

EVALUATING PUBLIC SQUARES THROUGH INTERIOR DESIGN PRINCIPLES  
AND ELEMENTS: A CASE STUDY IN MARTYRS' SQUARE IN TRIPOLI, LIBYA

A THESIS SUBMITTED TO  
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES  
OF  
ÇANKAYA UNIVERSITY

BY  
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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR  
THE DEGREE OF MASTER OF SCIENCE  
IN  
INTERIOR ARCHITECTURE

SEPTEMBER 2019

Title of the Thesis : **Evaluating Public Squares Through Interior Design Principles And Elements: A Case Study In Martyrs' Square In Tripoli, Libya**

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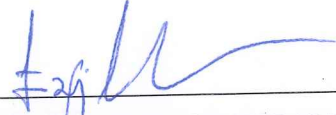
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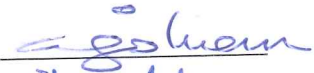
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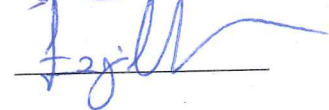


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## **ABSTRACT**

### **Evaluating Public Squares Through Interior Design Principles And Elements: A Case Study In Martyrs' Square In Tripoli, Libya**

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September 2019, 69pages

Public spaces are the core elements of shaping the social life in the cities, and design of public spaces is one of the subjects of urban design. As tools of inclusive or exclusive design methods of public space vary. For shaping the built environment, people are decision makers who will use the environment and public spaces. The design decisions are shaped around the people. This research explores the features of public squares using the design principles and elements of interior spaces. Through the literature review, eleven design principles were identified for urban spaces and public squares, while twenty-two principles were identified for interior spaces. The comparison between the two set of principles and elements showed that there are five main factors that are mutual between the two spaces; furniture, accessibility/ space planning, social diversity/ universal design, identity, and architectural elements/ artwork. The terms used for each space can differ between the sets, while describing the same principle. A general analysis for compliance is performed on public squares as public interior spaces. In addition to the mutual principles and elements, some differences were revealed due to the open space nature of public squares. To examine these findings , A case study of Martyrs' square in Tripoli, Libya is conducted in this study . The evaluation shows that further improvement is required for the square regarding the specific features within it in order to enable people to use it for their cultural and social interactions efficiently.

**Keywords:** Public square, interior spaces, urban spaces, Libya ,Martyrs' Square

## ÖZ

### **Kamusal Meydanların İç Mekan Tasarım Prensipleri ve Unsurları ile Değerlendirilmesi: Libya, Trablus'ta Şehitler Meydanında Bir Vaka Çalışması**

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Tez Danışmanı: Doç. Dr. Z.Ezgi KAHRAMAN

Eylül 2019, 69 sayfa

Kamusal alanlar, şehirlerde sosyal yaşamı şekillendirmenin temel unsurlarıdır ve kamusal alanların tasarımı, kentsel tasarımın kilit konularından biridir. Kapsayıcı veya özel tasarım araçları olarak kamusal alan yöntemleri değişmektedir. Yapılı çevreyi şekillendirmek için karar vericilerdir, çevreyi ve kamusal alanları kullanacak olan insanlardır. Tasarım kararları insanların etrafında şekillenir. Bu araştırma, iç mekanların tasarım ilkelerini kullanarak kamusal meydanların özelliklerini araştırıyor. Literatür taraması ile kentsel alanlarda ve kamusal meydanlarda on bir tasarım ilkesi, iç mekanlarda ise yirmi iki ilke belirlenmiştir. İki ilke ve unsur seti arasındaki karşılaştırma, iki alan arasında karşılıklı olan beş ana i unsur olduğunu göstermiştir; mobilya, erişilebilirlik / alan planlama, sosyal çeşitlilik / evrensel tasarım, kimlik ve mimari unsurlar / sanat eserleri. Her bir alan için kullanılan terimler, aynı prensibi tanımlarken, kümeler arasında farklılık gösterebilir. Kamusal meydanların iç mekanlar olarak kabul edilebilirliğine yönelik bir analiz yapılır. Ortak ilkelere ek olarak, alanların açık alan niteliğinden dolayı iki grup arasında farklılıklarda bulunmuştur . Libya ,Trablus'taki Şehitler meydanında bir örnek olay incelemesi, olarak secilemiştir . araştırmanın sonuçları insanların kültürel ve sosyal etkileşimlerinde verimli bir şekilde kullanabilmelerini sağlamak için. Tasarım prens'p ve elemanlarında iyikstirneler yapılması gerektiğini göstermektedir.

Anahtar Kelimeler: Kamusal meydan, iç mekanlar, kentsel mekanlar, Libya, Trablus Şehitler Meydanı

## ACKNOWLEDGMENTS

I would like to express my gratitude to my academic supervisor Assoc. Prof. Dr. Z Ezgi Kahraman who gave me this opportunity to be one of her students. She gave support and guided in several matters throughout my thesis. I would like to express my sincere gratitude and appreciation to my academic Dr.Simge Ozdal Oktay for her continuous support, her patience in the first phase of my thesis . I was fortunate enough to have the chance to work with her. I would like to express my sincere gratitude to Assoc .Prof. Dr. Çiğdem Berdi Gökhan for her relentless support and guidance . I would like to express my sincere gratitude and appreciation to my family for untethering support . There are no words to describe my sincere gratitude and appreciation to my parents for supporting me spiritually throughout my life. And finally, I would like to express my thank to my friends who supporting me .

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 About the Research and its Significance**

Public interior spaces and public squares are mainly designed for social interaction between people and surroundings in different scopes. Squares all over the world have historical and political significance that help to specify the identity of the city in which they are located. Moreover, public interior spaces are designed to contain a certain theme and connect the different elements that they include in a social context (Cafuta, 2015). The main aim of designing both public interior spaces and public squares is to establish a connection between their users and the space in order to create a social environment. Furthermore, there are different elements used in designing a public space. One of them is the lifestyle of the users and the historical background of the space. Additionally, several elements, including geography, topography, socio-cultural background, and politics, play a major role in creating the overall design of public spaces (Vedredi, 2014).

Considering the elements of urban design and interior design, there are several similarities and differences that can be found from an architectural point of view. The urban design principles are character, continuity, enclosure, public realm quality, ease of movement, legibility, adaptability, diversity, and sustainability (CABE & DETR, 2001). Nonetheless, the value of the interior space emerges from different principles depending on the architectural concept adopted in the design. Some designers argue that the value of the interior design is infested through the balance of design and the ability to create a sense

of stability for the user (Alharbi, 2016). On the other hand, other researchers see flexibility as one of the most important values that need to be implemented in public spaces (Blumenfeld, BaRoss, & Dufner, 2009).

As several design principles are utilized in order to create a certain space, a series of architectural analysis is used to examine different aspect of a certain subject with the goal to find the conformities and non-conformities in it. Therefore, understanding the elements, concepts and principles that are used in designing an architectural space allows the designer to evaluate the space as a referenced benchmark. Both public squares and public interiors are designed according to context-specific principles that distinguish them from private entities. The design principles of both types are consistent with each other. Therefore, it is possible to evaluate public square as urban interiors (Barliana, Cahyani, & Paramita, 2014).

In this research, the concepts of urban space, public square and interior public space are investigated. The theoretical discussions extract the design elements of both types. Moreover, by understanding the design principles, a set of criteria is developed for each design concepts for the comparison. Based on the findings of the research, the discussion highlights the differences and similarities in design principles of interior space and public squares and their common principles that make the evaluation of public squares as interiors of urban space. Those differences are used to compose the conclusions of the study.

## **1.2 Aim of the Study**

The main aim of this research is to understand the design principles of public squares and public interior spaces in order to compile a set of criteria for both concepts that can be used to compare them, and to evaluate public squares according to interior design principles. The study establishes an architectural analysis on some examples to highlight

the most implemented concepts and design principles for both types of spaces. Based on the main aim of the study, the following objectives are identified:

1. Understanding the concept of public space according to its unique features.
2. Studying the design principles that give the identity to public squares and interior spaces.
3. Comparing design principles and elements of public squares and public interior spaces.
4. Evaluating public squares as interior spaces within the urban context through considering design principles and elements of public squares and interior spaces.

### **1.3 Thesis Structure**

The thesis is divided into five main chapters. The first chapter provided a view about the research and its importance. Moreover, the introduction chapter identified the main aim of the study, as well as the structure followed in the thesis. The second chapter reviews the concepts of urban space and public squares through the information provided from the literature review and the examples of public squares around the world. The main aim of the second chapter is to identify the design principles and elements of public squares.

The third chapter examines the literature for the interior space design elements in order to highlight the design elements and principles of interior spaces. The second and the third chapters provide the foundation for the comparison part in the fourth chapter. Public squares and interior spaces are assessed through an architectural analysis to uncover their differences and similarities in accordance to design principles and elements. Moreover, examples from both types of spaces are evaluated. The last chapter discusses the findings of the study on evaluating public squares as interiors of an urban area. This chapter, additionally, include recommendations for further studies on urban interiors.

## **CHAPTER 2**

### **THE CONCEPT OF URBAN SPACE AND PUBLIC SQUARES**

This chapter focuses on understanding the concepts of urban space and the unique characteristics that give its identity. The concept of public versus private spaces is reviewed to distinguish the specific design criteria that provides a space privacy and publicity extent. Moreover, a literature survey presents the definition of public squares according to architects and designers, as well as a brief history of their emergence and development. In accordance with the aims of this study, the chapter compiles different design principles and characteristics of public squares that can be used for the architectural analysis and its comparison with interior spaces.

#### **2.1 Urban Space and Design**

The urban design is a tool that is used to form a certain arrangement standard to a space through its development. The urban public spaces are defined according to their proximity to the center of the urban development and divided into three main types; surrounding, semi-urban and urban. The closer the space to the borders of the urban development, the closer it is to the surrounding type. Whereas, the closer the space to the center of the urban development, it is classified as urban (Satir & Korkmaz, 2005). Furthermore, the urban space and the way it is developed determine the urban identity, which it mainly controlled by an authority in order to ensure that all developments do not alter the original identity of the city. Changes in the archeological structures and increasing commerciality of the

building use are among the most important factors that contribute to the loss of identity of the urban space (Al-Hasani, 2012).

Urban spaces are indispensable places in cities, where the main events are held, and the inhabitants of the city look for social and cultural interaction with each other. Furthermore, these spaces combine several elements into their design, such as streets, shops, avenues, structures and squares. An element can be a part of the urban space according to its importance in the overall structure of the city (Wheeler, 1971). Urban space contains different kind of space variations in its design principle, which is a significant concept to understand for adopting the design logic and configuration of different spaces to connect people in an urban environment (Madanipour, Roles and challenges of urban design, 2006).

Urban spaces formulate definitions and boundaries, organize settlements, and create different types of opportunities and uses for the individual. Regular private areas, public and open spaces are shaped by less unique and more mobile explanations and anticipations (Ozturk & Genc, 2014). There is also a wider access and independence to include alternative activities within the space. The factors formulating the urban space mainly depend on how individuals use places and how these human activities contribute to their identity (Fraser, Jay, O'Neill, & Penn, 2012).

The activities performed in the urban space are often quite different from the intended use, but occasionally, the original intended applications. An urban space can give the city a chance to make these free spaces a space that is breathable, useful, and social, as well as visually pleasant designs for the community (Chitrakar, 2016). Therefore, urban space can be defined as artifact of urbanization. Urbanization is a social process which connects the society and city in complex ways. Urban is the result of the social and institutional forces. Urban space is a dynamic aspect of urbanization. Thus, urban space reflects the relationship between society and the city. Therefore, the configuration and design of urban

space should be evaluated with respect to the society and their ways of life (Carmona, 2014).

Organization of the urban space should define physical and social dynamics of public. The streets, parks, squares and other shared places of a city contributes to the urban space and reflects the society's values, needs, activities and structure. Expressions of the society and the city create a sense of belonging and connections with people. Urban space typology can be classified with all the parts of society and the city (Hack, Birch, Sedway, & Silver, 2009). Special needs and requests are very important in design process. Also, the needs and special requirements should be well defined. Furthermore, designers as place makers should not only create an excellent harmony between the public and private places, but also consider the needs and requirements of the society living in the urban space (Zhu & Shukui, 2014).

Urban space and urban design have a long history. For example, in African tribes, we see that there are lots of celebrations and ceremonies on urban space. As it mentioned in urban design definition, urban spaces connect the city and people to each other (Amankwah-Ayeh, 1996). The urban space is the key to the health of a community. They contribute to public health by providing an environment for fresh air and exercise. Access to the public space also provides access to other people. People are social creatures and they need to interact with each other. Public spaces gain value with its user (Carr, Francis, Rivlin, & Stone, 1993).

Well-designed urban spaces support local businesses, attract business investments and accommodate daily life activities. For instance, Arkansas's Little Rock's River Market designed in 1996, including the Clinton Presidency Library, doubled its economic capacity in three years (McCollum, 2017). Cultural opportunities can be provided in public places. An architect or public outdoor space designer can provide locally significant events by creating space for the public. The designer can add cultural events, values and opportunities to space (Dener, 2006).



A well-designed urban space may also encourage volunteerism. For example, in 'Corpus Christi, Texas, 1500 adults and children helped to make pottery, light masts, pillars and floor arched flooring tiles for Staples Street Station, a bus transfer center. PPS "projects of public space", a nonprofit organization that assists people to create and maintain public spaces to empower communication, won a Federal Design Achievement Award for the project (Olmsted, 1997). A well-designed urban space may improve the environment, improve public health and increase the use of public transport. As Rebecca Solnit states that "In great cities, spaces as well as places are designed and built walking, witnessing, being in public, are as much part of the design and purpose as is being inside to eat, sleep, make shoes or love or music. The word citizen has to do with cities, and the ideal city is organized around citizenship -- around participation in public life" (Efroymson, Thanh Ha, & Thu Ha, 2009). Public space is a crucial part of being a citizen of a city and participation to public life.

At the beginning of the 1980s, seven acres of New York Bryant Park were overworked by drug dealers; office workers and tourists who did not dare to venture. With the changes proposed by the PPS, the park today attracts 10,000 people in a sunny setting and offers a popular film festival on summer evenings (Olmsted, 1997). Urban space can handle complex and heterogeneous construction; since people can perform different kinds of activities in the same environment. A public space may also be the treatment of different needs of people with different opportunities in the same place. Urban spaces can be designed or used as private, semi-private and public spaces. The definitions and principles related to the basic elements of these public spaces will be discussed in the following section of this chapter within the context of outdoor space design (Carr, Francis, Rivlin, & Stone, 1993).

## **2.2 Private Versus Public Spaces**

Private spaces have significant influence on people by satisfying their desire to relax and need for special areas that keep them away from stress. Private places are also surrounded

by the public places physiologically, people relax in these kinds of areas. People generally approach private areas with their personal feelings (Madanipour, 2003). Personal space consideration designates comfort, discomfort, when the personal space is encroached it designates anger or anxiety. Private spaces general purpose is to fix the psychology of people. Private places have also different aims of use within themselves. For instance, a bedroom is reserved for its owner, but a living room is reserved for collective use. Shortly, private places are designed for special needs and preferences of their users (Demirbas & Demirkan, 2000).

Private places are designed and classified for a particular user, and the people who authorized to use the place are specified. Public places and private places are nested with each other. According to special needs or desires, there can be a bedroom in an office. Working areas are public places but the bedroom is private and secured, relaxing area for the owner. According to the needs and special desires, the architecture can show changes. A bedroom can be as big as a castle or only a bed can go into the room. Furthermore, in office areas some hobby areas can be designed for workers relaxation. The best thing is there is a thin line between public places and private places and their excellent compatibility (Madanipour, 2003).

Changes in the relationship between public and private places are shown in the fact that people often use special places to communicate with the public using online public forums. Often organized online or via social media, groups never meet in a public place; in fact, many participants never leave private places (Carr, Francis, Rivlin, & Stone, 1993). Subsequently, there are several examples that can be reviewed, where different degrees of privacy have been incorporated. The Aalto house, shown in Figure 2.1, is located in Munkkiniemi, Helsinki. The house was completed in 1936 as Alvar Aalto's home and studio. Aalto has a lot of private needs. As Aalto states that 'Even the smallest daily chore can be humanized with the harmony of culture. The studio function leads to

nested. From the personal space view the entrance part, the living room and the kitchen are more public when compared to studio and bedroom. As it was mentioned before, some of the places are reserved for the owner and some of the areas area reserved for public. For instance, living room is reserved for public usage, where the studio is a personal and private space (Jetsonen & Jetsonen, 2011).

A public space is a place that is generally open and accessible to people without restrictions. Roads, public squares, parks and beaches are generally considered public places. Public buildings such as state libraries, hospitals and museums are publicly open. Though not considered as a public space, private buildings or properties that can be seen from sidewalks and public places can affect people's visual perception, such as outdoor advertising (Gurney, 2015). Nonetheless, a semi- private space is defined as a controlled location, which is accessible only to residents and related people. An example here would be a common staircase on a residence with a controlled front door access. These places are not really private since they were shared; but they are not really open to the public, as they are usually not accessible by strangers (Serreli, 2013).

A highly qualified public environment can have a significant impact on the large or small economic lifetimes of public centers. Architects and urban planners perceive public spaces as the living rooms of the cities. The presence of good parks, squares, gardens and other public spaces becomes a vital business and marketing tool as the town competes with each other to increase investments: companies attract well-designed, well-managed public places and their customers, employees and services. A well-designed city with excellent public spaces has the potential to increase the numbers of residents and visitors (Carr, Francis, Rivlin, & Stone, 1993).

According to the Madanipour (2003), public space is a vital part of everyday public life: the streets in which people go to school or work, the places where children play, or the places where they meet with nature and wildlife. They can enjoy with the local parks, walk dogs and sit at noon to enjoy the sport; expressly, public space is our outdoor

recreation room or our outdoor recreation center. Public spaces influence the form and function of cities and daily interactions at the community level. The penthouse, public gardens and street cafés are examples of new open public spaces emerging as important components of the public space. Public spaces influence the form and function of cities and daily interactions at the community level (Madanipour, 2003).

### **2.3 Definition and History of Public Spaces**

A public square is an empty space within an urban fabric. It is creating a floor, surrounded by buildings, and has openings to access the space. Architects believe that creating public squares are the best way to assess the interaction between people and the city (Erdogan & Ayatac, 2015). The role of the public square is defined as the space where people gather together to conduct business according to their needs and desires, which shapes it to contain the necessary elements that facilitate those desires and needs. Furthermore, public squares should allow the general public to walk and use it for recreational purposes (Palladio, 1997).

The first form of a city is observed for the first time in the 40<sup>th</sup> century BC, where public squares were located at the crossroads of the main routes. The earliest example of a city square is found in Greece near the Acropolis, known as Agora, where social, political and commercial activities were conducted. Variety of activities used to take place in the Greek Agoras including musical performances, athletic competitions, and political gatherings. Figure 2.2 shows the location of the Agora near the acropolis in Athens. The general shapes of squares were either squares or rectangular. The same type of spaces is found in the Roman empire and known as forums. Nonetheless, the Roman forums included further activities including judiciary and religious gatherings (Memluk, 2013).

Towards the last days of the Roman Empire, public forums lost their significance as people started to carry out a lot of the activities in the cathedrals and churches. Thus,

public squares started to be formed around the religious buildings during the renaissance period. They were known as piazzas, an example from Italy is shown in Figure 2.3. Water fountains that create an aesthetically pleasing environment was one of the various elements of piazzas. With the industrial revolution in the 19<sup>th</sup> century, the cities' population densities started to increase causing dramatic changes in the economic and social aspects of the cities. Subsequently, further functions were applied to public squares to fulfill the needs of the newcomers that they provide the desired services. In the Islamic world, public squares were formed around mosques as they were close to commercial activities, which can be observed in the Sultanahmet district in Istanbul (Figure 2.4) (Memluk, 2013).



Figure 2.2: Greek Agora in Athens (Memluk, 2013)

A) Acropolis B) Teatro C) Agora D) Gimnasio y Estadio

## 2.4 Design Principles and Characteristics of Public Squares

In architectural and design studies, there are several criteria that are identified as characteristics that contribute into the success of the public squares from a design point of view. Abidin, et al. (2010) identified eight main principles that make public squares more attractive and popular. Abidin, et al.(2010) discussed the characteristics of an attractive public square as follows:

- Location and context : The location of the public square within the city and the way it is located contribute to the attractiveness of the space, allowing the users to enjoy sights as well as make memories that would increase the popularity of the square.
- Facilities and amenities: Parking is one of those facilities. It is as private transportation has increased in the recent years; this aspect is one of the influential elements in the design-making to use the public square. The other one is Benches: people visit public squares to spend their time. Therefore, it is necessary to allow for benches in order to give them the opportunity to rest and relax. Logistics: in order to ensure that the public square delivers the desired value to its visitors, logistical services including maintenance is required.
- Character of space: This criterion targets the special monumental buildings, landmarks and sights that make the public square unique and different from its counterparts. Moreover, the way the public square is viewed politically and religiously are important factors in increasing the popularity of the square.
- Activities: The more activities that can be performed in the public square, the more popular and attractive it would be due to the fact that it would be satisfying more needs and desires. Furthermore, the quality of the activities plays a major role in distinguishing the public square from its counterparts

- Landscape: People tend to prefer natural and green places. Thus, the landscape design of the public square increases its attractiveness. For instance, adding water features to the public square would create a relaxing and soothing atmosphere to the place. Moreover, the variety of planting species and colors makes the public square more appealing.
- Connection between people and surroundings: This addresses the facilitation of the public square for social interaction between the users as individuals and community. Also, providing a sufficient pedestrian transportation network is essential in order to allow people to move around the public square easily.
- Socio-cultural context: The users of the public square vary in their purposes. Some users live in the square, while others might be working or visiting. The quality of the social and cultural aspects plays a role in the way people interact with the square and perceive it.
- Accessibility: The public square should be accessible for any group of the society including gender, age, ethnic, social level, or economic groups.

The authors argue that the main objective of a public space, especially a square, is to address the needs of the people. Moreover, as people go to public squares for specific reasons, it is the responsibility of the designer or the architect to understand those needs and ensure that they are fulfilled in the most efficient manner. The design principles used in forming public squares changed from one historical era to another. In the Greek and Roman periods, public squares had square or rectangular shapes. However, the main focus during the renaissance period was on the symmetry of the square regardless of its shape (Memluk, 2013).

Carr, et al. (1993) have identified three main characteristics of the public squares. Public squares shall be responsive to the needs and desires of the community, where people can relax, discover, and engage in active and passive activities. Moreover, a public square shall be accessible to all people groups without discrimination, as well as have the ability to empower the connection between the place and the people's lives. Memluk (2013) have identified six main design principles and characteristics for public squares as follow:

- Form: This principle addresses the aesthetic morphology of the public square. The author confirmed that in terms of form the public square must be enclosed and a protected space, while its center shall be free of any visual obstacles and any monumental elements shall be located on the sides or the perimeter. The author stressed that a public square shall contain several elements of surprise, with attractive facades and unique pavements.
- Location and size: The location of the public square gives it its context and meaning for the people. For instance, public squares that were built during the renaissance period were located next to cathedrals and churches, which gave them a religious view, while modern public squares are mainly located next to shopping centers giving them a more commercial atmosphere. The size of the public squares defines the volume of activities that can take place in it. The optimal public square size differed according to the designers' viewpoints; however, public squares can vary between 20 to 100 meters for each side. Other designers defined the size as a ratio between the surrounding building heights and the public square lengths. Ratios between 1:2 to 1.5:2 are identified as the most optimal for space definition.
- Activities: The main aim for activities in public squares is to empower restoration for individuals and cohesion for society. The type of activities held in public squares are correlated to the type of buildings that lay on the square. Squares with governmental buildings feature protests, while squares with churches and cathedrals feature memorials and religious events. Nonetheless, the author has the



view that activities shall not dominate the identity of the square rather than be part of it.

- **Landscaping:** As public squares are mainly dominated by hardscape elements; pavement material is one of the most important elements to be assessed. The main two criteria that shall be considered during the selection of pavement material are durability and aesthetic appearance. If various materials are selected for the hardscape of the public square, the designer shall ensure the coherence between them, while different colors and textures can be used to highlight the landmarks and focal points of the square. Climate is also one of the important criteria to be considered in the material selection process taking into account their reflection and heat absorption. Plantation can be added to the public square in order to provide an aesthetic beauty to it, in addition to shade and resting areas.
- **Furniture:** There are two main points in providing furniture to public squares; furniture shall be sufficient and of all the needed types, and furniture material shall be durable and suitable for climate. Moreover, furniture shall be user-friendly and taking into consideration the safety aspects. In order to create an aesthetically acceptable furniture design for the public square, benches and trash bins shall be placed on equal intervals. Direction signs shall also be provided in order to facilitate the circulation around the square.
- **Focal point elements:** These elements provide the unique identity of the public square. Items such as sculptures, fountains, monuments distinguish the public square from other parts of the city. Nonetheless, the author recommends that the center of the square shall be avoided when adding focal points to it.

A research that based on a case study about Italian public squares divided the qualities that are used to judge the design of public squares into three main aspects; aesthetic qualities, functional qualities and spiritual qualities. The indicators under each category provide a measurement of the urban life quality. Aesthetic qualities include the iconic building in the surrounding area, natural environment quality, geometric properties, artistic features, view wideness, interaction between environment and people, and lighting. Functional qualities include the specialty of the location within the city, accessibility, activeness of interaction between the society and the environment, fulfillment to needs of different people, the variety of the activities provided, attractiveness to special social groups, facilities, and foot accessibility. Spiritual qualities include the sense of community and place, memories, harmony with social, cultural and ideological values, sustainability through different historical eras, satisfying different sensations, sense of identity, usage by religious, national and cultural groups, and uniqueness (Mehan, 2016).

Furthermore, designers and architects have also several recommendations for features and design principles that make public spaces more attractive for the users. Project for public spaces (2008) had several recommendations towards enhancing the quality of public squares and spaces, which addressed recommendation on five main aspects:

- Spaces: provide pedestrian sidewalks and focusing the development around the cultural and art destinations. Moreover, provide dining and shopping facilities, and increase the friendliness of the public square for the users.
- Amenities: provide seating areas, green environments, art features and signages transforms the public square into a more acceptable space aesthetically and makes it more user-friendly.
- Activities: include performances, celebrations and gatherings that represents the social, cultural and national values of the public square users.

- Maintenance and management: it is important to ensure that the public square sustains its attractive status and any issues are resolved towards enhancing the user's experience.
- Community involvement: creating a sense of belonging for the community that uses the square makes it of a sentimental value rather than a materialistic value (Project for Public Spaces, 2008).

Moreover, Carmona et al. (2003) believes that any urban design projects, including design of public spaces, shall adopt certain principles in order to ensure that a sustainable strategy is followed. Among these principles are stewardship, resource efficiency, diversity and choice, consideration of human needs, resilience, minimization of environmental impacts and uniqueness. The authors used several sources from the literature in order to support their view point that if the designers adopt sustainable urban design practices, there will be positive impacts on the urban designs including public squares. Furthermore, the authors identified six main dimensions for urban design, which are morphology, perception, society, aesthetics, function and rhythm (Carmona, Heath, Oc, & Tiesdell, 2003).

To sum up, this chapter discussed various approaches on principles, characteristics and elements considered in designing public squares. Table 2.1 attempts to synthesize those approaches.

Table 2.1: Design principles and characteristics of public squares as summed up by the researcher

Design principles and characteristics	Description and elements
Location	<ul style="list-style-type: none"> <li>• Location add context to the public square.</li> <li>• Location add attractiveness and popularity.</li> <li>• It influences the frequency of use of squares.</li> </ul>
Form	<ul style="list-style-type: none"> <li>• Form addresses the aesthetic morphology of the public square.</li> <li>• Form contains visual and architectural elements.</li> </ul>
Size	<ul style="list-style-type: none"> <li>• Size depends on the function, activities and design approach employed in the public square.</li> </ul>
Architectural elements	<ul style="list-style-type: none"> <li>• These elements include sculptures, fountains and monuments, as well as some constructions.</li> <li>• These elements help to distinguish public square from other parts of the city.</li> <li>• These elements contribute to the identity formulation of the public square.</li> </ul>
Activities	<ul style="list-style-type: none"> <li>• Activities are correlated with the surroundings of the public square and its purpose of designing.</li> <li>• Public squares are used for memorials, protests, ceremonies and other social, political or economic activities.</li> <li>• Public squares allow different purpose of usage.</li> </ul>
Facilities and amenities	<ul style="list-style-type: none"> <li>• Public squares include various services, such as parking, logistics, maintenance, commerce, recreation and transportation.</li> <li>• Public squares provide opportunities for resting and relaxation.</li> </ul>
Landscape	<ul style="list-style-type: none"> <li>• Landscape should provide aesthetic value, functionality and durability.</li> <li>• Landscape adds color, material and texture to the public square.</li> </ul>

Design principles and characteristics	Description and elements
	<ul style="list-style-type: none"> <li>• Landscape includes plantation and water usage.</li> <li>• Landscape adds relaxation and attractiveness to the atmosphere of the public square.</li> </ul>
Furniture	<ul style="list-style-type: none"> <li>• Furniture need to be durable and suitable for the climate.</li> <li>• Furniture should be ergonomic and user-friendly.</li> <li>• Furniture includes seating, signage, benches and trash bins.</li> </ul>
Accessibility	<ul style="list-style-type: none"> <li>• Public square should be reachable by using different modes of transportation.</li> <li>• Public square should be part of the pedestrian network.</li> </ul>
Social diversity/ social accessibility/ Social interaction	<ul style="list-style-type: none"> <li>• Public square should be accessible to all the groups of the society without any exception.</li> <li>• Public square should allow social connection and interaction.</li> </ul>
Identity	<ul style="list-style-type: none"> <li>• Identity of the public square is constituted by the overall association (unity) of the other design principles and elements.</li> <li>• Identity is supported by the surroundings of the public square.</li> <li>• Identity provides uniqueness to the space.</li> </ul>

## CHAPTER 3

### PRINCIPLES AND ELEMENTS FOR DESIGNING INTERIOR SPACES

Further to the review of urban design and public squares concepts and design principles in the previous chapter, it is necessary to understand the interior public space counterparts in order to establish the comparison between them. The design criteria and principles for both subjects are compiled in the next chapter, where the similarities and differences are highlighted for the case study assessment.

#### **3.1 The Transitions between Exterior to Interior Public Spaces**

The view of public space has changed over the past years, as they have shifted from being open areas to being located inside buildings. However, the functionalities of the public interior spaces remained similar, whether it was for commercial, cultural or recreation. Structures like shopping malls, and metro and train stations started driving more pedestrian traffic than conventional public squares that possessed the commercial and cultural values before (Poot, Van Acker, & De Vos, 2015). Figure 3.1 shows an interior public space on Madison Avenue, where an exterior public space design concept is developed into an interior space with skylights.

There are many architectural concepts that have changed with the transformation from exterior public space to interior public spaces. One of the most important concepts is accessibility, where public squares are owned by the people, interior public space might be mostly owned by companies and developers, which produces the concept of place ownership. The owner of the interior public place can decide the accessibility level to the space. From the user point-of-view, entering an interior public space requires a decision

### **3.2 Design Principles and elements of Interior Public Spaces**

The built environment of different contexts, interior or exterior, plays a major role in adding meaning to people's lives, impacting their emotions and psychological status, and giving the user the sense of belonging to the space, the environment and the city. The production of the space is based on primary components that addresses the relation between the environment and the human. Therefore, there are three levels in understanding the interior public space, as explained by Lefebvre in 1991 (Perolini, 2011):

- **Representational space:** it is the environment that depends on symbols produced by the cultural and ideological beliefs and theories. The level extends beyond the physical elements of the space to the psychological and emotional meanings contained within its elements, which can change by time according to the user's beliefs, thoughts and memories. Examples of such spaces are the worship spaces (mosques and churches), where elements of the space can be interpreted in a symbolic manner.
- **Representations of space:** this level addresses the way designers, planners and architects represent the space through models, plans and maps. Therefore, these spaces are conceptual and can change over time with the change of ideology, while the lively element is absent. The spaces are communicated through the aforementioned tools as an abstract and their construction illustrate their interpretation by the builder.
- **Perceived space:** this level is the when the space transforms from being abstract to a social space, where the society decides its values and significance. An existing space can be perceived by an artist through a painting, as he or she decides the colors to be used according to his or her perception.

Ercan (2007) defined several principles that are determined through the interior public spaces in the current times. On the contrary to the exterior public spaces, such as public squares that are mainly owned by the public and managed by a municipal entity, the

interior public space is commercialized or commodified. Therefore, there are unique features that are found in such spaces, Ercan (2007) discussed Design principles and characteristics of interior public spaces as follow :

- Capture of users: Due to its commercial nature, the interior public spaces are designed to capture users within it in order to increase consumption and commercial returns.
- Attractiveness and beautification: The symbolic and aesthetic features that are added to the space are meant to create a unique space that is distinguished by the users from other similar spaces.
- Inclusivity: Interior public spaces are meant to provide accessibility to the widest range of users. Therefore, features that allows the disabled, aged and cultural groups to use the space have increase to fulfill this principle.
- Variety and diversity : The use of several architectural styles in a single space is common in order to satisfy different tastes according to perception and culture. It is also common to use replicas of famous architectural artefacts.
- Use of culture and history: This element is used to add identity to the space according to the social and economic results that are desired by the developers. The incorporation of cultural and historical elements within the space adds the taste and gives a direction to the individual perception of each user.
- Control of environment: The interior public spaces are more controlled than their exterior counterparts. Undesired elements are removed from the space, such as smoke, traffic, noise and weather conditions. Events held within the environment is more controlled than public squares, as well as more manageable security measures that can be implemented within it.

In interior space, there are several elements that can impact its space perception to increase the spaciousness characteristic that is found in exterior public spaces and public squares. The color used within the environment can change such a perception, as light colors are



found to increase the spaciousness effect, while dark colors decrease it. The shape of the interior environment and its geometry is another factor that plays a role in the spaciousness characteristic. Less edges within the spaces through using curves and circular shapes increase spaciousness, while edges add borders and limits that decrease it. Moreover, the height of the ceiling, which adds more volume contributes into perceiving the space to be more spacious. Such a feature can be added through double heights found in mall atriums and courtyards (Al-Zamil, 2017). There are other characteristics that are found in the interior environment resulting into several design principles, Mahmoud (2017) listed a number of design principles and characteristics of interior environment as:

- Identity: The design reflects the identity of the users according to their social, religious and cultural values. Openings within the spaces reflects openness and symbols determine the identity of the users.
- Privacy: The privacy factor is more visible in interior environments. Even in public interior environments, there are elements of privacy that are not found in the exterior counterpart. Connectivity with adjacent environments is less, while access is limited through certain gates or doors. Users within the interior environments have more features that allows them to have more privacy, such as acoustic isolation.
- Functionality and flexibility: The environment can be adjusted to fit users with different needs and preferences. Large public interiors are often broken to contain smaller areas for gatherings, socializing and activities.
- Safety and health: As interior environments can be controlled for access and impact of the exterior environment, there are more options of safety and health features that can be added.
- Accessibility and circulation: The access to interior environments depends on the privacy factor and the usage intention of it.

- Aesthetics: Interior spaces are designed according to the tastes and the preferences of the users. The artwork and designs within the public interior spaces are meant to leave a certain impression on the user as part of the whole design intent.

Mahmoud (2017) analyzed the main principles that affect the interaction between the interior environment and its users on the behavioral and psychological levels. In addition to the main principles that were presented by the author, the study provided interior considerations for the outdoor environment that should be taken into consideration during the design, which are:

- Harmony and homogeneity between the outdoor space and the interiors surrounding it.
- Adequate and suitable fencing to define the borders of the space, while allowing connection with the adjacent interiors.
- Availability of enough pathways within the outdoor space to connect it with the other structures within it and around it.
- Balance between soft and hard surfaces.
- Consideration for infrastructure and utilities to allow for the use of technology.
- Availability of lighting in all parts to maximize its potential use during the night and to increase its security and safety.
- Visibility, seating and furniture should be suitable for the function of the space and to empower connectivity between the interior and the exterior spaces in the area.

Other interior design principles are considered essential in the design of the interior environments. The comfort of the users is one of those elements that are considered necessary in order to enable occupants to utilize the space according to the required functionality. Comfort is achieved on the thermal, visual, acoustical and air quality levels

(Demirkan & Afacan, 2018). Current technology is available in order to enable designers to achieve the required level of comfort within an enclosed space, which is a more challenging task for public open spaces. Anuar, et al. (2019) identified eighteen design elements for the interior environment, especially for public spaces. Based on these arguments, there are physical elements, such as furniture, ceiling design, material and finishes, color, texture, ergonomics, signage, theme and artwork, while other elements are more concerned with the functionality and comfort of the space, including space planning, temperature and ventilation, universal design, sustainability, coherence with nature and safety and security. According to Anuar, Selamat, Jaini, & Hashim, (2019) , Interior environment elements and principles was summarized as :

1. **Space Planning:** The planning of the space includes its layout through identifying its access, accommodation of the intended function and traffic flow in order to create a dynamic comfort for the users.
2. **Furniture:** Furniture should be provided in appropriate scales and comfort, as well as distributed on the different zone around the space. Furniture can include seating, trash bins and storage units for operations and individuals.
3. **Ceiling Design:** Ceiling height is important in indoor spaces as it affects the perception of spaciousness.
4. **Material and finishes** There are considerations for the use of material and finishes according to the heat and sunlight exposure. Other considerations include durability, slip resistance for ramps, protections and ease of maintenance.
5. **Lighting:** Natural lighting is the most type that is encouraged in spaces due to its positive effect. Adequate and sufficient lighting is required for night times and shading should be provided to prevent excessive natural lighting exposure.
6. **Color:** Color has its impact on the occupant's perception of the space and has close relationship with the lighting provided. Studies show that the mood and emotions of the users are altered through lighting in the environment.

7. Temperature: The control of the temperature allows the space to be active or available for use in extreme weather conditions. Therefore, cooling and heating is important to be provided based on the weather condition.
8. Ventilation: In interior environments, ventilation refreshes the air and enhances indoor air quality, which lessen sickness and discomfort of the occupants.
9. Theme : The theme is defined through the overall design of the space, which affects the selection of activities, media and programs offered within the space.
10. Acoustic: Noise has negative impact on the space users as it reduces their comfort and ability to interact efficiently. Thus, implementing noise control and acoustic isolation measures reduce the undesired effects of noise on the users.
11. Texture: The texture of the surfaces used simulate interest through visual variety and shadows. Moreover, change in texture can be a way to separate areas visually and as a guide for users for directions.
12. Artwork: Artwork provided within the space can have a relaxation effect on the space users. It is a way to satisfy tastes and simulate emotions.
13. Ergonomics: Ergonomics is concerned with consideration of the most efficient performance and wellbeing of space occupants when designing each element within the space. The design should take into consideration the physical and mental abilities of the users.
14. Universal Design: The concept of universal design is concerned with designing the space to allow all population to use it, regardless of disability, communication issues and age. Therefore, the design should be easy to use, flexible, safe, spacious and equipped for the necessary tools for communication.
15. Sustainability : The concept is focused on providing a design that can accommodate the needs of the occupants and their changes by time. The use of green material and ensuring an efficient energy consumption are important considerations of this element.

16. Coherence with nature: The connection between the occupant and nature has been suggested to increase comfort and sense of freshness. These factors are intended to increase the positive interaction within the space.
17. Signage: Directional and informational signage is provided to increase the efficiency of navigation within and around the space. It also allows users to identify important facilities within the space, such as toilets and first aid kits.
18. Safety and security: These features empower the confidence of the users to use the space without worrying about their safety or life from potential hazards. A safety analysis and plan can enable designers to identify these hazards and implement the necessary solution for them, as an efficient tool. (Pile, 2003)

Pile (2003) identified the interior design through the six elements: line, texture, shape or form, space, and color.; which are:

### **1. Form or Shape :**

These two terms refer to figures of two or three lengths or extensions as follows:

- 2D shapes appear on surfaces that are entirely flat with lines that cross paths. As planes also have a 2D nature - that is, length and width – any shape located on them is flat with no declination or depth; for example, a triangle, square, circle, etc. Additionally, such planes may be of no particular form themselves and, hence, have no specific geometric characteristics.
- 3D Shapes: With declination and bulk – that is, depth and volume - a 2D shape is simply transformed to a 3D one. Certain architectures including columns or stairs, as well as constructions can be regarded as 3D erections. As far as interior design goes, empty 3D shapes, spaces like rooms or accommodations inside buildings constitute the most basic components of this kind.

## **2. Texture, Pattern and Ornament:**

- Texture appears in any substance with a variety of attributes, including soft polished glass and rough and uneven surface of metal or sandpaper. All material possesses this quality at different measures: bricks and tiles, for instance, may also be made soft, shiny, or in other qualities and. As for paints, they can be either glossy, flat, or matte. Other more naturally-based material like wood and stone allow for their texture to be changed using different processes for finishing.
- Pattern: Different from texture – often much smaller and embedded within the material – patterns are much bigger and can be created on surfaces while the material is prepared. To illustrate, a wall made from bricks or tiles can receive a pattern formed from the joints of those bricks and tiles.
- Ornament: This concept includes additional material that are not quite vital for application, but still provide an aesthetic touch of craftsmanship, variety, and uniformity. In fact, they had a major part in many of the art works belonging to past history. For example, decorations on walls and ceilings, eggs and darts, Greek keys, and many other works in the classical era, leaves and gargoyles of medieval times, and other similar forms are an indication of the mindset and professionalism of the stated periods. Today's so-called run-of-the-mill manufacturing facilities, however, have made it much simpler to come up with such works, which are devoid of meaning and require no skill to be created. In essence, ornaments today have been made redundant to a large scale.

## **3. Value :**

Value is related with the degree of light or dark within any object, varying as shades or tones on a scale ranging between black and white. Value is used in describing color variations as well as any element within the interior design.

“High” or “low” address the degree of lightness and darkness, respectively, the term “contrast” is often employed to highlight certain elements within a space as opposed to the rest. Architects need to be aware of such value relationships among different elements and colors so as to create the ideal atmosphere or ambiance. In this respect, color becomes key to any design work, which is mostly initiated based on primary sketching and drawing in black and white, with the interior character eventually taking shape once color is applied to materialize the design.

#### **4. Transparency:**

A degree of darkness, straightforwardness, and translucency appears in all objects and material produced for design so as to generate a specific character for the space under work. Among these features, darkness is differentiable most easily in any material and, for this reason, is widely paid attention to as regards surfaces and objects to be used in the interior.

When attempting to arrange lines, surfaces, and empty spaces, there are other fundamental principles to be considered among which, one may refer to size, scale, and proportion – Pile (2007) described in detail as follows:

1. **Size:** Objects are regarded in terms of their mass as opposed to that of humans and other objects surrounding them. For instance, a sizeable living room can still be smaller compared to a massive church interior, but it is still bigger as opposed to a nearby entrance hall. The point is that definitive and absolute size is often not as significant as relative size.
2. **Scale:** Design applies the term “scale” to refer to minute issues concerning size – that is to say, the proportion of an object or space in contrast to the rest of the space, individuals, and objects. Proper scaling is accomplished upon the right choice of elements with proper dimensions related to the subject space, to humans

and, most importantly, to real size. All too often, many small pieces can remain unnoticed in larger areas and, on the contrary, larger ones can appear extra-large if positioned in too small a space. Large areas that still look small are known to be “out of scale”.

3. Proportion : It deals with the dimension of parts within a design compared with others as well as the entire space. Proper proportions are regarded as vital for any aesthetic accomplishment as anyone can easily differentiate whether a particular design is poorly or properly proportioned. If good, then the proportions are visually "right"; otherwise, a space may appear either over-extended or too narrow. Other elements such as a door, window, or a piece of furniture is often hard to be judged in or out of proportion despite attempts to create a reliable mechanism for such determination.
4. Unity and variety : they are two other design concepts; yet, we cannot exactly measure these two factors in actual settings. Unity – otherwise known as harmony – lets us experience the space in its entirety and not in conjunction with other elements. In other words, all segments within the design fit properly and form a unit, where one needs no further addition, omission, or modification within the entirety of the space.
5. Balance relates to obtaining equity between the forces at play in design, and we know this concept very well as gravity is among those forces upon all individuals and needs to be offset by remaining erect or applying a support tool for this purpose. In visual terms, any item that appears out of balance looks unnatural and, hence, troubling; whereas balanced configurations appear natural, in peace, and relaxing.
6. Rhythm is the normal pattern of all visual components within a setting in unity, and it can be obtained by means of repeating regardless of how easy or



complicated the pattern is. Accordingly, number 1 can represent a window opening, a column, or a subdivision in a paneled wall, with subsequent numbers to follow. We appreciate rhythm and it has played a crucial role in ancient as well as present-day design works. Old-time architectural orders, including Doric, Ionic, and Corinthian, are good examples of such rhythmic patterns; whereas today we apply modular furniture and structures to convey the same meaning. Applying rhythm by selecting big or small units in close proximity or farther apart has to be done in consideration of the overall setting. Because repetition may also cause monotony, one has to compensate for this shortcoming by applying variety at the same time.

7. **Emphasis.** By attaching more importance to certain configurations, emphasis ensures that certain items appear more outstanding whereas other insignificant ones remain out of the spotlight. Emphasis may be done through making changes in dimensions, place, value, shading, and the type of material in use. For example, a very large entryway only partially arranged can immediately attract attention.

The planner must choose the degrees of the significance of the considerable number of components that make up an inside and afterward locate a visual articulation for every one of these levels, from the most significant through the less critical to the least significant. An attractive chimney shelf focused in one mass of a room is a characteristic point of convergence that is accentuated by setting a fine painting over the man-rel. Setting the seating furniture a couch and seats, maybe so that is identified with the chimney while picking an appropriate spread texture talk doesn't contend with the canvas will give the furniture bunch ng optional degree of significance. Rug, roof shading, and lighting can be blessed to receive seem unbiased, practically unnoticeable, On the other hand, a beautiful and emphatically designed floor covering, a strikingly planned seating gathering, or a marvelous light installation could be a vehement center, wherein case different components would be purposely subjected.

To sum up, this chapter discussed various approaches on principles, characteristics and elements considered in designing the interior space and the public interior space. Table 3.1 attempts to synthesize this approach. The principles compiled in the table consist of several design elements that are taken into consideration in designing the interior environment. On other hand , Table 3.2 attempts to synthesize the elements of designing the interior space.

Table 3.1: Design principles of interior public spaces synthesized by the researcher

Design principles and characteristics	Description
Attractive of users	<ul style="list-style-type: none"> <li>• Public interior spaces are mainly commercial areas, where the developers are interested in capturing the users and retaining them for the longest period.</li> <li>• Spaces have more attractive and beautified features to catch the attention and interests of the users.</li> </ul>
Inclusivity, variety and diversity (Universal Design)	<ul style="list-style-type: none"> <li>• Public interior spaces provide usage facilities for the widest range of the users.</li> <li>• Variety of tastes and preferences are satisfied for social and cultural diversity.</li> <li>• Setting the objective to include the whole population to participate into the built environment with the focus on the disabled, elderly and users with communication issues.</li> <li>• Several concepts and guidelines are identified to increase the usability, flexibility and perceptibility of the space to allow all users to use it with minimal effort and seamlessness.</li> </ul>
Aesthetics	<ul style="list-style-type: none"> <li>• Aesthetics are designed to fulfil the preferences of the different perceptions and tastes.</li> <li>• Cultural and historical elements are added to give a specific identity for the space.</li> </ul>

Design principles and characteristics	Description
Control and accessibility (Space planning)	<ul style="list-style-type: none"> <li>• Security and access are controlled according to the functionality of the space.</li> <li>• Health and safety features are more controlled within an interior public space.</li> <li>• Undesired factors, such as noise and weather conditions are controlled.</li> <li>• Functionalities within the interior space are controlled according to the preferences of the users and managed by the developers.</li> <li>• Layout planning for accessibility and traffic flow to the space and within the space.</li> <li>• Dynamic comfort for the users to avoid the negative impact of a crowded spaces.</li> </ul>
Identity	<ul style="list-style-type: none"> <li>• The design elements reflect the identity of the users according to their social, religious and cultural values.</li> <li>• Openings within the spaces reflects openness and symbols determine the identity of the users.</li> </ul>
Privacy	<ul style="list-style-type: none"> <li>• Connectivity with adjacent environments is less, while access is limited through certain gates or doors.</li> <li>• Users within the interior environments have more features that allows them to have more privacy, such as acoustic isolation.</li> </ul>
Ergonomics	<ul style="list-style-type: none"> <li>• Each element in the space should consider the wellbeing of the occupants in order to simulate the most efficient performance and interaction.</li> <li>• The mental and the physical abilities of the users are the two elements that are used to design the different elements within the space.</li> </ul>
Sustainability	<ul style="list-style-type: none"> <li>• The accommodation of the needs of the space users and the changes in these needs with time within the same environment.</li> <li>• The design is focused on using the resources efficiently, including material and energy consumption.</li> </ul>

Design principles and characteristics	Description
Coherence with nature	<ul style="list-style-type: none"> <li>• The built environment should empower the connection between the occupants and the natural environment around them.</li> <li>• Natural elements increase the sense of identity and belonging to the space and simulate more positive social interactions.</li> </ul>
Size	<ul style="list-style-type: none"> <li>• Size depends on proportion as well as scale, whose ratio determines the way all elements forming an object are linked to it in its entirety.</li> </ul>
Scale	<ul style="list-style-type: none"> <li>• Scale is based upon the size and in contrast to the dimensions of the space surrounding an object.</li> </ul>
Proportion	<ul style="list-style-type: none"> <li>• Proportion is widely applied by interior and exterior designers as the primary element affecting our impression of shapes because we can utilize the surrounding space better by employing the right proportions.</li> </ul>
Unity and variety	<ul style="list-style-type: none"> <li>• An area that has been properly arranged and designed is one which accommodates many other elements and designs within itself. Every part within such a space can give a feeling of order by means of uniformity in dimensions, forms, the colors applied and the patterns that exist – all coming together to account for why we decorate the surroundings spaces in the first place.</li> </ul>
Balance	<ul style="list-style-type: none"> <li>• Balance is about the way and the whereabouts of positioning certain objects and elements within a space. To ensure proper balancing, it is better not to position all elements in one place and, instead, place them all over.</li> </ul>
Rhythm	<ul style="list-style-type: none"> <li>• This is the order of repeated elements within given sequences of one arrangement. Rhythm offers structure and takes charge of the eyes as they examine the surrounding area; it also causes the eyes to flow across the space and see each element in more</li> </ul>

Design principles and characteristics	Description
	<p>harmonious terms. To achieve rhythm, designers simply repeat lines, shape, color, texture, or any other major element.</p>
<p>Emphasis</p>	<ul style="list-style-type: none"> <li>• Emphasis is defined as the center space and, hence, to be clearly visible once we enter the area, with examples including a fireplace, piece of art or a window. At any rate, there must be adequate emphasis in order to for all other elements to lead to the space intended to attract attention.</li> </ul>

Table 3.2: Design elements of interior public spaces synthesized by the researcher

Elements of interior public space	Description
Line	<ul style="list-style-type: none"> <li>• A point represents a location within any space from a spatial viewpoint and has no width or length, making it difficult to precisely interpret. A number of points randomly placed on a plain may make little sense.</li> </ul>
Form and shape	<ul style="list-style-type: none"> <li>• The contrast between shape and background leads to strength form and can be considered a unique form in space, contrast case gives shape legibility, importance and identity within the space.</li> </ul>
Opacity	<ul style="list-style-type: none"> <li>• The qualities of opacity, transparency, and translucency are characteristics of materials and the objects made from them and have a major bearing on interior design planning. Opacity, or imperviousness to light, is the most common quality of most materials and therefore of the surfaces and objects made from them</li> </ul>
Furniture	<ul style="list-style-type: none"> <li>• The most important features of furniture are their scales, variety and distribution within the space.</li> <li>• Furniture should accommodate the needs of the users for resting, waste management and visual pleasantness.</li> </ul>
Ceiling Design	<ul style="list-style-type: none"> <li>• The perception of spaciousness affects the emotional comfort of the users.</li> <li>• Increased ceiling height allows for more activities to be accommodated within the space.</li> </ul>
Material and finishes	<ul style="list-style-type: none"> <li>• Material should be durable and allows for maintenance by the facility manager.</li> <li>• Consideration for safety are essential in material and finish selection.</li> </ul>

Lighting	<ul style="list-style-type: none"> <li>• Utilization of natural lighting has positive effects on the emotions of the users, while shading is necessary to prevent its negative effects.</li> <li>• Enough lighting should be distributed around the space to maintain its functionality at night times and for security purposes.</li> </ul>
Value and Color	<ul style="list-style-type: none"> <li>• The perception of the users is affected by the colors used within the space.</li> <li>• Relationship between color and lighting should be considered.</li> <li>• Color has proven impacts on the mood and motions of the users.</li> <li>• The light value is one of the visual elements of attraction and high impact because of its distinctiveness and the different forces and works to balance these forces in a certain way that achieves aesthetic dimension design</li> <li>• In the interior design, usage of lightness of darkness perfectly areas and the creation of areas where the color values vary. The color value is particularly relevant to color, the amount of light that any surface can reflect and attribute to the light and dark degrees.</li> </ul>
Temperature	<ul style="list-style-type: none"> <li>• Temperature of the environment is essential to achieve comfort in it.</li> <li>• Extreme weather conditions can be altered through providing appropriate cooling or heating measures.</li> </ul>
Ventilation	<ul style="list-style-type: none"> <li>• Ventilation enhances air quality and prevent sickness among occupants.</li> </ul>
Theme	<ul style="list-style-type: none"> <li>• The overall design of the space determines the range of activities that can be accommodated within it.</li> <li>• Theme is a collective feature that is decided by the layout, artwork, color and geometries.</li> </ul>

Acoustic	<ul style="list-style-type: none"> <li>• Acoustic measures are taken to alleviate the negative effects of noise from the interior or exterior environment.</li> <li>• Isolation can be used to achieve the required acoustic performance.</li> </ul>
Texture	<ul style="list-style-type: none"> <li>• Surfaces around the space are finished with different textures to increase the users' interests into the environment and add shadows to the colors and finishes used.</li> <li>• Textures can be used as a seamless separation or combining factor between the different parts of the space, which serves the functionality of the space.</li> </ul>
Artwork	<ul style="list-style-type: none"> <li>• Cultural and social backgrounds of the environment can affect the artwork used for the space.</li> <li>• The function of the space is another factor that can determine the artwork used.</li> <li>• Artwork provides a relaxation and emotional depth to the space, which satisfies the tastes of the users.</li> </ul>
Signage	<ul style="list-style-type: none"> <li>• Wayfinding tools are provided within the space through different means including directional signs.</li> <li>• Information is provided in the built environment to facilitate the interaction between the users and the physical elements around them.</li> </ul>
Safety and security	<ul style="list-style-type: none"> <li>• Safety features are focused on identifying the hazards that are available within the environment and providing measures that lessen or eliminate their impacts on the space users.</li> <li>• Security measures provides confidence within the users to interact in the space without worrying from possible crimes or incidents.</li> </ul>



## CHAPTER 4

### EVALUATING PUBLIC SQUARES THROUGH INTERIOR DESIGN PRINCIPLES AND ELEMENTS

#### 4.1 Similar and Different Design Principles and Elements between Urban and Interior Spaces

The principles and elements included in the interior spaces are focused on more details than the counterparts of urban spaces. Therefore, the principles of the interior space are more in number than those of urban space. There are five common principles between the two spaces, as shown in Table 4.1; furniture, accessibility/ space planning, social diversity/ universal design, identity, form and architectural elements/ artwork.

Table 4.1: Common and different principles and elements between urban and interior spaces

	Urban Space	Principles of Interior Space	Elements Of Interior Space
<b>Common</b>	Furniture Accessibility Social Diversity Identity And Form Architectural Elements	Space planning Universal design Identity Size	Line ,Form And Shape Texture, Pattern And Ornament Value And Color Opacity Furniture
<b>Different</b>	Location Activities Facilities and amenities Landscape	Attraction of users Privacy and Aesthetics Ergonomics Sustainability Coherence with nature Scale and Proportion Unity and variety Balance Rhythm and Emphasis	Artwork Celling Design Material And Finishes Lighting ,Acoustics Temperature Ventilation Theme Safety and Security

## **4.2 Defining Public Squares as Interiors of Urban Space:**

Through the evaluation of public square characteristics based on both public squares and interior environment's design principles, it is evident that public squares would satisfy their own design principles. Nonetheless, based on the interior environment's design principles, the means of which public squares capture their users are through providing different type of commercial, political and social activities that drives traffic towards them. The aesthetics of the public square are mixtures of the surrounding structures and the architectural features contained within it. There is less possibility to control many features in public squares, such as weather conditions, where functions depend mainly on the social and cultural references. Moreover, there is no privacy of any kind in the public square, where in the interior environment, users have some privacy from the exterior environment. Some mutual design principles are found between the two spaces; identity, and inclusivity, diversity and variety. The identity of the public square is given through the surroundings and it is perceived as an overall unit. Inclusive design principles can be implemented in public squares, similar to interior environments. Diversity and variety are illustrated through the social interactions and connections.

## **4.3 A Case Study in Martyrs' Square, Tripoli, Libya**

### **4.3.1 Description of Martyrs' Square:**

The Martyrs' Square – previously called Green Square at the time of Gaddafi, later as Independence Square during the monarchy, and initially Italy Square during the Italian colonial rule - is a major site in downtown Tripoli, Libya. See figure(4.1)

### 4.3.3 Evaluation of Martyrs' Square according to Principles of Interior Spaces

The square is evaluated based on the design principles and characteristics of interior environments that were presented previously, as shown in Table 4.4.

Table 4.4 Evaluation of Martyrs' square in Tripoli, Libya according to Principles of Interior Spaces

Principles of Interior Spaces	Evaluation of Public Square
Aesthetics	Rich cultural and historical context. The square colors and elements represent the Libyan culture. The activities reflect the latest social and political interests of the city residents.
Privacy	No privacy is possible within the square. It is an open space accessible to the public at all times.
Ergonomics	No specific features are provided within the square or ergonomically designed elements.
Unity	The unity the surrounding landmarks and the coastline create with it gives it its identity and special meaning. The square is known to be one of the icons of the Libyan revolution and the main social and political gathering place
variety	Within the city, the harsh and rather outstanding shape of the citadel has a smoothing effect on the contrast visible between older Ottoman structure and more modern Italian shapes. Once we contrast the average height of the already present structures inside the medina walls with those made by Italians, the citadel clearly has an overwhelming impact on all structures and, despite its age compared to Ottoman-era works, it stands focal and, in this way, creates equilibrium between the old and new, short and tall, big and small – thereby combining both fabrics into one visual representation.
Proportion	Height of the surrounding buildings is not extremely high comparing to size and shape of Martyrs' Square.

Principles of Interior Spaces	Evaluation of Public Square
Balance	The other public structures around the square change according to dimensions and place; as a whole, though, they all represent Italian-style design, whose preparation on the seaside was intended for providing a feeling of modernity to passers-by. The buildings farther away from the shore have been arranged to give room for palm trees to create a major contrast as opposed to the solid walls of the medina further away. Such contrast has created another equilibrium in the use of space on the shoreline.
Rhythm	The square can be put to use for a number of purposes, namely as farm-product markets, open-air cinemas, artistic performances, public announcements and charity raising, and many others supported by the Government. The consequence is further interest inside the city to provide for numerous social activities to create a feeling one unity and belonging among the residents.
Emphasis	An outstanding feature in the Martyrs' Square is the Red castle-otherwise known as Saraya – accommodating the Libyan National Museum and in place as old as the Roman era .
Signage	Signage is mainly for traffic and landmarks.
Sustainability	Concrete elements provide sustainability; however, lighting is grid powered with no consideration for renewable energy.
Coherence with nature	The square is very distinguished from its surrounding structures with ancient and modern designs. Palm trees are the only features that imply natural coherence.
Proportion	Height of the surrounding buildings is not extremely high comparing to size and shape of Martyrs' Square.

<p>Safety and Security</p>	<p>Safety features are focused on identifying the hazards that are available within the environment and providing measures that lessen or eliminate their impacts on the space users.</p> <p>Security measures provides confidence within the users to interact in the space without worrying from possible crimes or incidents</p>	
<p>Ceiling design</p>	<p>No applicable.</p>	

## **CHAPTER 5**

### **CONCLUSION**

Public spaces are social, commercial, cultural and political attractions that are designed to simulate interaction between its users. Furthermore, public squares are main attractions within the urban environment, which have symbolic and social significance for the residents and the visitors of the urban environment. The social and cultural connection between the users and the public square is one of the crucial items for its design process. However, the design principles and characteristics of public squares are mostly different from those of the interior environment. This research aimed to understand the design principles of public squares and interior spaces in order to compile a set of criteria for both concepts that can be used for comparison between them, as well as evaluating public squares according to interior design principles.

Urban spaces are indispensable places in cities, where the main events are held. The inhabitants of the city look for social and cultural interaction with each other. Furthermore, these spaces combine several elements into their design, such as streets, shops, avenues, structures and squares. Urban spaces formulate definitions and boundaries, organize settlements, and create different types of opportunities and uses for the individual. Organization of the urban space should define physical and social dynamics of public. The streets, parks, squares and other shared places of a city contribute to the urban space and reflects the society's values, needs, activities and structure. Expressions of the society and the city create a sense of belonging and connections with people. Urban space typology can be classified with all the parts of society and the city.

Through the study of different literature sources, several public squares design principles and characteristics were identified. The researcher was able to compile a list of the most important items.

Moreover, interior environments have changed during the recent era through incorporating exterior design elements within it. The view of public space has changed over the past years, as they have shifted from being open areas to being located inside buildings. However, the functionalities of the public interior spaces remained similar, whether it was for commercial, cultural or recreation. The design of the public interior space was widely affected by the exterior elements. Hotels and shopping malls are influenced by exterior designs, where facades represent exterior building facades and furnishing is closer in design to park furnishing than to those of interior spaces. Many examples can be seen around the world of these designs, of which some were discussed through the course of this thesis.

Similar to the research performed for public squares, the researcher compiled a list of interior design elements for comparison and application purposes on public square cases. The main focus was on features that are related to public interior environments, as a close concept to public squares. The compiled design principles and characteristics of the public interior environment were summarized through the literature review.

An evaluation was performed through a comparison of the two list of design principles, where public squares were evaluated, as shown in Table 4.1. The findings of the research show that with regard to interior environment's design principles, the means of which public squares capture their users are through providing different type of commercial, political and social activities that drives traffic towards them. The aesthetics of the public square are mixtures of the surrounding structures and the architectural features contained within it. There is less possibility to control many features in public squares, such as weather conditions, where functions depend mainly on the social and cultural references. Furthermore, there is no privacy of any kind in the public square, where in the public

interior environment, users have some privacy from the exterior environment. Some mutual design principles are found between the two spaces; identity, and inclusivity, diversity and variety. The identity of the public square is given through the surroundings and it is perceived as an overall unit. Inclusive design principles can be implemented in public squares, similar to interior environments. Diversity and variety are illustrated through the social interactions and connections.

An evaluation of the Martyrs' square in Tripoli, Libya was performed as a case study based on the full list of design principles of public squares and public interior environments. The evaluation shows that the square is a significant part of the city based on its location, the activities held within it, accessibility, the ability to capture the city residents and visitors, and the special identity it has emerging from the significant landmarks that form its edges. The morphology of the square as a hub connecting the circulation network of the city and due to its large size, it has the ability to attract users for the main social, cultural and political activities. There are a few significant architectural elements that are unique for the square, including Tripoli castle, Byzantine monuments and the coastline of Tripoli. There are issues that are faced by the design of the square regarding the lack of furnishing, landscape uniqueness, safety and health features and inclusive design features that allows more users to enjoy it.

Addressing the main aim and problem of the research, it is evident from the performed analysis and the case study of Martyrs' square that the design elements that are used for urban and interior spaces have many similarities between them, which enables the analysis of public squares as interior spaces. Moreover, the distinguishing design principles of interior environments can also be used to evaluate public squares with different extents and limitations. The interior space principles of capture of users, aesthetics, privacy, material and finishes, lighting, color, ventilation, theme, texture, ergonomics, sustainability, coherence with nature, signage, safety and security differ from the principles emphasized in public spaces; however, they can be implemented into public



squares to add more levels of details. Moreover, interior design principles, such as inclusive design, identity, furniture, site planning and artwork, have similar equivalents in public environment design principles. Finally, there are challenging interior design principles, such as temperature, acoustics and ceiling height, which are influenced by the open space nature of public squares and have limited control solutions.

- What can be improved to use Martyrs' square as an interior space?

The sense of interior space can be improved in martyrs' square through targeting several principles and elements. Privacy can be improved through installing family seating areas with trees surrounding them, which also provides shading for the users in day times. First aid kits and fire safety equipment can also be added to increase the safety and security of the square. Features that consider the specific needs of the users can be implemented to increase the inclusivity of the square and to enable users with special needs to enjoy the space. Tactile markings, ramps, speakers for hearing-impaired users are all measures that can be taken to achieve this target. Enhancements to the limited furnishing in the square is required by increasing seating areas and trash bins.

The temperature of the square can be improved by increasing the green areas and planting trees around the square borders and within it, which also can reduce traffic noise and improve the acoustic quality for the users. Moreover, trees can increase the sense of privacy of the square and act as ceiling-like items, which empowers it as an interior space.

- What are the advantages of using Martyrs' square as an interior space?

The use Martyrs' square as an interior space increase its attractiveness to the users through the many activities and improvements that are provided with the interior space design. Privacy would encourage families to use the square to spend their leisure time and share it with the community. Furthermore, increasing the inclusivity of the square would eventually increase the percentage of the population that can benefit from it, as well as

the increased furniture that would enable users to spend more time at the square, rather than using it as an occasional gathering area or a passing point through the city. Also, enhancing the thermal and acoustic qualities of the square will increase the comfort of the users, which would allow them to choose it as a prime location for their activities. The overall benefits of using martyrs' square as an interior space extend to social and economic dimensions through increasing the ability of the square to retain people in it for socialization. Moreover, commercial outlets around the square will benefit from the increased attractiveness of the square causing more people to prefer it as their social area.

Based on the results of the research, the following recommendations are provided:

1. The location and identity of the public square are important features that determines its popularity. Therefore, designers should ensure a choice of location and design concept that can attract the city residents based on their social and cultural identity.
2. The size of the square should be adequate to host the social and political activities that are desired by the users.
3. Unique architectural elements and aesthetics should be added to the public square in order to ensure satisfying the different tastes and preferences of the users.
4. Public squares are meant to be enjoyed by all diverse society members. Thus, inclusive design features should be considered during the design.
5. Private seating areas can be provided in specific areas, where families can enjoy their time during recreational activities.
6. The public square is recommended to be surrounded and contain diversified commercial and social activities to capture most of the preferences and desires of the users.
7. Adequate furnishing is needed in Public squares, including seating and trash bins, for a more comfortable use.

8. A special attention shall be given to landscaping features, which can contribute into the identity of the public square.
9. Public squares should have large and wide areas in order to provide flexibility to host different types of activities or several activities at the same time.
10. Transportation, signage and toilet amenities are recommended to be added to the public square to ease access, circulation and user retention.

For future research, the compiled list of design principles and characteristics can be applied to different existing squares for comparison and discussion. Moreover, a qualitative method can be used to evaluate the different factors discussed in this study from the viewpoint and perception of the public square users.

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