and other outdoor activities
- Encourage optional/recreational outdoor activities along the stairway and enhance variety to support social life / finding methods to attract social life on stairways
- Promote user health, comfort, and safety: stairways should protect people from adverse climate, danger, and other types of stress.
- More specifically, making links between the character of the stairways and the rest of the site.
- Increase the visual integrity
- Creating harmony between the existing structures and proposed structures is another important issue in design study.
- Engage and delight them: they should provide visual rhythm and continuity, express natural features, dramatise light, form, and view, create sequences, exploit the aesthetic potential of common stairway elements.
- Provide a clear definition of what is public and what is private
- Increase user's claim for stairway space
- Make community services easier

Recommendations:

- Dimensions of steps should be uniform. So, every flight of steps should be redesigned.
- To provide more comfortable movement, landings should be added considering level changes and entrance to buildings.

- Sizes of entrances should be widened.
- Service areas should be provided at the entrance points for garbage bins, telephone boxes, etc.
- Street furniture should be placed carefully to prevent chaos on the stairway. The width of the stairway should not be made narrower because of user high level of user density.
- Bollards are recommended at the entrance points.
- Low-level pedestrian lighting elements should be located. Particularly the entrances to the stairway should be well lit.
- Fire hydrants must be located at the top point of stairways. The reserve parking area for service vehicles may also support emergency access to buildings.
- Handrails with double rails should be placed along the stairway. They should be broken up some landings to provide transition between directions.
- Bright colours are suggested for handrails.
- Plant boxes are suggested to enhance visual quality. They will also use as cut off elements to reduce tiring affects of long flight of steps.
- Seating elements may be used for resting and social activities in platforms adjacent to the dull facades.

5.5. Conclusion

Stairways, in Güzelyalı area, are an important element related to pedestrian circulation. In fact they are inevitable, as they are an outcome of the area's topography-imposed conditions and necessities. In some cases they are the only mean of accessing buildings. Under the circumstances comfort and safety becomes a must rather than an enhancement.

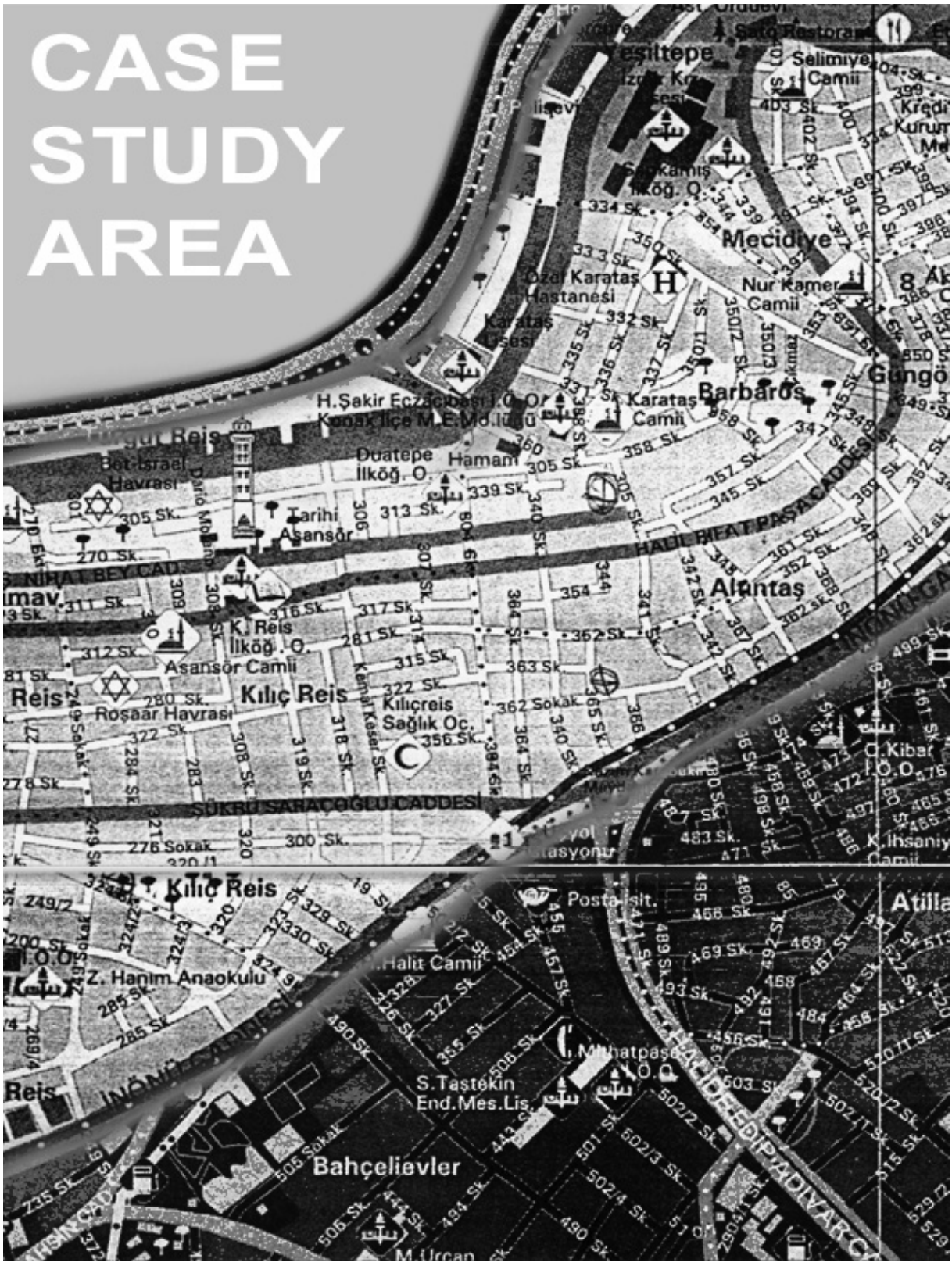


Figure 5. 109: Proposed plan

CHAPTER 6
CONCLUSION

The urban stairway has always been used to adjoin different levels and to create a gentle transition. Another purpose is to accentuate the separateness of spaces, with the stairway acting a bridge; to represent human spiritual aspirations and cosmography; to demonstrate secular power and authority, prestige and status; for aesthetic, urban, and spatial manipulation. All the time, these spatial elements convey meanings and have personalities.

Whether they are considered special or not stairways are and will be inseparable elements of the cityscape.

- They connect points at differing heights.
- Steps introduce a variance to the street image.
- They sometimes signify an idea or spiritual approach.

Every stairway plays at least one of these roles. The density of vehicle traffic and advances in technology create a tendency to neglect the potential of stairways. They are still a part of the urban space whether there are slopes or not. The point is to realise stairways are more then obstacles that are the only viable solutions on steep slopes.

Stairways, against the prejudice are implemented in flats usually at variance or impose hierarchy due to religious, corporate, governmental, economical superiority. As long as harmony with environment identity is supplied keeping up with the standards.

A stairway with necessities satisfied for comfort and safety is usable and even pleasurable for almost everyone.

Although time and technology has evolved the materials and forms everything is still a reflection or derivative of the past. But the current

applications lack so many qualities, that the old forms and materials are still preferred.

As motor vehicle traffic is not existent on stairways, they have the potential to enhance social life instead of being just a path. I believe that they have the potential to provide the city dwellers with the freedom they need.

This thesis is constructed around the idea that there are possible design and application modifications that would promote the use of stairways.
The research and case study reveals the potential of stairways such that, by utilising designer solutions and detail tweaks, these spaces can be transformed into livelier, usable places that satisfy the users' expectancies of the urban space.

As a result stairways and surroundings may become more attractive places that enhance social life and "the living in the city experience".

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APPENDIX I

INQUIRY FORM

1. What is your age?

……

Age groups:

Children under 13 years of age
Young people between 13-20 years of age ☐
Adults between 20-55 years of age ☐
Older people over 55 years of age ☐

2. What is your gender?

Male ☐
Female ☐

3. Do you have any difficulty?

Yes ☐
No ☐

What is the difficulty?

……

4. Is your dwelling placed on this stairway?

Yes ☐
No ☐

5. Do you fell there is a strong sense of street pride in your stairway?

Yes ☐
No ☐

6. Why do you use this stairway?

……
……

7. What type of outdoor activities except pedestrian circulation is placed on this stairway if they exist?

……..
……..
……..

8. How often do you use this stairway?

Using frequency:

One or twice per a day ☐
One or twice per a week ☐
One or twice per a month ☐
More rarely ☐

9. How do you define this stairway?

……
……
……

10. How do you define this stairway considering safety aspect?

Very dangerous ☐
Dangerous ☐
Safe ☐

11. How do you define this stairway considering security aspect?

Very dangerous ☐
Dangerous ☐
Safe ☐

12. Please choose your level of satisfaction concerning stairway quality.

Adequate (1 points) ☐
About average (2 points) ☐
Inadequate (3 points) ☐

13. How do you feel about the overall appearance of the stairway?

Generally very good ☐
Overall, very average ☐
Poor ☐

14. Please list what is important to you in deciding what street to live on.

……
……
……

15. Why do you prefer to live on this stairway? (for residents)

……
……
……

16. Please list positive characteristics of the stairway.

……
……
……

17. Please list negative characteristics of the stairway.

……
……
……

18. Please choose your level of satisfaction concerning public services on the stairway.

Very satisfied ☐
About average ☐
Very dissatisfied ☐

19. Please list three things you would like to change about the stairway?

1. ……
2. ……
3. ……..

APPENDIX II
GLOSSARY OF TERMS

Step: a support for the foot in ascending or descending.

Ramp: a sloping surface between two places that are at different levels.

Stepped ramp: a series of ramps connected by steps.

Flight: a continuous series of steps between one landing of a stairway and the next.

Rise: the measured height of a flight of steps.

Landing a platform at the top, bottom, or between flights of a staircase.

Stairhead: the top or top landing of a stairway.

Pace: a raised step or platform, especially one serving as a landing or resting-places at the end of a short flight of stairways. Also called footpace.

Walking line: a main walking route along the stairway. Also called line of movement.

Riser: the vertical face of a stairway step.

Tread: the horizontal upper surface of a step in a stairway, on which the foot is placed.

Riser-tread ratio: the preferred ratio between the riser and tread of a stairway step.

Critical angle: the angle of a pitch above which a stairway is considered to be uncomfortable or unsafe, usually 20 º.

Preferred angle: for a flight of a stairway, any angle of pitch between 5 º to 10º.

Nosing: the usually rounded edge of a stairway tread that extends over the riser.

Handrail: a rail providing handhold and serving as a support at the side of a stairway or platform.

A widened stairways: A widened portion of the stairway that is furnished with seating elements, or steps to buildings. Sometimes it is wide enough for planting.

Covered stairways / the arcade stairways (Abbara *Tr*.): An outdoor passage that connects two stairways or, sometimes stairways and other pedestrian streets.

Straight flight: a flight of stairways having no turns or winders.

Address	function			form				length of stairway				width of stairway	
(… street)	access	connection	access+connection	straight	broken	L-shaped	180^0 return	under 15 m	15 to 50 m	51 to 100 m	over 100 m	1,5 to 2,5 m	2,6 to 7 m
26			O	X				O					X
39	O			X					O				X
77 /1			O	X					O				X
79			O	X					O				X
80			O	X				O					X
97			O	X					O				X
99			O	X					O				X
100			O	X		X					O		X
108			O	X				O					X
111			O	X					O				X
131			O	X				O					X
132			O	X					O				X
133			O	X				O					X
138			O	X					O				X
167		O				X		O				X	
176			O	X				O					X
178			O	X				O					X
179			O	X				O					X
180			O	X					O				X
185			O	X						O			X
186			O	X						O			X
187			O	X					O				X
190			O	X				O					X
204			O			X			O				X
205			O	X						O			X
249			O	X						O			X
266			O	X					O				X
267		O			X					O		X	
268	O			X					O			X	
269			O	X							O		X
270			O	X						O			X
271			O	X						O			X
272			O			X				O			X
274			O	X						O			X
275			O	X							O		X
282			O	X					O				X
303			O	X							O		X
304			O		X		X				O		X
305			O	X				O					X
306			O	X						O			X
307			O	X						O			X
308			O	X					O				X
309			O	X					O				X
310			O	X							O		X
313			O	X					O				X
314			O	X					O				X
332			O	X					O				X
334			O	X					O		O		X
335			O	X				O					X
336			O				X	O				X	
340			O	X							O		X
341			O		X						O		X
342			O	X				O					X
344			O	X					O				X
346			O	X					O				X
347			O	X				O					X
349			O		X					O			X
353			O		X				O				X
364			O	X						O			X
367			O	X				O					X
376			O	X				O					X
387			O	X						O			X
391			O	X					O				X
402			O	X					O				X
403			O	X					O				X

dimensions of steps			surface materials				street furniture				special features
steps with small treads (~30x17cm)	steps with medium treads (~48x16cm)	steps with large treads (~8Ox15cm)	cobble stone	cut stone	brick	concrete	pedestrian lighting	handrails	bollards	plants	
O				X		X					
O				X		X					
	O			X		X					
O					X			X	O	X	
	O				X			X	O	X	
O				X		X	O	X		X	successful design
O					X			X		X	
O					X		O	X		X	successful design
	O					X		X			
O				X		X		X		X	
O					X			X	O	X	
O					X			X			
		O			X			X			
O					X						
O					X	X		x			
	O				X			X	O	X	
	O			X				X			
O					X				O		
O					X					X	
O	O					X		X	O		
O				X		X		X		X	
	O				X			X			sea view
O				X		X		X		X	
	O	O				X			O		
	X					X					
O	O					X					
O					X			X			
O				X		X		XX		XX	
O				X		X					
O	O	O		X		X		X		X	old entrances+sea view
O	O			X				X		X	drainage
	O			X		X		X			
O	O					X		X		X	covered stairway
O	O	O		X		X		X			sea view
	O			X		X		X			
O	O	O				X					
O	O		X	X							old entrances
O	O	O				X		X			old entrances
O	O	O	X			X					
O				X		X				X	
O	O			X		X				X	
O	O	O		X		X		X			sea view
	O					X		X			
	O			X		X		X			
	O			X		X		X		X	
O				X		X		X			
O	O			X		X					
	O		X	X						X	sea view
O					X						
	O					X					
	O	O				X				X	
O				X		X		X		X	
	O					X					
	O					X					
	O					X					
	O	O				X					
O	O					X					
	O					X					
	O			X		X					sea view
	O			X		X					
O											
		O		X		X				X	
		O				X				X	sea view
	O			granite				X		X	sea view
		O				X				X	