TU W I E N Institute of History of Art, Building Archaeology and Restoration Department of History of Architecture

Doctorate Dissertation September 2018

Supervised by: Prof. Dr. Caroline Jager Klein Submitted by: Mohammed Khafaji

Public Life Connectivity in Jeddah Physical Urban Living
Declaration

I hereby declare that this thesis has been composed by myself and is my original work. Further, I have acknowledged all sources used and have cited these in the reference section.

Mohammed Khafaji
Acknowledgments

The author of this dissertation would like to thank the Faculty of Environmental Design at King Abdul Aziz University at Jeddah, Saudi Arabia, for giving me the opportunity and financial support to complete my PhD degree in Austria. Also, I would like to thank the Faculty of Architecture and Art History at Vienna University of Technology for providing me with an ideal research environment, and support to complete my PhD degree.

I am highly grateful and indebted to my supervisor Dr. Caroline Jäger-Klein Professor in Architecture and Art History at Vienna University of Technology for very valuable guidance and great support throughout my PhD research studies. Her helpful guidance and feedback during the preparation of this work were invaluable.

Lastly, I am thankful to my wife Wegdan who offered me unlimited support while I was conducting my research. I am also especially grateful to my parents, who supported me emotionally and financially.
Abstract

The human experience of public life has been transformed from physical space into digital space. This shift has separated public life from the public space. In Jeddah city, the public space that played an important role in shaping people public life in the old city has weakened in current times. This research will conduct an investigation on Jeddah built environment to find out how did this shift happen and the factors that separated public life from public space in Jeddah city before and after the removal of the wall in 1947. In addition, developing a new urban strategies that restore public life in the public space.

Keywords: Public, Private, Public Space, Private Space, Physical Space, Digital space, Jeddah, Saudi Arabia.
Table of Contents

Introduction

Definitions.
The Problem and Objectives of the study.
Methodology, Major and Research Questions.
Limitation of the Study Field.
The Structure of the Thesis.

Part 1 : Public Life before the Removal of the City Wall........1
  1.1 The Evolution of Jeddah...............................................2
  1.2 The Public Boundaries..................................................7
  1.3 The Private Boundaries...............................................41
  1.4 Summary......................................................................68

Part 2 : Public Life after the Removal of the City Wall........69
  2.1 City expansion. ............................................................70
  2.2 The Open Space............................................................93
  2.3 The Public and the Private Boundaries............................97
  2.4 Summary......................................................................117

Part 3 : The Public Life in Contemporary Times...............120
3.1 City expansion. .........................................................121
3.2 The Open Space..........................................................129
3.3 Summary. ................................................................155

Part 4 : The Digital Space.................................................156

4.1 Definition and Uses.......................................................157
4.2 International Cities Case Studies.................................168
4.3 The Physical Space and the Digital Space....................174
4.4 Summary. ................................................................180

Part 5 : Towards a New Vision of Connectivity.............182

5.1 Discussion. .................................................................183
5.2 Urban Strategies..........................................................187
5.3 Summary. ................................................................193

Conclusion and References .............................................195
Introduction
Definitions

Each society has a certain attitudes towards the meaning of public and private. In addition, the concept of public and private is not constant, but it changes from time to time with the evolution and change of society. For this reason, the definitions of terms "public" and "private" are ambiguous and is also a subject that has different ideas and views in academic literature. These different ideas indicate that the public space has a multi-dimensional character. For example, the Oxford dictionary defined the public as "concerning the people as a whole, 'open to or shared by all the people', 'a section of the community having a particular interest or in some special connection" (Thompson 1995: 1106). The term is also used in a variety of phrases which refer to a large number of people or to society or to the state such as general public, public opinion, public life and so on.

Madanipour (2003: 110) Identifies three types of ambiguity in the defining public. These are: the first when the term 'public' is used for homogeneous society, or state as an individual organization. The second mystery lies in descriptive and normative explanation of the public: some authors, such as social anthropologists, often use the term "public" to denote human interaction, while others adopt a more normative position. For example, political theorists use it to refer how human interactions are conducted.
The third use focuses on whether the public and private are linked to personal or non-personal relationships. Although the public depends on the personal world, it can also be included in the impersonal world such as market exchanges and the interpersonal realm of face-to-face interaction. In some cases, the world of personal relationships can also be interpreted as public as distinct from personal, while others can be seen as private (as distinct from impersonal).

For facing these ambiguities, Benn and Gaus (1983) have mentioned three factors that shape the social dimension of the terms ‘public’ and ‘private’. These are access, agency and interest. Also, they pointed out that "place and spaces ... are public when anyone is entitled to be physically present in them; they are private when someone, or some group, having the right of access, can choose whether to deny or allow access to others" (Benn & Gaus, 1983, p. 7). Regarding the factor of ‘agent’, they argue that a space or resources can be public in case they are created and controlled by the public authorities or through agents that act on behalf of communities and if they are used by the population in general. Concerning the factor of ‘interest’, public and private can be distinguished through identifying those individuals who will obtain the benefit from consuming a particular space. Accordingly, it can be said that the physical environment consist of public and private spaces: public space is the domain in which public life takes place, in contrast to private life.

The Problem and Objectives of the Study

This research will study how the relationship between public and private has changed the level of connection between people to public
life. Since the demolition of the Jeddah city wall in 1947, all physical boundaries have been designed to separate public space from private space. This segregation has reduced the connection between people and public life. In addition, the digital space, on the other hand, has high level of connection between people and public life, reducing the importance of people presence in the public space. However, while the domain public life is being transformed into virtual space, we started to lose the physical frame and its material expression of public life that form community, civic identity and culture. Accordingly, the aim of this research is to understand the circumstances that brought public space to this situation that occurred during the time period from 1954 to the contemporary time, seeking to determine factors that can revive public life in public space.

**Research Questions and Hypotheses**

Public life can be experienced in both digital world and physical world. Connectivity and accessibility are one of the advantages of experiencing public life in the digital world. In physical world, connectivity and accessibility to public life can be achieved through the relationship between public and private spaces. The interactions between public and private spaces increase the level connections between people and public life. On the other hand, the segregation between public and private spaces reduce the level of connections between people and public life. Accordingly, the gap between digital world and physical world can be increased or decreased through the level of interactions between public and private spaces. As the gap between these two world increase, the use of public space reduce. In contrast, the use of public space increase as the
gap between these two world decrease. Based on this hypotheses, this research raise several questions:

How the boundaries between the public and private space have formed the level of connections between people and public life in Old Jeddah and how this has changed in the present time?

What are the architectural and urban elements that have defined the level of the boundaries between private and public space in Old Jeddah and how this has changed in the present time?

What is the level gap between the digital world and the current physical world regarding the level of people’s connection to public life?

What are the urban strategies that create interaction between the public and the private, through which connections between people and public life increases in the public space?

**Methodology**

This study will depend on the descriptive strategy in achieving its research goals and objectives. According to the Deming & Swafield (2011), descriptive strategy is considered one of the most important research design adopted for graduate theses. It is commonly used in practice-based research, and has been proven to be able to provide achievable result. This research will use two types of descriptive methods:

Primary Description:
The primary description strategy is the first descriptive method will be used in this research. This research will use two types of primary methods: Behavioral Mapping is the first type of primary description that will be used in this research. It is considered one of the research design strategy that can be used for a specific open space as well as it provide a broad understanding of its inventories. According to Kevin Lynch (1971), in Site Planning, emphasizes the importance of behavioral mapping techniques in understanding the psychological and social use of a specific site, by discussing all forms of this procedure. Lynch states that “**Understanding how people use and value the spatial environment is the key to planning sites that fit human purposes**” (Lynch, 1971, p.95).

Questionnaires are the second types of primary description will be used in this research. Questionnaires are one of the most affordable ways to gather information about people’s attitudes, values, experiences, and past behavior towards public space. The questionnaire in this research will be designed in such a way that participants have freedom to express their views in response to the question asked without any influence or clues from the interviewer.

**Secondary Description:**

The secondary description strategy is the second descriptive method will be used in this research. This strategy is widely used in design-based research in architecture. It involves using information or data from an observational procedure undertaken by those other than the researcher. This research will re-analyze, interpret, and review past data such as media report, maps, previous studies, archival decimates and diaries.
Status of Knowledge

In order to identify the gap between this research and other research related to the public space in Jeddah, many academic researches have been studied and reviewed. Since 1986, there have been six academic researches related to public space in Jeddah. Although all of these research deals with the study of the public space from a different point of view, no research has yet confronted the fact that the notion of public life has changed in contemporary Jeddah, and therefore activating public life in public space lies in the creation of new strategies and principles that respond to this change. The following literary references shed light on previous research objectives with their varied methods in chronological order:

Nahass (1986) investigated the services that should be available in the open public space for Jeddah residents. The research followed four types of methods: document review, interviews of experts, questionnaire for user and observation. The study found that there is a great need to add public open spaces in the residential neighborhood. Although some of them were present at the time, they were not suitable for users’ needs.

Al-Shahrani (1992) took a different approach through examining the types of recreational use and its relation to open space in the city of Jeddah. He divided Jeddah into three phases. These are: the first phase
between 1925 and 1948, the transition between 1949 and 1970 and the modern phase between 1970 and 1990. The study concluded that there were no open public spaces in the transitional phase, contrary to the first phase that had several types of open public spaces. In the modern era, open public spaces were available but did not serve people’s needs and desires. The study adopted several methods to achieve objectives such as reviewing related documents, questionnaires and observation. The results of the study showed that there is a need to design public spaces for children and families. In addition, there is a need to add shaded spaces and green spaces.

Hammadi (1993) investigated the manner in which the open spaces are defined and planned in relation to the use of the public space. The study conducted by four methods: these are document reviews, observation, evaluation and questionnaires. The research revealed that the Corniche design did not respond to the socio-cultural requirements of the city, as well as the absence of sufficient shadows to protect users from the direct sunshine. Moreover, there are no designated areas for children’s activities.

Sobaihi (1995) studied the use and the quality of children play areas in Jeddah. The study included guidelines to provide adequate recreational areas for children in the city. In this research, questionnaires by users and experts were used to achieve goals. The research found that the current level of entertainment does not match the advanced human standards. Plus, the quality of play areas are very poor. Thus, the study provided strategies to support the play areas in Jeddah. The study also
recommended the existence of a special agent interested in the planning and designing for children play areas in Jeddah.

Mandeli (2011) examined the quality of open public space in modern residential areas through users opinions and views. The study followed five methods: interview experts, direct questionnaires with users, photographs examination, official documents and direct observation. The study discussed strategies and guidelines that have a direct impact on developing the public space. In addition, the study examined the role that played by the public space management in the developing and maintaining the public spaces in Jeddah. The study concluded that some of the modern inflexible building regulations negatively affected the quality of the public space in residential areas. In addition, the process of construction and maintenance is also responsible for the lack of quality public space.

Alhajaj (2014) studied the urban environmental health through increasing the public open spaces in the city. The research used four types of methods such as observation, recording and behavioral mapping. The research revealed that the number of open public spaces in Jeddah is insufficient. In addition, the majority of public spaces in Jeddah is designed for passive activity and not for active activity. Thus, the research recommendation demonstrates the importance of providing sufficient open public spaces for active activities in Jeddah.

According to the above, all the six previous research on Jeddah public spaces illustrates that there is no research yet has examine the
relationship between the public space and the public life in Jeddah city, as well as activating public space by responding to changes in the concept of public life in contemporary Jeddah.

Outline of the Research Design

According to the above, it can be argued that there is a gap between people lives of and the physical environment of the city regarding public and private boundaries. However, the value of this research lies in understanding this gap by conducting an investigation, analyzing the transformation that occurred in public-private life and space throughout the history. This investigation describes the changes and all the events that have happened in the history and have played roles in changing the notion of relationship between humans and the built environment (architecture, cities), Searching for accumulation of events that can describes the boundaries of space and the private life in Jeddah city. In addition, finding an interactive relationship between public-private life and the built environment in which we live in. This relationship will contribute to creating a greater role for architecture in people lives through developing a new strategies to activate the public and the private spaces in the contemporary city.
Part 1: Public Life before the Removal of the City Wall
1.1 The Evolution of Jeddah.

Jeddah city centre is located on the eastern shore of the Red Sea in the narrow coastal Tihama plain under the mountains of the Hijaz (Figures 1.1 & 1.2). The Hijaz region occupies a large proportion of the large part of the western part of the Arabian Peninsula and includes the most important cities and commercial centers in the Kingdom including Makkah, Madinah, Jeddah and Taif.

Figure 1.1: Location Map Jeddah. Source: (Presidency of Meteorology and Environment, 2010).
While the city of Jeddah continues to grow to this day, it was founded by unknown fishermen to the area from about 350 BC (Bokhari, 2006). Some studies consider that the history of the city dates back to the Stone Age because of the existence of Thamoudian writings found in different locations of the city (Pesce, 1974). Figure 1.3 shows the growth of Jeddah city from a primitive fishing area about 350 BC 100 hectares (Abdulgani,
1993, p.50-59) to a modern city in 2014, 32,500 hectares extended long beside the coast (Jeddah Municipality, 2014). The small city changed with the advent of Islam at the beginning of the 7th century which influenced the architecture and urban form of the city (Abu-Ghazzeh, 1994, p. 49-55). Not to mention the importance of the city of Jeddah to the holy city of Mecca in providing goods and the main sea port instead of the old port of Shuaiba in Mecca, about 20 kilometers south of Mecca in 646 AD (Pesce, 1974). Since the city became the main port of Mecca in 647 AD, Jeddah has become an important city Hijaz and in Islamic world.

Figure 1.3: The growth of Jeddah city.  Source: (S. International, 1980, 13).
TE Lawrence visited Jeddah in 1916. He described the town: "it was a dead city, so clean underfoot and so quiet. Its winding, even streets were floored with damp sand solidified by time, as silent to tread as any carpet. The lattices and wall returns deadened all reverberation of the voice. There were no carts, nor any street wide enough for carts. One would say that for years Jeddah had not been swept through by a firm breeze, thus its streets kept their air from year’s end to year’s end, from the day they were built for so long as the houses should endure. The streets were alleys, wood roofed in the main bazaar, but elsewhere open to the sky in the little between the top of the lofty white-walled houses. These were built four or five stories high, of coral rag tied with square beams and decorated by wide bow windows running from ground to roof in grey wooden panels. The doors were heavy two-leaved slabs of teak-wood, deeply carved, often with wickets in them, and they had rich hinges and ring knockers of hammered iron" (Lawrence, T.E, 1935. p. 72-73).

Jeddah was also described by JM Richards in 1947: ‘Jeddah however, is Thereafter the built-up area of Jeddah was constrained by its was also described by JM Richards in 1947, wall which had four main facets, with a encircling perimeter of approximately at the same time a thriving mercantile been the town in its own right : for centuries it has principal port of the Arabian Peninsula. Its great days were those of the India trade, as a way of increasing the revenue of the country; Jeddah still preserves evidence of its old position in on the India trade route. There is virtually--.. no timber the whole of the Hejaz and the timber super- structure of Jeddah’s towering houses - mostly teak - from as far away as the East Indies” (Richards, J.M, 1947, P. 47-53).
According to the city historians such as (Alyafi, Badeeb and Alansari), the city had settlements before the construction of the wall in the eleventh century by the Mamluk Sultan immediately following the Portuguese attack in 1509 (Bokhari, 1983). The City wall protected the city urban and city structure that stretched within the boundaries of the wall. Since then, the city began to grow with several ethnicities due to its proximity to the Holy City. Thus, the architectural and urban character of Jeddah symbolizes hundreds of years of Islamic architecture that covers many architectural styles such as Persian, Mamluk, Ottoman and other (Jeddah Municipality, 2014). This combination of different architectural styles and the socio-economic mix of the city created an original environmental pattern known as the Hijaz architecture or the city of Hijaz.

This architecture reflects many values and conditions, including religious and social character of the city, in terms of adherence to Islamic values and norms, conservative traditions, values of generosity and social solidarity, as well as the city's climate and geographical location on the Red Sea. All these elements have been reflected in the design of houses and the interconnections between them, as well as the reflection of the environmental aspect of the materials from which these historic houses were built. People in Jeddah used coral rocks in their buildings which are extracted from the sea, the sea mud, and the sediments of the beach as well as built the roofs from the local environment materials such as wood and palm trees.

The city is characterized by unique architectural and urban heritage, which is witnessed by many cities of the Red Sea, such as Moussaw, Sawakin, Al-Fajr and Yanbu (Miran, Orbasli, Woodward 2009 ).
The essence of Jeddah, like other Islamic cities, reflects Islamic customs and social needs such as privacy, which are applied in the formation of the urban fabric of the city and the architectural elements of the buildings. However, the urban fabric of the city grew within the walls of the city with clear Islamic principles in relation to the wall and its doors, street view, organization, market system, open public spaces, housing, religious, educational buildings and diplomatic missions (Abu-Ghazzeh, 1994).

1.2 The Public Boundaries.

The City Wall

The old city of Jeddah was surrounded by a barrier built at the beginning of the 16th century by Hussein al-Kurdi to protect against Portugal’s attack (Pesce 1974, Buchan 1980, Wynbrandt 2004) (Figure 1.4). The wall of Jeddah contains six doors and continued in this position until it was demolished in 1947 (Pesce, 1974) for the urban expansion of the city (Daghistani, 1991).

The wall of the city has been described by many marquees and travelers as (Ibn Battota, Khasro and others), that was not a regular shape due to the site topography, and to the fact that some parts of the city fabric were created before the construction of the wall in the tenth century.

The wall was build by the local population, and it has two main doors, one facing Makkah while the other facing the sea. It consist of 6 towers: Each tower is about 6 cubits in diameter. The wall also has six additional doors such as Bab Makkah, Bab El Madina, Bab El Sherif, Bab Babid, Bab Bint and Bab El Maghriby (Figure 1.5).

Each door was facing a designated place and was called based on the name of that place. For example, (Mecca Gate is facing the holy city of Mecca) (Figure 1.6), and El Madina gate is facing Madina city (Figure 1.7). All these doors were guarded by two towers at least (Abu-Ghazzeh, 1994 p. 49-55).

According to the Abu-Ghazzeh, T. (1994), all gates were sealed with wooden panels, constructed by assembling beams that were 20 cm broad and 12 cm thick, d from the inside and vertically from the outside, and then tied with iron bands with large nails. All six gates were guarded by at least two towers.
Figure 1.5: A map of the Old City of Jeddah. Source: (adopted from Pesce 1974, P.107).
Old Jeddah, as any Arab Islamic city, has the properties and the characteristics of the urban structure, where its streets connect the city’s gates to the centre which contains a mosque or markets (Abu-Ghazzeh, 1994). Commercial streets and city roads were used as places to gather people and social interaction by men (Al-Shahrani, 1992). In the late 19th century, the urban environment of Jeddah was described as "The street are quite spacious, not too neglected, opening from time to time on large and well-aerated squares, which are the lungs of the city" (Pesce 1974, p.49).
According to Richards in 1947, “The walls are still in fairly good condition, so that the only entrance to the town is by battlemented gateways, one on each side, and by a smaller pedestrians gate on the north. Inside the walls of the town the pattern is one of closely packed buildings arranged in no regular plan; there are few streets of any length, the tall buildings giving the impression of having been stacked inside the town walls like flower-stalks into a vase. They are separated by narrow alleys that open out here and there into little squares. The streets and squares are clean; in fact the cleanliness of Jeddah is one of the surprises in store for the visitor accustomed to the dirt and smells of other middle eastern cities” (Richards, J.M, 1947, P. 47-53).
The Concept of Public Space

The Old City was confined to the activities of the port, which was evident in its physical structure. The open public spaces were therefore linked to the customs buildings and the port. Outside the area, the open spaces were irregular in shape and used as an open market. However, the city contains all the basic life components of urban life and many buildings were present such as mosques, caravanserais, Markets, traditional buildings, and others.

Figures 1.8 and 1.9 show how private and public spaces were distributed in old Jeddah. Figure 1.9 illustrates most of the common public properties such as souks, governmental offices and mosques. They all were located in the center of the city, starting from the most important gate in the city, Bab Makkah.

Private spaces mostly houses were concentrated on semi-public spaces such as homes above small shops, which means that these semi-private properties acted as transitional space between public and private space, reducing disturbance and providing privacy. Street widths and designs also followed Islamic principles; for example, streets in public spaces were wider than those in private spaces.

In addition, the city’s commercial and religious function influenced the distribution of land use, in such a way that to make the public space linked to trade or to bring pilgrims close to the sea through gates such as Bab Makkah (Mecca Gate), which were associated with a series of commercial activities such as Wali Street. The stores were located behind

Public Life before the Removal of the City Wall
these shops and sometimes in the ground floor of shops in residential neighborhoods (Figure 1.10&1.11). In general, there was a sequence of several levels well associated with function and spaces. However, the city was centered around the market area which contains many commercial activities such as Qabeel Street (Figure 1.12).

Figure 1.8: Public and private distribution in old Jeddah. Source: (Bagader.M, 2015).
Figure 1.9: Jeddah as the Portuguese archives show it in 1517. Source: (Pesce 1974: 82, adapted by Bagader, M., 2015).
Figure 1.10: The uses of ground floor of the entire buildings. Source: (Bagader, M. 2016)
Figure 1.11: The uses of first and upwards floor of the entire buildings. Source: (Bagader, M. 2016)
Social aspects

Because the city is a gateway to Mecca and a commercial center for the Arabian Peninsula, the people of Jeddah are considered a mixture of different nationalities from all over the world such as Turks, Persians, Yemenis, Hindus, Bukharan, Indians and others. The locals were under high pressure from different customs and cultures. Over time, these different habits have adapted to each other and created a society with a unique identity.

The writers and travelers of the 19th and 20th centuries realized that the residents of Jeddah were Muslims belonging to several nationalities with extended extended families consisting of several nuclear families.
Most of them came to Jeddah to perform the rituals of Hajj and in one way or another they settled and became residents, which provided them jobs and a better life.

Types of employment

Most people in Old Jeddah worked in trading, exporting and importing products for the region. According to the Bokhari, "Most of the traditional families were active traders (tujjar), each specializing in one or more commodities, bequeathed from one generation to the next" (Bokhari 1978, p. 148).

For centuries, Jeddah was considered one of the pilgrimage cities in addition to Mecca and Medina. Many services had to be available to pilgrims such as services and accommodation. Thus, the money that was earned by the families was dependent on those occasion.

In addition, many people work in building construction, local factories, services, cafes, water and gas distribution for homes. It should be noted that these industrial activities began in the early 20th century and are mostly concentrated in craftsmanship.

The boundaries of quarters (Haras) within the old city

As shown in Figure 1.13, the old city is divided into four regions: Al-Sham is located on the northwest of the Old City, Almazloum on the east, and the warmest and the most crowded commercial activities is called the
Yemen region that is located on the south-east whereas the Albahar is on the south-west of the city.

Figure 1.13 also shows how these regions were connected and integrated with each other without any physical boundaries between them. In addition, the boundaries of each region were only known by the senior men in the city. These regions contain family houses, in addition to the mosques that many social activities are turned around them. The city in its overall physical and social form had a sense of residential space.

Figure 1.13: Old Jeddah’s quarters map. Source: (Arrowsmith, C & Sahahiri, R. 2016).
However, by walking from one region to another, some differences can be seen from the architectural shape of the buildings to the spatial arrangement of the regions. All boundaries of streets and open spaces are irregular in shape. In addition, they all have different boundaries than the other. These differences between places facilitated the inhabitants of the city to differentiate between one place and another and between one lane and another. Accordingly, public spaces were used as an element to connect those neighborhoods, and the only way to move between these neighborhoods was to pass through these public spaces. This feature gave the public space a great importance to the city.

The favored area was the northern part of the city, facing the sea and caught the northwest wind. The area was inhabited by wealthy families in the community who built luxury homes such as Panajeh, Al-srti and Zahed. On the other side, the southern part was the commercial and industrial center and has some houses for fishermen, shop owners and artisans (Al Ansari, 1982, p. 113). However, in general, there was no social division, and the whole society poor and rich lived in the same place and neighborhood. This is due to the fact that all buildings were all very similar, and to fact that all spaces and quarters were highly connected with each other Figure 1.14. Thus, people lived in similar environment conditions and they all serve each other in the same place.

Therefore, The city was directly connected with traditional social organization, and public spaces play an important role in connecting all these regions with each other.
The public space was also connected with the private space. According to the layout of the city, Jeddah is a typical example of an Islamic city that contains houses, mosques and markets. Although it shares many characteristics of the Islamic city's such as compact form, homogeneity and urban unity, Jeddah is not designed around the central mosque like most Islamic cities. However, public squares are present and adjacent to the mosques that accommodate many social activities.
All mosques are surrounded by many social activities and events. Each neighborhood has a large mosque and several small mosques (Figure 1.15). Small mosques were called Zawyah. Zawyahs plays an important role in gathering families with each other while large mosques provide a great meeting for men. Several mosques were known at the time, such as the Shafei Mosque, which is located in the Al-Mazloum neighborhood, which was built in the thirteenth century AD (AH). Osman ibn Affan Mosque, located in the Al Mazloum neighborhood, which was built in the thirteenth century AD (AH). Al-Basha Mosque is located in Al-Sham neighborhood and was built by Bakr Pasha, who was crown prince in 1735. Akash Mosque is located on West Gabel street, established before 1379 AD (AH). Al-Mimar Mosque is located in the west Al-Alawi Street and was built by Mustafa Maamar Pasha in 1384 AD (AH).

Figure 1.15: Old Jeddah's Mosques and Zawiyahs. Source: (Arrowsmith, C & Sahahiri, R. 2016)
Therefore, the connections between the public and the private space is achieved by greater urban density, compact residential areas, narrow open roads with spaces that are hierarchically structured from the highest level of public to the lowest (Figure 1.16).

![Figure 1.16: Plan of Old Jeddah. Source: (Fadan, 1983)](image)

Public and private activities play an important role in shaping urban spaces of the city. These public squares, alleys and public roads have
arisen and evolved as a result of several small decisions by several occasions. It must be borne in mind that these areas are owned by the community and individual has no right to take part of the road or from the public space to build on it. Thus, people can share each other in the design, arrangement and cleanliness of open spaces. Each family had a role in the appearance of the external spaces. The external spaces belonged to the owners of its inhabitants. Responsibility was not only in the private sphere, but also extended outside the home. People possess inside and outside in accordance with common responsibilities and various tasks among them. Accordingly, people participation in outdoor environment played an important role in connecting the public to the private life.

In addition to the people participation in shaping public space, which was considered one aspect of connection between public space and people, all public space were connected with each other, and all buildings were connected to public space as well. This integration was described by Amed Eyuce who said that, "Each and every individual building is an integral part of whole settlement and plays an indispensable role in the provision of livable open spaces of activity circulation" (Eyuce, 1986, p.138).

**Streets and the pattern of public space**

The hierarchy of public spaces in Jeddah is clear where narrow roads are connected to the active public spaces into secondary public spaces, then from narrow roads to small living spaces. These spaces are distributed in the city so that each house has at least one space. Some of these spaces are very small and it can be a corner of a winding road or intersection point between alleys or dead end (Figures 1.17&1.18). Alleys,
roads and open spaces confirm the human scale and reflect the homogeneity between man and life with each other. These spaces are known by neighbors and no one can change them.

According to Moughtin and Shirley (2005), The city that has small streets gives to the pedestrians great choices and a variety of roads between any two destinations. However, by walking in old Jeddah or by seeing to the layout of the streets (Figure 1.17), we clearly see that old Jeddah is a fine example of such a form. All roads were responsive to climatic conditions: the city is oriented towards northwest to take advantage of the northwest wind. They also illustrate the gradual transition from the public spaces (market) to the semi private spaces that ends up in the private space (house) (Figure 1.19). These narrow and winding roads are homogenous, provide shade and move the cold wind to the pedestrians.

![Figure 1.17: The layout of the streets of the old Jeddah. Source: (Fadan 1983, modified by the author 2017)](image-url)
Figure 1.18: The layout of the streets of the old Jeddah. Source: (Fadan 1983, modified by the author 2017)
Figure 1.19: The hierarchy of spaces in the old town of Jeddah. Source: (AL Lyaly 1990, modified by the author 2017)
Furthermore, the width of the road determined based on its location and function. The wider roads are located at the outer boundary and became gradually smaller towards the center of the city. The alleys are up to two meters wide while the other roads in the market and in the outer boundaries may reach only fifteen meters or more. Narrower roads may range from a series of semi-public spaces.

These design principles are clearly responsive to the waterfront environment and respects it. The general nature of the street system consisted of a few relatively regular main streets that sprang from the shore, and smaller secondary streets laid out along N.S axis, taking full advantage of the prevailing N-NW winds and sea breezes as well.

The narrow streets surrounded by high houses direct the breeze, reducing the size of air traveling, and causing an increase in air speed. The air speed increase creates low pressure zones in the upper parts of the side streets with respect to atmospheric pressure in the lower parts. Thus, the air is drawn in the side streets with a pressure differential that is proportional to the square of the velocity (Figure 1.20). (Fathy. H, 1986, p. 52-53).

In addition, the streets that convey air flows create low-pressure zones at the wide open intersections of the smaller streets on the side. This action stimulates air movement in the air from streets to the intersection (Figure 1.21). (Carmona. L.S, 1984, p. 393).
Figure 1.20: Air pressure differences. Source: (Fathy, H, 1986, modified by the author 2017)
Moreover, the solar exposure that produce a natural thermosyphonic effect, cause differences in street quality. These differences tend to rise the hot air while the cool air settles. Thus, the air moves in the streets and around the buildings (Figure 1.22) (Kuhan. E, 1959, p. 23).
During the development of the urban fabric of the city within the boundaries of the wall, the streets were constructed to meet the movement of cattle, hamalis and animals. Its width was determined by the need for two transverse animals, while the minimum height of Roshan was set at about two meters to allow smooth passage of animals (Hakim, 1986; Kaizer, 1984). All camels were unloaded at the gates and their loads were distributed through the narrow streets to the final destination through donkey, horse or porter (Figure 1.23&1.24) (Badeeb, 2012).
Figure 1.23: Camels were unloaded at Makah gate in 1918. Source: (Waraqat, 2010, http://www.waraqat.net/13427/)

Figure 1.24: The loads were distributed through the narrow streets to the final destination by camels. Source: (Waraqat, 2010, http://www.waraqat.net/13427/)
The street system in old Jeddah was a key element in its form. Each space has a different degree of privacy. These spaces with their different degrees of privacy divide the activities of society from the highest level of privacy to the lowest. According to Hakim (1986), the shape of the roads reflects the degrees of privacy. He pointed out that there are four street orders in old Jeddah:

The first order is the roads that connect the gates to the markets in the city center. Determining the minimum width for these arteries that were formed mainly from the remote areas of the city, and was based on the functional requirements that is to allow two fully loaded camels to pass without any obstacles. In all Islamic cities, the minimum bid is 3.23-3.50 m (Hakim, 1986). These similarities in street design create social and cultural similarities stemming from shared religious affiliation and an urban and architectural planning approach (Abu-Ghazzeh, 1994).

The second order of the streets in old Jeddah are the main roads and the access roads through and between the the major quarters of the city (Badeeb, 2012). They tend to form shortcuts across the first order streets. These secondary roads are directed from east-west angle to a north-south based on their location in order to link residential areas to the city centre. This design also provides shadows that cools the atmosphere during the day. The third order streets provide entrances and interconnections within neighborhoods that tend to be used by those who live, work or communicate frequently with the neighborhood (Abu-Ghazzeh, 1994).

The cul-de-sacs system, which is called zuqqaq locally, is confined to people whose private homes faced onto them. These spaces were not connected to the large structural system and they could be associated
with any of the three orders referred above (Abu-Ghazzeh, 1994). The design of these zuqqaqs in Old Jeddah is distinguished from the other Islamic cities from Greco-Roman, medieval or medieval cities (Benet, 1963). They primarily support the desired degree of privacy for the family life and provide a natural ventilation system as well (Bagader, 2010).

The open spaces that called Barahats locally, are often located between the intersection of the main roads and are used for commercial and public activities. Many of these barahats are present in the city and gave a distinctive character to the city’s traditional character (Figure 1.25). These barahats are used by residents or the community in the establishment of weddings, celebrations, condolences or others (Abu-Ghazzeh, 1994, P.49-59).

![Map Showing the Baraha in Old Jeddah](image)

Figure 1.25: Old Jeddah Barahats. Source: (Arrowsmith, C & Sahahiri, R. 2016.)
The souk system

Markets were very important for the city in providing goods to Mecca. The establishment and integration of the market system played an important role in the development of Jeddah (Hakim, 1986). The marchers (Al Ansari and Alyafi) believe that these markets existed before the city was closed by the wall, but it was not controlled until the wall and main roads were built in the early 16th century.

The market took several forms as a market for the exchange of commercial goods in different places within the city wall. The central market was a one-story structure consisting of many shops in a continuous or semi-continuous linear organizations (Badeeb, 2012). Markets also appeared along the city's winding roads, especially those connecting the city gates with to the center. Here, the ground floor was used for marketing while the upper floors were used for housing. The space system of the market developed on both sides of the city wall in its doors. Weekly and seasonal markets, joint activity in the Islamic community was held in public places along the main roads of the city (Abu-Ghazzeh, 1994)

According to the site of the Municipality of Jeddah 2015, Old Jeddah has seven famous markets (Figure 1.26). One of the most important markets that existed in old Jeddah as shown in figure 1.26 are: Souk Alnada Market is one of the most famous traditional markets in Jeddah, where it was established 150 years ago within the walls of the Old City. Souk Alalawi is the heart of the historic Jeddah area and one of the best markets in Jeddah. It is one of the oldest historical markets in the region. It is located between Qabeel Street and the Bedouin Market. It connects
the port with Bab Makkah. Souk Alkaskia is considered one of the new markets located south-west of Qabeel Street. Souk Albado is one of the most important historical markets and the best popular markets in Jeddah which is located in Bab Makkah. Souq Aljamee, which is named by the name of the Al-Shafi’i Historical Mosque located in the market, and is located in the Al-Mazloum neighborhood. Souk Gabel which is located in the famous historic area and is one of the oldest and best popular markets in Jeddah. Souq Bab Makkah, which starts from Nasif House to Bab Makkah Street with the end of the Bedouin market. Small swarms, bundled markets, grocery shops and local mosques were everywhere in Jeddah that were served as the centre of the neighborhood. In these places, shops were created from the fabric of the surrounding houses.

Figure 1.26: Old Jeddah souks. Source: (Arrowsmith, C & Sahahiri, R. 2016.)
However, in regard to the public and the private, The market was the most public place in old Jeddah, Having said that, The sense of privacy was exists in the public market. In fact, one of the most important connection that existed between the public and the private life in old Jeddah is that the people in public spaces had human relations with each other whether a close relationship, friendship or neighbor. Therefore, the human relations between people in public space was the point of connection between public and private life (Figures 1.27&1.28).

Figure 1.27: Public spaces in Sham quarter. Source: (Riba.S.T, 1979&1980, modified by the author 2018)
Public Activities

As mentioned earlier, the open public spaces in Old Jeddah are connected with private life significantly. The interaction between these two domains reduced the gap between public life and private life. One of the most important signs on this point is the individual behavior between inside and outside. According to the Jumah (1992), men clothes that were worn inside the house are the same that were worn outside in alleys, unless they came out of the area. However, The reason for the behavioral
similarity between inside and outside is that people in the public space know each other through a close relationship and friendship. Regardless of the type of relationship, each person knows the other and they meet each other on a daily basis in the public space through going to their business, shops, mosque and others. As a result, the relationship between neighbors is very strong in the public spaces.

The strong relationship between people has created a strong social interaction. Many activities were taking place in public spaces. The use of these spaces is varied according to its function and size. In the residential area, for example, most of the spaces and roads that were blocked were used by children as a safe place to play. Not only that, but the adults also met in the Mastaba or the so-called Marques. Marques is defined as outdoor sitting, consist of many Mastaba (Figures 1.29 & 1.30). According to the Jumah (1992), Mastaba is an external social platform that brings people together to talk and it was considered one of the most famous furniture in outdoor spaces. It was used for meeting men, sitting, chatting and playing. These Marques were spread in the alleys in front of the owner house and were almost available with coffee, shisha, drinks and some entertaining.

The majority of people sit in cafes. Swiss traveler Louis Burckhardt, who visited Jeddah in 1814, pointed out that the city contains 17 coffee. Cafes were not limited to gathering people, drinking and playing, but also was a media. One of the activities that took place in cafes was listening to the radio, which served as a link between the local community and the outside world. Radio was the dominant media outlet at the time, and people in these cafes discussed local and international news. Thus, the
presence of media in these cafes gave the public space a great importance to the people.

Figure 1.29: Mastaba. Source: (Akbar.S, 1998, modified by the author 2018)

Figure 1.30: Marques. Source: (Akbar.S, 1998, modified by the author 2018)
Neighbors had strong ties with each other. They depend on each other for many of their daily needs and on big occasions like marriage. It was common for the family to use kitchen utensils and *karaweet* from neighbors. Some of the kitchen utensils that were needed on large occasions, were not owned by anyone and can be used by all people. The strong relationship between neighbors and the large use of external spaces extended the physical area of the population. The unpaved roads were always clean. Residents wash the front of their houses continuously in the same way as they do indoors.

Religion and social values encouraged neighbors to build strong relationships among themselves. Narrow alleys and adjacent buildings have maintained the continuity of interaction between neighbors, which helped to maintain these values. The physical environment provided a suitable climate for the warm atmosphere and humidity. Thus the outside world was vital and practical, providing a cold atmosphere and maintaining a culture of values and strong relationships among neighbors.

1.3 The Private Boundaries.

The extended family of three generations is the type of family that was existed in Old Jeddah. Relations and respect among family members was very strong. Grandparents are the centre of family relationships that connect the family with each other. The master of the family had a strong authority where all family members respected and obeyed his decisions. When he becomes old, the eldest son becomes a real master of the family.
(Jomah, 1992). The head of the family had earned special treatment. For example, he always sit in most pleasant and comfortable place. When they eat together, the best food was put in front of him and he was the first to eat.

Young people and children show a great respect for individuals and family members even if there is no much difference in age between them. The little boy calls his big brother or his big sister the word *Sidi* for men and *Estates* for women (Maghribi, 1982). These terms is a masculine title of respect, meaning "my master" in Western Arabic language and Egyptian Arabic equivalent to modern popular usage of the English Mr and Ms. These formalization among different age groups contributed to creating a categorized groups based on age, gender and common interest. Sometimes, in order to act freely, each group can separate from others to engage in special activities.

The house had several families connected to each other. In some families, men and women from these families can not see each other. Thus some of these activities are divided by gender. Men and women in every house eat together in breakfast and lunch times. Dinner is the only chance for the family to separate themselves (Maghribi, 1982).

The separation between men and women was not practiced by some families as long as the woman was dressed modestly. In fact, The degree of privacy seems to be varied from one family to another. In describing the wedding process, Moroccan pointed out that the bride could be invited to the groom’s house and that the groom’s father was seeing her. Gauaz
(1994) denied that this can be happened. Some researchers have suggested that every extended family, men and women, met each other on occasions.

One of the informants, Mr. H. Khujah, noted that cooperation between the neighbors was very strong. He told the story of a man who knew that his relatives would visit him at home. So he asked his wife if there was any food. The only food available at the time was a basket of aubergines. The man asked his wife to prepare it in the best possible way. The visitors arrived and the man sat with them until the wife came to invite them to eat. The man was surprised to see a trip full of dishes. When the guests left, the man asked his wife where you got all this food from. She told him that she had prepared all the food quickly and she sent several pots to the neighbors. The neighbors responded by sending them food prepared for that day.

Another similar story was mentioned by the informant Ms. F. Ibraheem. She said that her family had a strong relationship with another family. When her family comes to eat good and tasty food, and the other family know about it, they come and take pots from their home to them, then they are emptied and filled with the food that he attended that day to send them.

The house was the world of women, where they only go out when they visit families. Gazzaz (1994) noted that it was common in the city of Jeddah and other cities in the Hijaz area if a man is out of the house and his wife needs to buy things from the market, she hang the baskets in
front of a window and the first passing man is responsible for carrying the desired things. If the man is alone and does not take the basket, she can complain to the *Omday* who was acting as a social leader of the community, and resolving conflicts among the community members. The protection of women’s privacy shows that the role of women is confined to the inside. This made the house become a woman’s world.

In the muslim society, men and women move in two separate circles. The market place and the mosque formed the man’s world whereas the women’s activities clearly concentrated around the house that served the private life of the family. Having said that, this separation between men and women was not practiced in some families as long as women wore long dresses and covered their hair with scarves.

**Compatibility of context and home**

The value of privacy for social relationships has a great influence on how people interact with physical space as well as its elements that divide private and public activities. This part of the studies will explain the physical of private boundaries and its connection to the public space.

**Building:** The development of traditional home growth in Jeddah reflects and represents the life of families inside the house. When the family grows up and became bigger, the house grows too. One floor is enough for a family unit. When the son marries, the wife joins with his parents after the construction of the expansion is complete. This happens to every son so that the house became a home of three generations: the grandparents, the young adults with their wives and children, and therefore the house was always full of people.
The increase and expansion of the house was vertical for two reasons: the first was because of the limited expansion of the land that is surrounded by the city wall, second is the need for air movement, especially in the wet and warm atmosphere. Buildings were also high due to the floor heights. In order to get the largest amount of air, the vents had to be large to allow easy passage of air and achieve good cross ventilation where the average height of each floor was up to 5 meters (Figures 1.31 & 1.32 & 1.33). A house that starts with three or two rooms will end up being a multi-apartment building due to its social structure and climate.

Figure 1.31: The average height of floor. Source: (Arrowsmith, C & Sahahiri, R. 2016.)
Figure 1.32: Cross ventilation. Source: (AL-lyaly. S.M, 1990, modified by the author 2018)
Door: The spacious space of the living space in front of the house was also occupied with privacy. Some of these house fronts were relatively private. This transitional sense between public and private domain
reduced the functional benefits of doors as one of the element boundaries except at night. During the day the doors are usually open.

Religious and social events influenced the shape of doors significantly. The door is made up of two openings. The right is a small and is used for frequent daily use (Figure 1.34). The two openings are opened when they are used by the pilgrims for a few days before their departure to Mecca or to their home countries. In occasions, the two openings are opened.

Figure 1.34: The traditional doors. Source: (Stacey International, 1991: 29, 45 and 58)

The door is the boundary between the semi-public space and the semi-private space. The similarity between these two spaces in terms of privacy has reduced the role of the door in isolating the building from the outside. The door was therefore open all day.
Dahleez: The sequence of external public spaces in terms of privacy is continuous inside the building through a space called Dahleez. The Dahleez is the first space when the person enters the building (Figures 1.35.1.36). As mentioned previously, the door that separate the inside and the outside was always open because the space of the Dahleez was similar to the outer semi-public space. In other words, the Dahleez is the transitional element that connect the private world to the public. This relationship increased the communication between people inside and outside as well.

Figure 1.35: The ground floor plan of AL-Jukhdar house. Source: (Based on drawings from the old municipality of Jeddah)
The dahleez or entrance hall was the transitional space between the outside and the inside of the house. The strong relationship between people with alleys, the use of the house front, the frequent opening of the door make the dahleez a semi-private space. Therefore, the responsibility
for cleaning the dahleez was for the children rather than the wife of the house. In many cases the dahleez was without furniture, carpet or decorated items, although it was the first space the visitor had to see when he entered the house. When entering the dahleez, the person can notice that things are missing as if there were furniture and was removed temporarily. You can also hear the sound of echo due to the absence of furniture in a 5-meter-high space.

The reason for emptying the dahleez was because of its functional benefits. When the weather became hot and children can not play in front of the house, they play in the dahleez, which is the coldest space in the house because it was sprinkled with water (Al-Lyaly, 1990). Sprinkling the dahleez with water was also to cool corridors, stairs and the adjacent rooms through circular openings on the wall. This process can only be achieved when the dahleez is without furniture. The absence of decorated items also contributes to the impression that the dahleez is a semi-private space. In addition, the dahleez space was visually exposed to the outside and therefore leaving a valuable items in the dahleez was risk.

In some houses, a few chairs are placed on occasions called the krait. In large social events, when many seating areas are needed, a lot of krait are placed in the dahleez, adjacent rooms and in the front of the house which make the whole place a large seating area.

**Stairs:** The vertical expansion of the house has given the stairs a significant function. As mentioned earlier, the building has several families (extended family). Each family lives on a floor. The strong relationship between these families made the stairs one of the semi-private spaces in the building that was not only used as a connection
between these floors, but also was a space used by children to play and by adults to sit and chat. The stairs is design in the way to reduce the opportunity of sudden visual contact among people as well as distribute the cold air to houses and rooms through small side openings (Figure 1.37).

Figure 1.37: Air distribution through stair. Source: (AL-lyaly, S.M, 1990, modified by the author 2018)
Kharijah: Taking advantage of the outside air to create a space with a good climatic atmosphere was the basis of the design. Kharijah was one of those solutions in Jeddah traditional buildings. AL Kharijah is a private open space located inside the building. People in this space see, hear and smell everything that happens in the public space without being seen by anyone. In other words, it is a place where public life can be experienced in private space. This space is one of the places that can connect public life to private life.

Al Kharijah was considered a special external place for woman. As women remain inside the home most of their times, they use this space as need for a special open space. Al Kharijah is one of the features that characterized many traditional homes from modern apartments. It has the advantages of Balcony and Court Yard. It is a large area surrounded by two or three rooms. The high view of the alley through large wood-covered openings makes the air pass through it (Figure 1.38). They are located in upper roles usually in the third or fourth floor (Hariri, 1993) (Figure 1.39). Women in the outer space can expose themselves to sunlight, which is considered beneficial for health. The direct vision of sky, moon and stars, cold air and privacy gave the Al Kharijah a distinctive function to the basic needs of them.

These characteristics made Al Kharijah a unique social place as it was used extensively by the family especially women for many activities. Before using it, the floor was sprinkled with water for cooling and then covered with carpet. Al Kharijah was used for chatting, playing, drinking
tea and sleeping. It was also used for drying clothes. Thus, Al Kharijah was practical and rich.
**Hierarchy:** The Noorwali house (Figure 1.40), shows hierarchy of relationship between the indoor and the outdoor. Because the air gradually get cooler in upper floors, each floor has deferent portion between the indoor and the outdoor. These portions are organized gradually where the upper floors has more outdoor than indoor spaces whereas in the lower floors the indoor is more than the outdoor. Furthermore, this system is also applied in all the openings of building. Gradually, the openings in upper floors is bigger than in the lower floors. In fact, the bigger openings in upper floors means bigger Rowshan projection, and therefore, the interior space get more air and the public space get more shadow. Thus, In response to the hot and humid weather, the private space has to be connected with public outdoor spaces.

![Figure 1.40: The hierarchy of relationship between the indoor and the outdoors in Noorwal, house. Source: (Khan,1981)](image)

The sequence in the relationship between the inhabitant and the general context was distinctive in the traditional home in Jeddah. There was a sequence in the relationship between private house and public alleys through the ground floor. The first and second floors occupied a
large part of the daily family activities. The third floor was usually a junction point between the inside and outside in the Al Kharijah. This floor was not completely closed as the first floor and second and not fully open as roof floor. Members of the extended family of the three generations range their comfort depending on the age, health, clothing and nature of activities (Danby. 1984). The sequence provided a variety of spaces to serve family activities according to the comfort of the climate. When the family grows up and the family needs more closed spaces, the space of Kharijah on the third floor became a bedroom whereas the location of Al Kharijah change from the third to the fourth floor and so on.

**Rowshan:** The court yard system was not exist in traditional Jeddah homes. The main source of home cooling was through large openings which could be divided into two types. The first is the wooden casement windows, and it has the same function as the regular window by allowing air and light to cross. The width of wall provides a reasonable space for sitting or sleeping next to the window. On the ground floor, the window have iron for protection reasons which were very simple with modest decorations.

When the window is prominent outside, it is called Roshan. Roshan was the nicest piece in traditional homes in Jeddah. Roshan is made of imported Indian wood from the east (Figure 1.41).

Roshan is an important element in the building that play an important role in connecting the private to the public. The main goal of Roshan is not just to ventilate and light the interior spaces, but actually it connects the private to the public through its openings that not just to allow people
to see, hear and smell anything that happens in the public space without being seen, but also talk to the people who are in the public space (Figure 1.42). Therefore, Roshan has the ability to connect private and public activities with each other. For example, sleeping which is considered as private activities, was actually taken place in the Roshan that is considered one of the most important elements that connect private space to the public space.

Figure 1.41: The Roshan. Source: (http://bestofinsta.org/media/1091165710899274707_1169253895)
In addition, the Roshan can connect two or more private spaces with each other in different buildings. According to Jomah (1992), the Roshan enabled people particularly women who are inside the space to talk and communicate with neighbors in groups during the day while they sat in Roshan without leaving the private house (Figure 1.43). The depth of the
Roshan that made the narrow alleys narrower on the upper floors helped neighbors to communicate with each other. Thus, The semi-public narrow alleys and the Roshan connect neighbors together who live in different private spaces in different buildings.

![Figure 1.43: Woman discussions while sitting in their home Roshan. Source: (Akbar.S, 1998)](image)

Roshan is not just a window; it is a space that can be used privately and publicly. The use of this space can transform from public to private activity according to time and need. For example, Roshan was used for parents sleeping. When the setting bench Karaweet joined with the Roshan on the same level, the width of the Roshan and the depth of the...
wall with corvettes make the space larger than a large modern bed (Figure 1.44). On the other hand, if they have guests, this space is given to the most important person to sit (Figure 1.45).
Maq’ad: According to the Figure 1.46, the Maqad was adjacent to the Dahleez in the ground floor and had two windows. Between the Maqad and the Dahleez there is a wall with large circular openings to move the air. The house can have more than one seat depending on size and financial situation of the residents.

The Maqad was the most used place by the owner, friends and neighbors for having conversation, drinking tea and smoking shisha on a daily basis without disturbing the internal life of the family at the top. It could be used as a private office for work, sleeping and storing goods.
Makhlawan: The literary meaning of the Makhlawan is the place where you are alone. It can be found on any floor and its use was highly variable. It was used by the elderly to rest after dinner and lunch and may also be used as a storage room. The furniture in this room is similar to the Maqad.

The ground Makhlawan in the Nassif house was located opposite the Maqad. It was used extensively by the inhabitants for napping, and storing important purposes for free work.

Figure 1.46: Ground floor of Nassife house.
Intermediate floor

**Suffah:** As shown in the intermediate floor (Figure 1.47), the Sofah was a relatively small room usually located between the Muakhkhar and the stairs on one side and the Majless on the other. It was used as a transitional space to receive informal guests from women relatives. It was furnished and decorated with Saisam box and Karaweet or Tawaweel. If the number of guests was large and the Majless was not enough to accommodate them, the Sofah was used as extra space. In this case the door is open between them, the place becomes fully as one large room. Formal guests who need special treatment like older people sit frequently in the Majless while young and sit in the Sofah.

**Majlis:** The Majless was the largest room in the first floor and it was always located on the main front to enter the largest amount of air possible (Jomah, 1992; Maghribi, 1982). It was always flexible and clean for inviting formal guests.

Although Majless is more private than the Maqad, it is the most expensive place in the house. The family do not use the Majless in their daily lives except for sleeping. It can be used by the family if they live in a small house. In any case, the Majless must be ready to receive guests at any time. If men and women are invited at the same time, men sit in the Maqad while women in the Majless.

**Muakhkhar:** The second area on the first floor is more practical and is located on the northeast and is called the Muakhkhar in the sense of the back zone. It can be used as a multi-purpose room or two. It was used for
preparing snacks, eating food, children sleeping and entertaining the family.

**Bitalma:** The bathhouse, which is the place of the water, is located close to the Sofah and has easy access to the stairs, which makes the ALsaqah to enter it without disturbing the privacy of the family.

**Mabeet:** Mabeet is usually located opposite to the Muakhkhar, and is the place where parents sleep. When the Mabeet was on the top floor, it means that it is used to support family activities during hot days and nights. These activities were for drinking tea, playing and storing pillows.

Figure 1.47: Intermediate floor of Nassife house.
**Third Floor**

The third floor was the beginning of the intersection point between the inside and the outside (Figure 1.48). When the parent is out of the house, all women from the extended family can use the exteriors as they are active in daily women’s activities.

**Roof Terrace:** The roof was the most airy place in the house. It was used for sleeping and cooking large tables in the caravans (Figure 1.49). Before the sun sets, the roof was sprinkled with water and the chains for sleeping. This process cool the place. This floor is usually divided into sections by walls rising about one meter to keep each family privacy when sleeping and laying on the ground.

![Figure 1.48: Third floor plans of Nassife house.](image)

Source: (Akbar,S, 1998)
Figure 1.49: Roof Terrace. Source: (Omrania, https://omrania.com/insights/8-features-vernacular-architecture-hejaz/)

Die approbierte gedruckte Originalversion dieser Dissertation ist an der TU Wien Bibliothek verfügbar. The approved original version of this doctoral thesis is available in print at TU Wien Bibliothek.
The dynamics of public and private spaces

The public and private spaces were closely associated with each other. In response to the hot and humid climate in Jeddah and the absence of technology to control the house, most public and private activities can occur in several places at home according to the location and time of cold air. The space has the potential to change from public to private space on an annual or daily basis. For example, a Majlis is one of the spaces that can be transformed from a public into a semi-private and completely private. In the hot days, sleeping, which is a private activity, can take place in the Majlis, which is considered a semi-private place where guests are invited. Meanwhile, during the pilgrimage season, it was used for pilgrims to reside in it and thus the Majlis turned into a public space. The roof of the building, which is a semi-private space used by all families, can be also used for sleeping as a private activity in humid days as it was also used for cooking as well. The Maq'ad is also a space that can be used for various activities such as, inviting friends, working, sleeping and storing goods. Thus, the shift in activities and functions has made the relationship between the public and private more dynamic.

Furniture plays a big role for this dynamic. In order to allow the space turn from activity to another, furniture must have certain characteristics. According to the Akbar (1998), most furniture in Jeddah houses was light, portable and it can be used in different functions such as the karaweet that can be used for sitting and sleeping.
1.4 Summary.

The public space is not just a place where activities take place, but it connects neighborhoods, buildings, people and activities together. It is the center that connects all people and places. All public spaces were designed in hierarchical order from the highest level of privacy to the lowest, reducing boundaries between the public and private. Moreover, all interior spaces must be connected to public spaces for gaining sufficient ventilation and lighting. Some of the activities that take place inside the home are considered public, such as receiving neighbors, pilgrims and celebrations, while others are considered as private activities of daily families. There is no special space for a particular activity since all activities can occur in all spaces. The private space can turn into a public space at different times. This dynamic is a reflection of the changing weather conditions at night, day, summer and winter. The most commonly used spaces are those that have a strong connection with the outer public space and are oriented north-west to obtain ventilation while the less-used spaces are those that have the least connection with external public space and are oriented south-east. This means that the more spaces are connected to the external public spaces, the greater the ventilation in the interior spaces. This principle of design explains why some of the highest level of private activities such as sleep must occur in Roshan that is one of the most important elements that has a strong connection to the external public space.
Part 2 : Public Life after the Removal of the City Wall
2.1 City expansion.

Until the late 1940’s, all evolutions of the built environment took place within the walls. In 1947, the city wall was demolished to meet the future development needs. In the early 1950’s, the city experienced great growth and was associated with the rapid change in the physical environment and lifestyle of the population. These changes were at level of home and neighborhood.

The city wall was demolished in order to allow the city to expand and develop outside the city wall (Figure 2.1). There were two main reasons for the rapid expansion of the city. The first reason is the growing numbers of immigrants and settlers. Due to the increase in global oil demand at the end of the 1940s and the end of the 1950s, Saudi Arabia witnessed an increase in economic growth. As a result, people have migrated from areas such as Yemen and Africa to the city to look for jobs. These immigrants built their homes in the places where they settled in organic environment form and organized irregular streets.

Economic development is also requires a professionals such as teachers, doctors from neighboring Arab countries such as Egypt, Jordan, Lebanon and Palestine (Al-Harbi,1989). The culture which has managed to absorb foreigners through history through a unified cultural uniformity, has begun to lose its homogeneity due to the rapid influx of large numbers of people from different cultures (Bokhari,1978).
Figure 2.1: Jeddah after wall demolition in 1947. Source: (Jeddah Municipality - Planning Department)
The second reason for the rapid expansion of the city was the change in the form of roads to stop the spread of unplanned streets and facilitate the use of large numbers of cars. The first network system appeared in Jeddah in 1952 (Salagoor, 1990). The irregular streets and the network organization continued to grow until 1962 when the municipality began implementing a comprehensive urban plan.

Therefore, the transitional area is considered the part that was outside the fence that built between late 1940 and 1970. The area has a large development area called Sabeel, adjacent to the old city area and scattered development areas located near the main development area. The areas consist of the airport, the Khuzam Palace, the Turkish fort (the new army headquarters), the port, and the oil refinery. These areas, in addition to other settlements in the north and east of the city.

With the demolition of the old Jeddah wall in 1947, Jeddah entered a new phase of growth. The establishment of urban projects accelerated the city's growth. As a result, the old city and suburbs expanded and covered the unplanned areas around Jeddah. Most urban expansions took place along two main roads: the Mecca Road in the east and the Medina Road to the north, which were the only roads outside the city walls. Development along these two roads was better than other areas due to the interest of local authorities in them. Thus, better population conditions in addition to the emergence of a new type of housing in Jeddah in areas inhabited by the population of the facilitators of the case. Other areas, especially in the southern part, were crowded with slums and slums.
M.H. Assad writes "In the southern sector of the city nearly a third of the dwellings are shanties - 92% of Jeddah's shanties being concentrated here and most of the rest are low grade cluster houses" (Assad 1977, p.28).

The main roads in this part of the city were Medina and Mecca roads. The first ring was the road of King Abdul Aziz, which evolved from the traditional system of roads from some parts inside the walls of the city. The second ring was connecting the Medina road, the airport, Mecca road and the port. In fact, these roads played an important role in shaping the overall picture of the transitional area of the city, as a new structural system was activated, and the areas between these roads were used in many residential areas.

The transitional zone contained traditional structural housing and other modern styles associated with the growth and development of Saudi Arabia since 1960.

There were five types of housing in urban organization. The organic fabric consists of three types: folk houses such as shacks and shabiyyah houses that are occupied by immigrants from areas such as Yemen and Africa. Modern traditional homes inhabited by Saudi families who moved from the old city. Villas and apartments were built on schemes that were divided by the municipality in the form of networked organization. These villas were inhabited by people with medium and high income families while apartments by expatriates.
In 1970, twenty-three years after the demolition of the fence, local authorities found that the city’s heritage was threatened. As a result, the authorities appointed Mr. Mathew R. to design a plan to preserve the heart of Jeddah (Bokhari, 1983). The master plan proposes that the historic area should be defined as a local historical area, respecting the built environment of the region. As well, all buildings are classified into three levels in terms of history and historical significance. This classification and new policies were proposed in order to preserve the region (Mathew, 1980). The most important part of this plan is the footprint of the wall of the city, which should have been seen through the design of new doors that conform to the ancient view of preserving the historic value of the area since the design and implementation of this plan until today.

Finally, the wall of the city played an important role in maintaining the city even after demolition. Many experts such as (Bossa, Adas and Angawi) believe that the old wall should be considered as basis for the beginning of a new phase in preserving the city’s heritage. After the demolition of the city wall, the historic area remains intact with its integrity and sustainable integration even as the infrastructure and built-up area of the area deteriorates.

**The city divisions**

Jeddah has been divided into deferent parts and that because of the rapid growth that took place after the wall demolition in 1947. This division was between the old part of the city and the new area after the fence demolition. The new area is also divided into two parts: the southern region that has factories, industrial activities and low-income
housing while the second area is developed along Makkah and Madinah roads in the northern and western parts of the city, which has high-standard housing such as palaces, villas and buildings, as well as some government buildings. However, the majority of lands in the transitional zone that surrounded by the second ring are housing. Business activities are located next to the main roads in the area. M.H. Assad, writes, “The commercial activity in this part of the city employs 45% of the total city workforce, engaged mainly in the service industry and service trade sector” (Assad 1977, p.25).

The central area in the old district, On the other hand, has returned to its position as a central market for the city, which includes commercial and office services, a financial center, hotels, parking lots, in addition to the presence of residential area through the central region.

Furthermore, the economic aspect played an important role in dividing the city. When the land prices increased as a result of the economic boom, many jobs have been provided and some household incomes have increased. Thus, most rich families that were living in the old city moved to the new northern neighborhoods for having modern standard life whereas the low-income families remained in the Old City and in the southern part of the new area. The middle-income families are spread throughout the city.

By the end of 1940, the city’s geographic community started to become disintegrated. The urban landscape of the southern, western and northern parts of the city was created for high-income citizens who were unlikely
to reside in the southern part of the city, whereas the low-income citizens live in the south and east of the city due to high land prices and the loss of adequate housing. In general, all urban growth of the city and urban developments have been followed this style.

As a result, the neighborhoods in the southern part of the transition zone are poorer in quality than those in the north. The high quality of buildings such as palaces, villas and new buildings are located in the north of the city, while unpopular elements such as oil refineries, warehouses and factories are located in the southern part of the city.

Therefore, it can be said that the division that occurred after the wall demolition in 1947 was sharp division between the regions, which also caused divisions in the social fabric of the city. This social division did not exist in the past, as the whole society, high and low income families lived in the same place and neighborhood. The buildings were all very similar and lived in similar environmental conditions. In the past, high and low income families serve each other in the same place. After the wall is demolished, low income families have to move daily to the wealthy neighborhoods. In other words, the workplace has been disconnected from the place of life due to the spatial and social divisions that took place at that time.

**The distinction between work-place and life-place**

The modern city that provides new services and modern lifestyle has encouraged wealthy families to leave the old city and live in the new city
for having better life. This movement caused two points: Firstly, Old Jeddah has become a living place for wealthy families and low-income immigrants. Wealthy families that were previously interested in supporting and maintaining public and private spaces are no longer exist, and therefore the physical environment started to be deteriorated.

Secondly, most low-income immigrants and workers who live in old city need to commute every day to the new city for serving high-income workers and having jobs. In Old Jeddah, all public space in the (haras) were surrounded by private houses, and people who used these public spaces were the same who lived in houses that surround by these public spaces. Not only that, but also the activities that took place in them were semi-private, and they were compatible with activities that took place inside the houses. Therefore, public space was connected with private space. After the wall demolition, on the other hand, the activities that has taken place in the public space are no longer connected to the activities inside the houses. For example, shops is one of the most important activities that have become available in all public spaces. Most markets and light factories are located on the ground floor of most new areas, especially the main roads. Customers and employees of these stores are not necessarily living in the same neighborhood where these stores are located. Because the place of work has been separated from the place of life, people now do not live in the same place or neighborhood where they work. Thus, all public space in all districts are not only being used by the people who live in the same district but also by all people in the city. This separation has removed the semi-public space that was present in Jeddah before the wall demolition, which in turn has disconnected the public space from private space by making the inside has a high degree of
privacy while outside has a high degree of public. Because the semi-private space has become a public space, the new buildings in Jeddah have become an important element that separates the world into two parts: the public that is the outdoor, and the private indoor.

**Social aspects**

The inhabitants of Jeddah are Arabs, with a mixture of non-Arab followers of Islam who migrated out of hajj and settled in the city. After that, these settlers became completely integrated and difficult to differentiate among them from the locals in the area. Among these foreign communities there are fewer nationalities than others, such as Persians, Turks and Berbers. However, the Yemenis and Hadhramans increased their number because they were working in construction and trade. In addition, some Saudi families have migrated to Jeddah from various parts of the Kingdom such as Makkah, Medina, Yanbu and Najd (the capital of the Kingdom) to get a better life, trade and jobs (Al-Ansari, 1982).

In the early times, most foreigners who came to Jeddah were wealthy and traders. They contributed to the physical structure development of the city by establishing many traditional buildings with good architectural elements, in addition to their contribution to the economic development of the city. On the other hand, most of the newcomers who have come after the rapid economic growth since 1950 have had low income from the working class as they have come for a job. They settled in groups in specific areas of the city, especially near the city center and the southern part of the city. After that, these settlements took as many names such as
(bugharyah), which is a neighborhood inhabited by people of bugharyah origins. *Hindawi* is an Indian region. However, all these people have become integrated with the *Jedawi* community because most if not all of them are Muslim and share common customs and Islamic backgrounds.

In the past, the old traditional community of Jeddah was able to handle and accommodate the habits and behavior of foreigners without losing their identity. From 1950 onwards, as a result of economic growth and the modernization of most of the Kingdom’s cities, the Jeddah community was unable to cope and resist the heavy pressure of urban urbanization. As a result, many traditional ways of life and expression of social identity began to be lost in some places or were ignored by others. Accordingly, the homogeneity of society has lost, and almost all society has become more complex and less integrated. This led to the lack of continuity of society in urban life in Jeddah.

**Types of employment**

Prior to the discovery of oil in large amounts in Saudi Arabia, the main domestic economy was dependent on Fajud pilgrims, Umayyads and trade. The city was for the long time as commercial center for the Hijaz region.

Economic growth has made many people from neighboring regions and other countries migrate to major cities to get better jobs. Jeddah has particularly attracted several levels of people. For example, low-income people work to build buildings and service activities, which are largely
Yemeni, Indian, Pakistani and others. There are also resident professionals such as doctors, engineers and others from different nationalities such as Egypt, Jordan, Syria, Iraq, Palestine and Sudan and others.

In the early 1950’s onwards, the city has seen rapid urban expansion. Most people were working in building construction and service activities. According to Matthew, "the urban economy is predominantly a service one, and the highest level of services in the region and particularly in financial, commercial and distributive sectors are usually the found in Jeddah. A substantial majority of all bank offices in the Western Region are in Jeddah" (Matthew 1972, p.184).

Jeddah’s homes have several levels of people from artisan workers to high-tech craftsmen as well as industry workers from the simplicity of government employees to high-level professionals spread around the city. However, newcomers always seek to live close to their places of business as possible, through which they created several communities. Thus, some social levels were centralized in certain places in the city.

In general, low-income people were present in the southern part of the city. The middle-income people are located in the southwestern part and the central region and are largely in the second ring roads and the western part of the city. High-income people are on Medina and Mecca roads in the north of the city.
The physical districts boundaries

In the past, before the oil boom in particular, most residents shared similar economic, social and other living conditions. The similarity in the urban fabric of residential neighborhoods such as (compact urban form, narrow streets and many external spaces) encouraged participation in social activities. During walking, they can talk and discuss common themes. However, these factors are not applicable in residential neighborhoods after the destruction of the city wall. This is what happened to the residential neighborhoods through the economic and construction growth. The social and spatial division of the city revealed the differences between residential neighborhoods.

Moreover, the new style of mobility enhanced the separation between these districts. In the past mobility between all the districts was by walking. All districts were connected with each other through public space. In the new area, After the wall demolition, people must move between these districts by cars because each district has become surrounded by wide streets (Figure 2.2).

In the past, in order to move from one private place to another in different district, the person must cross the outside open place. In the new area, due to the city growth and expansion, it has became difficult to move for long distance by walking, and therefore people need to use car. Open space is no longer used as a means of movement from place to another, and cars have become the best choice for most people in order to move faster with comfort. However, the public outdoor spaces still used as means movement from private place to another within the same district.
only because it was difficult to navigate the car in the neighborhood where roads were narrow and winding. Thus, the separation between the districts by wide streets has reduced the chances of people to use public spaces. Many indoor spaces in the city have now a direct relationship with each other. The public space, which was considered as a point of interaction between people and public life, gradually began to weaken, and therefore the amount of time people spend in outdoor spaces after the destruction of the city wall is far less than the amount of time people spend in outdoor spaces before the removal of the city wall.
Figure 2.2: The physical districts boundaries. Source: (Jeddah Action Master Plan, Technical Report No.5, 1978).
The appearance of cars in the city make the roads bigger and straight. Thus, the lands and neighborhoods have grown. The visual landscape of the city is being experienced by using car, rather than by walking. People started to see the city through a private cars, and the public space began to be seen rather than used. Not only this, but many public places are deliberately designed to be seen through cars rather than used (Figure 2.3).

Figure 2.3. King Abdul Aziz Street. Source: [https://www.jeddah.gov.sa/Mobile/Gallery/JeddahOld.php](https://www.jeddah.gov.sa/Mobile/Gallery/JeddahOld.php).
The layout

Most of the residential neighborhoods of the city’s in the transitional part, especially those established and developed between 1950 and 1960, share many characteristics of the old Jeddah urban form and other Islamic neighborhoods as well. These characteristics are compact urbanization, narrow roads, diversity in open spaces and others. At the same time, the advent of cars as a means of movement the has an impact on the neighborhood and residential neighborhoods as well.

Jeddah after the destruction of the city wall area has witnessed many types of housing. Different housing ranges from residential district to another in terms of type of housing, land ownership and socio-economic factors that played an important role in the formation of the general character. For example, the area that was dominated by Al Shabiah houses in the south and south west is different from those that designed by buildings and villas.

In old Jeddah and in south part of the transitional area , all buildings and public spaces were built by the inhabitants according to the idea of custom “action of belief in which persons persist with the concurrence of reasoning power and which their natural disposition agrees to accept as right” (Abdul Khaliq 1985, p.163). This means an agreement between people who were living in relation to the Open space, alleys, street, etc, which ends up being a residential neighborhood designed according to the needs of the residents. Therefore, people shared each other in the design, arrangement and cleanliness of open spaces. Each family had a role in the
appearance of the outer spaces. Thus the outer spaces belonged to the owners of its inhabitants. Responsibility was not only in the private sphere, but also extended outside. people owned the inside and the outside with common responsibilities and different tasks in their among them.

In the new city, on the other hand, especially in the north, such as Al-Sharafiya district, the streets are wide and organized for cars in the grid form network. The exterior has become a state property. People are no longer responsible for the outer space. The state is responsible for all external spaces and people's use these spaces according to the laws and regulations of the state. The outer spaces are now belong to the state and not to people. Thus, people who were representing the connection between the public and private is now separated, and therefore that also means that public space is being disconnected from the people.

Aiharbi (1989), has conducted a study to analyze the urban fabric of the city. The Analysis of these areas has been taken from several lanes such as AL Hindawiah’, (Sample area No.2), ’Al nuzlah Al Shrqiah (Sample area No.4), Al Saheifah, (Sample area No.6), Al Kandarah, (Sample area No.7), Al Sharaffiah (Sample area No.8) and Al Rawais (Sample area No.9) (Figure 2.4). He pointed out that these selected areas illustrate the transformation of the urban fabric of the city's in the transitional area. For example, Al Sharaffiah neighborhood was one of the villages outside the city wall (Figure 2.5). After the demolition of the wall in 1947, there was a rapid development through which the indiscriminate and mud houses were replaced, Characterized by compact architecture and narrow winding streets. Little radiant road displays from the central town are present in this neighborhood and they were used for traffic.
Figure 2.4. Sample areas in the transitional part of the city. Source: (Aiharbi 1989).
The historical growth stages of the city's of the transitional area are represented by the urban fabric of the city. When looking at figure 2.4 above and associating it with the map area figure 2.5, it is possible to observe and understand the transformation of the urban fabric of the city. Also, the picture shows the front of grid fabric in a few areas along two
main roads: the Mecca road to the southeast of the city and the Madina road towards the north of the city.

The narrow winding alleys disappeared at large rates in the area that was developed in the mid 1950's onwards especially in those areas that can be described as medium and high average, such as Al-Sharaffiah neighborhood.

The organic planning of transitional residential neighborhoods that provided intimate spaces and irregular areas enhanced the urban interaction that characterized by the concept of Islamic city. Most streets in the transition area are irregular, and they were shaded from the sun's rays by buildings. In most transitional neighborhoods, there was a hierarchical structure in the formation of the streets, where the roads are usually present in the residential boundaries and close to the center.

As mentioned above, the street hierarchy seems to have been clearly implemented when cars were limited in the city. However, as a result of increasing numbers of cars, The hierarchy of streets did not last. In some areas, especially within the city's transitional area, the streets have become wide, relatively straight and in some places they are in grid shape order. After that, it can be seen some areas planned by the municipality for high income people. In these areas, cars appear as a major means of transportation.

At present, cars have appeared in every part of the residential neighborhood and have created a conflict between cars and pedestrians. Roads that were designed for pedestrians, have been used for cars and and
for those who want to avoid traffic congestion and traffic delays in major roads.

A new model of buildings emerged instead of many nest and mud houses that were located in the outskirts of the old city. The southern part of the city as mentioned above still contains many slums of the houses of the worldly classification. However, the new road network has helped remove some slums in some parts of the city, especially in the southern part of the city.

Cars has changed the city gradually and rapidly at the same time. The use of cars in the previous time was due to the economic boom, which caused an increased in the numbers of immigrants, and the population density of the city. Thus the city needed to grow and mobility through cars became necessary and needed.

Dependence on cars at that time was not effective enough as there are some areas where cars can not enter. The city has not been designed to suit the car traffic in all areas. There is therefore a need for improvement and change. Gradually, the narrow, winding alleys disappeared, and straight and wide roads have become inside the neighborhoods. Bridges and new roads have been built and some old roads exposed. From now on, every building is surrounded by streets.

In the late 1960’s and early 1970’s, the urban fabric of the transition zone underwent major changes. Streets are intense and the roads are set
up throughout the city. Most of the existing roads have been introduced to meet the huge congestion generated from mixed land in this part of the city. As well as new roads, such as Amir Fahd, TV, Palestine, Crown Prince and Al-Falah. In addition, new bridges have been established throughout the city to provide ports and connect various parts of the city. The network also eases traffic congestion at intersections such as Mecca Road with Prince Fahd Street or King Khalid Street and the city road with Palestine Street and others.

These changes have affected the quality of the urban pattern in the city. These issues revolve around the following: First, the distance between all locations and buildings has increased, which contributed significantly to an increase in the length of travel time in the city. Second, the climate condition has become extremely hot due to the increase outer spaces exposure to sun radiation. Third, traffic congestion and environmental pollution have increased.

In Old Jeddah, the open space was a point of connection between private space and public space. Not only that, but some public and private activities were taking place in the open space as well. All these three spaces were connected with each other (Figure 2.6). As the connections between these spaces is no longer exists, the relations between these spaces changed as each space became isolated from the other. In addition, the concept of each of these three spaces has changed as well. However, this investigation will examine the impact of this new relationship on each of these three spaces as well as the effect of each space on the other.
Figure 2.6: Connections between public, open space and private space.
2.2 The Open Space.

The open space that was connected the private and public spaces became completely isolated. Access to these open spaces become more difficult. In Old Jeddah, these open spaces were surrounded by public and private buildings, but now they are surrounded by wide streets. Thus, the best way to reach these isolated spaces is by car. The separation of buildings from the open space reduced the presence of shadows that reduce the temperature in the space. In addition, these open spaces had a direct contact with the streets that caused an increase in pollution and noise.

With the increase of migration and population density of the city, the use of cars has increased dramatically in the city. As a result, most of the open spaces became parking spaces. Therefore, we can say that Jeddah at the time, did not have open spaces. Some of the activities that were taken place in the open space moved to the private space and others to the public space. Consequently, with the disappearance of open spaces in the city of Jeddah, the relationship which consisted of three spaces became only two: the public space and the private space.

Due to the disappearance of the open space that connects public and private life, some semi-public and semi-private activities that were present in the traditional open space have disappeared.

As mentioned perviously, as the city has witnessed a great growth and expansion, distances between places have increased. Also, the spaces
between buildings and intersections between cars movement and pedestrians have increased. All these changes encouraged people to use the car as a safer and faster alternative. Therefore, people in general whether children or adults, feel difficult to go outside, and they see the outside as uncomfortable, insecure and under control. Therefore, walking that was the primary mode of transportation in old Jeddah has gradually disappeared in modern Jeddah.

Shopping in the past was occurs in the open space. One of these ancient markets is called the Kabel street which was located in the center of Jeddah and extends from west to east. It was considered the most important street in Old Jeddah at all, which was a place for most popular cafes frequented by sailors and workers, as well as money exchange shops, perfume shops and cloth shops.

Markets that were happening outside has turned inside. The physical space of Markets are now dependent on air conditioners, closed by walls and surrounded by car streets. The open space, which was in the past responsible for connecting people to the markets and moving between them is no longer exists because cars has become the main alternative.

In the past, some social and religious occasions were taken place in the open space. In the Eid, for example, the manifestations of social celebrations were present in the open semi-public and private spaces through communication between the neighbors as well as in the Mercaz of Omdah and the mastaba that traditionally attracted the people in Jeddah. For example, Audaroos Baraha, dating back more than 70 years and surrounded by ancient buildings, was decorated with ryashin and
included many popular children’s games, psalm, dance and the mizmar that was the most famous art at that time.

As the public space has deteriorated, these ceremonial aspects have largely disappeared. All festive events are now taking place whether inside the buildings. In the Eide and other social events, for example, people are visiting each other in the house. In addition, with this shift, some of the kids’ games disappeared or moved inside. Some games such as domes, dominos and ballots that were played at inside and outside are now only take place inside. Several games have disappeared from the outer public space, such as the games of the bird, the hideaway, the seven rooms, the Berbers and the heart, in addition to the the game of the psalm, the folk arts games and children’s entertainment competitions.

Almarkaz is one of the most important activities that have disappeared. Al-Marqaz, which was located in front of most houses in Old Jeddah, now no longer exists due to the disappearance of semi-public spaces. In the new area, there was no alternative to the Merkaz as the interior became the place where people gather.

With the disappearance of the open space, all activities that were taking place in this space disappeared or moved into a private or public space. This means that public life of people have become completely indoor. With the loss of open space, which was not only a link between public and private space, but as place used for public and private activities, it can be concluded that the lives of people became mostly in
the buildings, whether public or private. Each domain has become isolated from the other and access to any of these domains has become complicated compared to the past (Figure 2.7).

Figure 2.7: Separation between public space and private space.
2.3 The Public and the Private Boundaries.

As mentioned previously, the change in the external environment affects the relationship between the inside and outside. In addition to the disappearance of semi-public space, all streets were widened from a rate of two to five to a minimum of 12 meters. Spaces between buildings have become wider. All streets are paved with asphalt and exposed to the sun throughout the day. Temperature has increased by cars and air conditioners. The External space become hot, polluted and source of auditory noise. These changes have affected the private and the public worlds in two main aspects:

Firstly, some activities that were taking place in open space have gradually disappeared and some of them moved to public space and private space. Secondly, the concept of the physical space changed from the idea of making the building more outwardly connected to the idea of inwardly connected. This change makes the relationship between the physical space whether public or private and the open space very sharp and make design strategies shift from the pursuit of integration with the outside to isolation from the outside. Consequently, the old traditional buildings that had always sought to be connected to the open space have become useless at this time, and must be replaced by new types of building with new sharp elements that divide the city into two spaces: indoor and outdoor.

Housing Types

During the 1960s and early 1970s, changes in the home environment were slow until the late 1980s, when domestic economic output increased
sharply due to the rise in world oil prices in the mid-1970s. Many social changes have taken place in Saudi society because of the government projects that have been created and the increase in per capita income. The standard of life for most Saudis has improved dramatically. Better education, health care, transportation, electricity, water pipes, drains and telephone lines are available in cities.

The city of Jeddah witnessed major changes in society, through population inflation, changing social and cultural structure, and ways of thinking. All these variables directly or indirectly affected the formation of society. One of the most important changes that have occurred is the separation of families from each other. Hamdan and Rugb argued that the family texture has changed from extended to nuclear (Hamdan, 1990; Rugb, 1985, p. 7-21). In the past, families lived with each other, but now each family lives in a private house. Nevertheless, the relationship between extended family members continued to be strong. According to Rajab (1990), one of the family requirements for selecting a home is the distance between home and their relatives houses in order to overcome the impact of the large expansion in Jeddah. He also referred to their relationships through short visits, telephone and social events. However, the transformation from extended to nuclear families has increased the amount of residential buildings in the city.

Furthermore, the high demand for housing in the middle of 1950 was as a result of increasing population density including foreign employees such as professors and doctors and from Arab countries such as Egypt, Jordan, Lebanon, Palestine and others. They contributed to the construction and dissemination of apartment developers in the city. Accordingly, the rise of the apartment buildings in the city was due to the
high demand for housing. The solution was to build apartments in response to the sudden increase in population density and lack of housing required the construction of houses in a short time (Figures 2.8 & 2.9).

Figure 2.8  An example of apartments during the fifties. Source: (Based on Salaghoor, 1990: 123).

Figure 2.9 : An example of apartment plans. Source: Apartment 1 & 3: (Al-Haddad architectural office), Jeddah. Apartment 2: (The archive department of Al-Aziziyah municipality, Jeddah).
The second type of housing is villa. The villas appeared in Jeddah in the mid-1950s (Al-Harbi, 1989) (Figures 2.10 & 2.11). When cars became the main means of transport, the old city began to become a commercial center, where it was no longer a comfortable place for rich families to live. Gradually they moved to the suburbs and over time when it became a high-profile icon in society. Al-Hathloul (1981), pointed out that the reason why villas become a high-level symbol in Saudi society is due to the Arab American company Aramco, which provided lots of villas to their employees in the early fifties in the eastern region of the Kingdom. Also, when the government moved from Mecca to Riyadh in 1957, a project with 754 villas was established for its employees. Because the government and Aramco are a high-class community, villas have become a high-profile symbol in society. The villa is a comfortable accommodation suitable for first class families, mostly merchants and senior government officials.

Figure 2.10 : An example of Villa plans. Source: (The archive department of Al-Aziziyyah municipality, Jeddah)
Figure 2.11: An old villa in Jeddah (c. 1960). Source: A. Al-Ansari, Tarikh Madinat Juddah, Dar Misl Letteba', Cairo, 1982, Appendix Three, Plate (L).
The Private Boundaries

The new design approach, which seeks to isolate the building from the outside, was achieved by replacing the old elements with new ones, which in turn has increased the levels of isolation in public and private domains.

**The End of Dahleez:** The Dahleez was one of the most important spaces that connect the indoor to the outdoor spaces in the traditional buildings of Jeddah. The Dahleez served the transitional relationship between the private area of the buildings and the open spaces. Now, with the wide road network that facilitate the use of cars, the front of the houses has become part of the street and thus dependence on the Dahleez has become useless. All the new buildings became without Dahleez which in turn made the indoors space lose its connection to the outdoor space. In the new buildings, the Dahleez has been replaced by the hall, which is considered part of the interior spaces and has no connection to the outside.

**The Buildings Door:** The doors, which were always open all day, are now closed. The hot wide streets do not encourage people to gather outside, and weaken the spatial feeling in front of the buildings. Thus, the doors must be closed to protect the buildings and the people from strangers. No one can open the door except the owner of the buildings. The relationship between neighbors has been greatly weakened and the boundary between indoor and outdoor spaces has become very sharp.
The End of Roshan: The Roshan was one of the most important elements in Jeddah’s traditional buildings. The purpose of the Roshan was to get air and light from the outside to the inside. In addition, the outward extension of the Roshan casts more shadow and coolness on the areas around the external spaces. However, with artificial lighting and air conditioners, the Roshan has become ineffective. Also, because the outer spaces are now wide streets and not suitable for walking, the functional roles of its outward extension has been reduced significantly.

The symbolic value of modern built environment is the second reason for the disappearance of Roshan. According to (Jomah, 1992), villas and apartment facades reflect the social status of its inhabitants. Therefore, The traditional way of showing this social status through Roshan has been neglected because it was linked to the image of being old.

Accordingly, in most of the new residential types such as villa, apartment and other public buildings, the relationship between the interior spaces and the external public spaces was only achieved through openings in the wall that determines the spaces.

The new window replaced the Roshan. From the inside, there were frosted panes of glass with wooden frames, while wooden shutters with slats in outside (Figure 2.12). The frosted glass kept the privacy and brought lighting inside. Al windows were closed during the warm and humid days in case the air conditioners are switched on. If the weather is
good, the windows left opened and the shatters were closed to maintains the privacy. Thus, this type of window was suitable for the use of air conditioners. It does not have any adornment at inside or outside. It was effective and practical. The traditional Roshan has been replaced by this new window.

Figure 2.12: An external view of a shutter window.
The control of the temperature inside the buildings reduced the need to open the windows. As the external environment become hot, polluted and source of auditory noise, the private space needs to be isolated from outside. Technology played an important role in isolating the interior spaces from the external space. One of the most important technologies that made the building more isolated and less needed to be connected to the outside are electricity, lighting and air conditioners.

According to the Assad (1977), The emergence of electricity became widely available. In 1950, the Saudi Electricity Company became a generator and distributed electricity to most of the population. He pointed out that at that time there were large power generating volumes for private buildings in the city with distribution of about 25% of public supply.

Therefore, because electricity became widely available in the 1950s, the interior artificial lighting has been widely spread, and the demand for electrical products increased dramatically as well. Government statistics show some imported products during the 1950s. Table 2.1 shows the large increase in the import of air conditioners which increased from 576 in 1951 to 5081 in 1953. During the eighties, this number increased to 800000 (Figure 2.13). Before 1970, each house had two air conditioners, while now each room had at least one.
In old Jeddah, the relationship between interior and exterior spaces was a goal of design in order to enter the light and air from the outside to the interior. Now, because artificial lighting and air conditioners are
available in all interior spaces, there is no need to connect the interior spaces with the exterior. Not only that, but the building must be completely isolated.

Therefore, during the sixties and early seventies, the practical window of wooden shutters was replaced by cheaper sliding aluminum window types (Figure 2.14). The new type is made of two aluminum frames. Although it is easy to slide one side to open the windows, the lack of use and maintenance led to the dust accumulated in the rails, that prevents it from being opened easily.

Figure 2.14: An external view of an aluminum window.
The new type of windows does not have light control as the Roshan and wooden shutters. This helped to increase the use of curtains. Curtains are located in front of the aluminum windows, but not with many form and layers that control the amount of light. The development and diversification of curtains designs can hide the ugly aluminum window type.

Unlike the Roshan, which connect the interior spaces to the exterior by entering the light and air from the outside to the inside, allowing people to contact with people outside, see, hear and smell anything that happens in the open space without being seen, The new window completely disconnect the interior spaces from the outside world by being closed most of the time and covered it with curtains.

Spaces: In the past, public and private activities had the ability to take place in any space in the buildings searching for most airy place. For this reason, every space was designed to accommodate different activities whether public or private. Now, because temperature can be controlled in all spaces in the building, the dynamism in the movement of activities from one space to another is no longer exists in modern buildings. Each space is designed for a specific function and is non-changeable. Each activity has a specific space. In new houses, for example, each member of the family has a special space which in turn has greatly increased the size of the house. In the past, the temperatures inside the buildings are very close to the outside. Now, with the air conditioners that control the temperature in every space in the home, the gap between the temperature indoor and outdoor has increased.
People replaced all the traditional names of space with other new ones that came with modern buildings. In houses, the Majles was called the saloon, the kitchen was called the Merkape, the bathroom was called the belltama, the Dahleez was replaced by the hall entrance, the dining room appeared and names like the wajha, the Makhakhar, the Sofah, the Dahleez and the Makhlawan disappeared.

Sleeping that was taken place in Majlis, Maq’ad, Kharijah and the roof of the building, now only happens in the bedroom. Cooking which was done in the Merkape or in the roof, is now only done in the kitchen. Furthermore, One of the most important spaces that has become functionally defined is the salon, which was once called the Majlis in the traditional building. Unlike the Majlis that was used for several different activities such as reception of guests, sleeping and hosting of pilgrims and others, the salon is designed only for guests. Because the salon is only used when guests are invited, it is considered one of the least used spaces in the house. Having said that, the saloon is the first space to be furnished at home because it is considered one of the most important spaces that reflect the social status of the inhabitants. In addition, because the public space is no longer a suitable place for people, saloon is one of the most important spaces or if not the only space that can bring relatives and friends together.

As activities have separated with each other, the number of spaces has increased in the building. Hamdan (1988) pointed out that the size of the nuclear family is decreasing while the size of villas and buildings has increased. Table 2.2 shows that the number of rooms per household has increased in Jeddah. In addition, Al-Ghamdi (1985), in a comparative
study between Jeddah and Al-Baha, found that the number of rooms for each house increased according to income in Jeddah, whereas there was no indication of this in Abha. In old Jeddah, for example, sleep was done in several places at home and family members were gathered in all the cold spaces in the house. Thus, the participation in using these space for sleeping was mandatory. Not only that, but sleep was taking place in Roshan which is considered the most place has a strong relationship with external public spaces. Now, because it is possible to control the temperature in all the spaces of the house, the reasons behind the participation is no longer exists. Therefore, the privacy now can be achieved by increasing the number of bedrooms in the house where every member of the family has a private space even for children.

Table 2.2 Number of Rooms per Household in Jeddah, 1971 and 1978.
Source: (Sert Jackson International Saudconsult, 1979: 117).
In the late seventies, Advertising played an important role in encouraging people to individuality. According to Duncan (1981), the home environment in Hyderabad was influenced by the handling of the new generation to personal expression of lifestyle. Similarly in Saudi Arabia, the sense of individuality among family members has been increasing. Foreign television programs, mostly American, have had a great impact on people’s values (Merdad, 1993). Several sources, such as articles on family issues in newspapers, magazines, and radio programs, have been advised to provide special rooms for children. The latest example of this is an article in the Okaz newspaper that mentioned that studies proved that allocating a private room for children increases confidence as well as the sense of self worth. Also, the newspaper advised that children should be consulted in choosing their furniture.

New spaces have emerged. In old Jeddah homes, food was served in all places and there was no specific place where food or dinner was served. All rooms could have been used for food. Now, because every space is now designed for a certain activity, there is a special space for food called the dining room. Another space appeared in the old houses of Jeddah which is the living room where the family meet and watch television.

**Furniture:** The consumption of the furniture has increased rapidly due to the increase the number of spaces in the house and in all building. Not only that, but also because each space is being used for specific
activity and moving furniture from one space to another, or transforms it from one activity to another is no longer needed. Thus, in the new buildings, every space has its own furniture. It has also become a good investment to establish local factories. According to the Table 2.3, it shows the steady increase in the number of furniture factories in the Kingdom of Saudi Arabia. The strong demand for modern furnishings and appliances during this period led to the prosperity of the markets. According to the Figures 2.15, 2.16, 2.17, 2.18, the total imports of modern furniture and equipment increased significantly. It shows an increase in the number of wooden seats, sanitary equipment, decorated glass items, vacuum cleaners and parts in Saudi Arabia.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Number of Wooden Furniture Factories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970 (1390 H)</td>
<td>6</td>
</tr>
<tr>
<td>1975 (1395 H)</td>
<td>15</td>
</tr>
<tr>
<td>1980 (1400 H)</td>
<td>28</td>
</tr>
<tr>
<td>1985 (1405 H)</td>
<td>43</td>
</tr>
<tr>
<td>1992 (1412 H)</td>
<td>65</td>
</tr>
</tbody>
</table>

Table 2.3 The increasing number of wooden furniture factories in Saudi Arabia.
Source: (Based on data collected from the Saudi Office Furniture, Equipment and Supplies Directory, 1994).
Figure 2.15 Total weight of imported all types of wooden seats to Saudi Arabia. Source: (Based on data collected from the Annual Statistical Reports of Department of Statistics, Ministry of Commerce).

Figure 2.16 Total weight of imported sanitary equipment to Saudi Arabia. Source: (Based on data collected from the Annual Statistical Reports of Department of Statistics, Ministry of Commerce).
Figure 2.17 The total weight of imported decorated glass items to Saudi Arabia.
Source: (Based on data collected from the Annual Statistical Reports of Department of Statistics, Ministry of Commerce).

Figure 2.18 The total weight of imported vacuum cleaners and parts to Saudi Arabia.
Source: (Based on data collected from the Annual Statistical Reports of Department of Statistics, Ministry of Commerce).
The tables also show a decrease in total imports after 1984 due to the increase in the number of local factories. However, if domestic production of furniture and appliances was added to imports, the real consumption of furniture and appliances would be much higher. According to Abdelkader (1995) in 1995, local factories covered more than 70% of total consumption. This indicates that the statistics for the total imports, especially in recent years, shows that only about 30% of the total consumption of furniture.

It should be noted that the sharp rise in domestic imports and factories is not a clear indicator of increased consumption. Figure 2.19 shows the number of building permits for homes by municipalities in Jeddah. More homes mean more consumption. In other words, it could be that the amount of furniture per room has remained the same while the increase in the sale of furniture and appliances was due to the increase in the number of houses. To find the main reason for the increase in consumption of furniture, the comparison between imports of furniture, which reduced by about 70% of the production of local factories, with the increase of building permits. Table 2.4 shows that the import of furniture is much more than the building permits in Jeddah.
Figure 2.19 The total number of residential construction permits by the municipality of Jeddah.
Source: (The Ministry of Municipal and Rural Affairs).

Table 2.4 A comparison between the increase of wooden chairs imports in Saudi Arabia and the increase of residential permits in Jeddah. Source: (Figures were taken from the Annual statistical Reports of Department of Statistics, Ministry of Commerce).
Public and private life are both taking place indoor. The urban environment that links these two domains is weak and suffers from pollution, traffic congestion, which in turn makes the transition of people from private life to public life, and vice versa, a problem in Jeddah. In addition, because the quality of the external environment of Jeddah has deteriorated sharply, buildings have been designed to isolate the interior spaces from the outer spaces. This isolation is achieved through the replacement of all architectural elements that connect the inside and outside to other elements separating inside from outside.

2.4 Summary.

Jeddah fence was demolished in order to absorb the increase in population density. Demolition of the fence has changed the expansion strategy from vertical to horizontal, transforming Jeddah from small to large city. This new expansion has divided the city into an old and modern part. In comparison, the new part has more and larger neighborhoods than the old part that has only four small neighborhoods. All the new neighborhoods are surrounded by wide streets and traveling between these neighborhoods can only be done by car. In old Jeddah, neighborhoods were connected with each other through open spaces. In the new Jeddah, on the other hand, street connect all these neighborhoods with each other. Thus, the open space was replaced by streets that contributed to increasing the horizontal expansion of these neighborhoods as well as reducing walking as a means of transport between these neighborhoods. Thus, the absence of an open space that
connect these neighborhoods increased the boundaries between these neighborhoods.

Moreover, with the recovery of the state economy and rising land prices, wealthy families moved from Old Jeddah to the northern modern part while poor families lived in the old and southern areas of the new area. Thus, spatial and social division separates the workplace from the place of life. Most of the low-income working class need to move daily from the old part to the modern part to work by car. The separation of the private space (the home) from the public space (the workplace) has weakened people's connection to public life in the public space.

Over time, with the increase in the number of immigrants in the city, the numbers of increased causing traffic congestion and an increase in the time mobility between private space and public space. For responding to these issues, some streets have widened, new streets and bridges have created. As these new streets become inside residential neighborhoods, every building within the residential neighborhoods has direct contact with the street. The semi-public and private open space, which was a point of connection between public and private life, no longer exists. All the activities that existed in the open space disappeared completely. Most aspects of public and private life become only inside buildings.

The secondary streets inside the neighborhoods have increased the distances between buildings and traveling between these buildings. This spacing reduced the presence of shadows causing an increase in temperature of the external environment. The heavy use of cars caused
air pollution and noise. Thus, in response to this external environment, buildings were transformed from a connecting element into a separating element between inside and outside. All the traditional architectural elements such as Dahleez, Roshan, Kharijah, door, stairs that was used to connect the inside with the outside, were replaced by other elements separating the inside from the outside.

The separation process was achieved through the provision of electricity that operates air conditioners and lighting, increasing the temperature difference between the inside and the outside. In old Jeddah, the amount of use and the type of activities in the space were responsive to the weather. Now, with the possibility of controlling the temperature in every room in the house, each activity can have a special space at all times. As every internal space has a specific function, the house size and number of spaces inside the houses has increased. This, as the quality of conditions inside a building is much better than the outside, the buildings must be designed to disconnect the inside from the outside, increasing disconnection between people and external environment.

However, as presented in this chapter and chapter one, it can be concluded that the integration between public and private spaces raises the level of communication between people and public life whereas it decrease as these two spaces are separated.
3.1 City expansion.

The population density of the city of Jeddah has grown rapidly from 147,900 in 1964 to 3,247,134 in 2007. (Municipality of Jeddah, 2004). This increase in population density has made the city grow significantly. Figure 3.1 illustrates the rapid growth of the city from 1970 to 2007. The direction of Jeddah's growth during the economic boom in the first half of 1970 was mostly towards the north and south where the expansion of the city was restricted by the old airport in the east and the Red Sea in the west.

After 1970, the growth was mostly towards north only due to the relocation of the airport and the allocation of low-density land to private developers by the government. During this period, new residential neighborhoods were spread between the new airport and the old city beside the city road and the west coastline. Although there is some development along the road to Mecca, it can not be compared with the northern expansion. The northern expansion of the city continued to the present day and exceeded the airport location because the land that was vacant between the old city and the airport was filled.
Figure 5.1 Jeddah spatial-temporal changes.
Source: (Aljoufie, 2012).
Urban Land Use Pattern

The formation of the planning in contemporary city follows the same configuration after the destruction of the city wall: the dominant lands are housing. What has been observed from Masterplan’s proposals is that there is a great interest given to open public spaces, roads and green areas as well as low density residential areas. Therefore, all new developed areas have open spaces enough for leisure or parking. They also have large street with low rise buildings, two- or three-story apartments or villas.

Business activities are continuing to develop alongside the main roads. Small shopping malls with supermarkets also appeared in many neighborhoods. Social facilities, recreational activities and industrial services were distributed around the city to serve the largest number of people.

Income class structure

The rapid development of the general level of living that took place in the Kingdom after 1973 as a result of high oil prices, reflected the level of household incomes, as well as the built environment. The general picture of the city shows more, where people of the upper class live in the north and north-west of the city while the lower-class people live in the south and south-west of the city. Middle-class people spread around the city.
Transportation

Cars are still the main means of transportation in the city. Private cars and buses are the most frequently used in Jeddah. The statistics shows the number of registered vehicles in Saudi Arabia has increased from 144,768 in 1970 to 5,861,614 in 1994, a forty-fold increase in 24 years (General Traffic Directorate, 1971-1994). The increase in the number of vehicles continued during 2010 and 2015. According to the Statista 2015, the number of vehicles sold in Saudi Arabia has increased from 600,000 in 2010 to 830,000 in 2015. People rely entirely on cars for their movement in the city and even within the neighborhood.

The network of roads and streets in most contemporary areas has been constructed in good sizes to respond with increasing density of cars at different times of the day. Also several bridges and tunnels have been constructed to facilitate traffic.

Residential Districts

The contemporary area of the city is characterized by two types of housing: planned and unplanned. Unplanned neighborhoods are those that emerged during the economic and construction boom of the early 1970s. They are always present in the East, Southeast and parts of the South in the contemporary area. They are few in number compared with planned neighborhoods. The main element of unplanned neighborhoods is housing, owners who seek to occupy the largest area of their land, and the excess spaces are used for the streets. This resulted in narrow and winding streets, difficulties in entering some houses in these areas with...
no open spaces. The dominant buildings in these areas are Al-Shabi House and apartments.

The newly developed neighborhoods are those located in the center and the northern part of the contemporary area. Most of these neighborhoods have basic services. The dominant buildings in these areas are apartments and villas. All newly developed areas have road networks that facilitate as many cars as possible.

The system of street networks, the presence of buildings in the middle of the land, the shapes of the square and the rectangle of the buildings with a flat surface etc give the contemporary area a distinctive urban form contrasts with the traditional area.

The planning of the new neighborhoods is built on the western real estate concept. Each neighborhood is divided into small areas, all of which have an average area of 50 * 50, or 50 * 200, surrounded by streets, and each land is divided into smaller lands with an area of 25 * 25. This partition is built on the network system.

The basic of square or rectangle grid facilitates the expansion and provide public facilities for all regions. The roads are straight and wide in order to cater to the rising demand of cars. The formation of the streets is regular and difficult to separate from one another.
Relationship of Haras

The contemporary area of the city contains many districts Figure 3.2. All the lanes in the contemporary area except unplanned neighborhoods have a uniform appearance of a schematic look. The only boundary between the lanes is the main roads Figure 3.3. Materially, each lane is well connected with the other, which makes it difficult to distinguish between two Haras except when looking at signs of roads and streets where the names of the lanes are written.
Figure 3.2 Jeddah Districts. Source (M.H. Hamza, A.S. AL-Thubaiti, M. Dhieb, A. Bel Haj Ali, M.S. Garbouj, M. Ajmi, Department of Geography and Geographic Information Systems, Faculty of Art, King Abdulaziz University, Jeddah, KSA, 2016, modified by the author 2019)
Figure 3.3 Jeddah Districts. Source: (Physchim62 using data from Open Street Map)
3.2 The Open Space.

After the demolition of the Jeddah wall, external public spaces failed to provide a good public life. Given this problem and the importance of having good public spaces in the city, some initiatives have emerged to solve the issue of public space. Unfortunately, all the efforts that have been made have not succeeded in addressing this problem since all efforts are based only on the provision of public spaces without facing the real problem of Jeddah after the demolition of the fence as mentioned previously in this investigation. This part of the investigation will address these efforts to find out the real reasons for this failure in contemporary Jeddah city.

During a study conducted by N. Alhajaj (2010), concluded that there are thirteen types of open spaces in the contemporary area (Table 3.1 & Figure 3.4). These spaces are classified into two categories: first, official public open spaces, which are estimated at 659 hectares and include waterfront (corniche), neighborhood park, pedestrian malls & plazas, roundabout park, large road-traffic islands parks, multipurpose community squares and mosques gardens. The second is unofficial public open spaces and estimated area of less than 86 hectares which include traffic-large island & roundabouts, large vacant blocks, local streets, under city bypass, parking areas and major road-highway sides (N. Alhajaj, 2010). In addition, the study showed that about 94% of these open public spaces are specialized only for passive recreation (Figure 3.5).
Table 3.1 Types of Public Space. Source (Alhajaj, 2009)

Figure 3.4 Percentage of the area available in hectare for each type of Jeddah official public spaces. Source: (Alhajaj, 2009)
waterfront (corniche): Corniche is one of the most important official open spaces in the city of Jeddah. The waterfront contains four Corniche: South Corniche, Mediterranean Corniche, North and Sharm Abhar (Figure 3.6).

The most important problems facing these spaces are: Although they are widely used, they are considered insufficient to meet the recreational needs of the city’s residents. Study analysis shows that the waterfront Corniche of Jeddah represents 11%, 72 hectares of the total open spaces of the city. Although they extend along the coast, they are not connected to each other.
Figure 3.6 Jeddah four Corniches. Source: (Alhajaj, 2009, modified by the author 2019)
The study also shows that the total area of these open spaces in the Corniche is small. The 123 hectare of the middle corniche is a place for passive recreation that extend about 8 kilometers from the north side of the Islamic port of Jeddah to the southeast border of the coastal government sites (Jeddah Municipality, 2009) (Figure 3.7). The width of the public spaces of the Corniche is between 15 and 40 meters. 24% of the total area of the Mediterranean Corniche is open to the public, 27% is reserved for government sites, 25% is for roads and parking, 12% is recreational areas and 12% is a fish market, private parking and mosques (Figure 3.8).

![Figure 3.7 Public open spaces in the middle corniche. Source: (Alhajaj, 2009, modified by the author 2019).](image-url)
Figure 3.8 Percentage of public open spaces in the middle corniche. Source: (Alhajal, 2009).

An extension to the northern part of Jeddah, the northern Corniche, which is estimated at 168 hectares. The survey shows that 20% of the total area is used as public open spaces, 29% for roads, parking and traffic islands, 21% recreational areas with tickets, 16% for salt lakes and 14% large traffic islands (Figure 3.9 & 3.10).
According to an interview conducted in this study with Dr. A. Alturki (2011) cited by (A. Nawaf, 2014, p.77), "Jeddah Northern Corniche is a very tiny public open space that considered inadequate to serve its users need. It lacks trees and any forms of vegetation cover. currently, there are many useless central lagoons that are polluted and foul smelling as they do not really meet up with see. Therefore, we took a reclamation approach, in the form of the land filling process which is characteristic of many central lagoons in this corniche, to maximize the public open spaces with their green areas for the benefit of the people”

The open public spaces of the North Corniche are between 5 and 40 meters wide. Users sit on the road islands and around the other side of the Corniche road that does not have a view of the sea because of the lack of spaces near the Corniche (Figure 3.50).
Figure 3.10 Public open spaces in the northern corniche. Source: (Alhajaj, 2009, modified by the author 2019).
The Obhor Creek Corniche is a linear shape extending about 10 km inland (Figure 3.11). It is used for leisure activities only (Jeddah Municipality, 2009). The total land of this Corniche is about 97 hectares. However, only 8% of the total land is used as open public spaces. 46% for ticketed recreational activities and 46% for roads, parking lots and roads (Figure 3.12).

Figure 3.11 The public open spaces in the abhor creek corniche. Source: (Alhajaj, 2009, modified by the author 2019).
The width of this corniche is measured from 3 meters of land for 65.5 meters in the public beaches area. An important part of the length of the Corniche is that it is narrow and difficult to use for physical activities except walking. The southern strip of Obhor Creek Corniche was specialized for public use (Al-Shahrani 1992, Daghistani 1993), but resorts, restaurants, and ticketed leisure use covered half of the area. In addition, large roads and traffic islands beside the waterfront have played a major role in reducing open public spaces.

In fact, all live corns dominated by cars and asphalt surfaces. The view of most of the waterways near the waterfront is much smaller than the supply of cars. Thus, large parts of the waterfront are exposed to polluted air and are unsafe for children and families. Most of the public
open spaces that are located next to the Corniche are not suitable for any kind of physical use. Basic activities such as walking, jogging and cycling are hampered by a narrow road and poor infrastructure (Jeddah Municipality, 2009). In addition, most of the public open spaces in Jeddah Corniche have limited green areas and trees, most of which are located on the road islands and on the Corniche roads.

**Neighborhood Park:** According to an interview with Dr. A. Alturki (2011) cited by (A. Nawaf, 2014), The neighborhood park is known here as an open space that provides users with sitting and walking places, and may or may not be used for active practices. In a few cases, a residential park has elements for recreational practices such as playgrounds, sports grounds.

The study analyzes showed that the gardens of the neighborhood represent 75%, 495 hectares of the total public open spaces in Jeddah (refer to Figure 4.4). 82% of these can be called a public parks, however, they are not developed and 71% of them have no plants or herbs (Figure 3.13 & 3.14). In addition, only 18% of the neighborhood gardens have the basics of an open space structure such as irrigation, electricity, pavement and seating.
Figure 3.13 Percentage of landscaped and unlandscaped neighborhood parks. Source: (Alhajaj, 2009).

Figure 3.14 Percentage of analysis of neighborhood parks with open space infrastructure. Source: (Alhajaj, 2009).
The distribution of these gardens around the city is important to be shown. For example, the northern neighborhoods of Jeddah that represent the middle and high class, have the most gardens. On the other hand, there are no gardens in the unplanned neighborhoods of the south and west and in the new neighborhoods in the east of the city. In addition, in the old neighborhoods of contemporary part of Jeddah, the gardens of the neighborhood are not following any pattern layout in the distribution or sizes. Also, most of these gardens are leftovers of unbuilt construction land. This is due to the absence of regular planning and workshops during the last 30 years (A. Alturki 2011, cited by A. Nawaf, 2014).

In the new neighborhoods of Jeddah, there is some evidence that the gardens were planned in hindsight and are integrated into the shape. This is because of the following: “The administration of urban design and open spaces is now regulation the provision of public open spaces through its official involvement in the process of investigation the provided provision of public open spaces in the new residential development maps and drawings. We have been given the authority to impede any new development residential parks from obtaining its official building license” (A. Alturki 2011, cited by A. Nawaf, 2014, p.85).

With regard to the forms of the neighborhood gardens in Jeddah, the study analyzes show that there are six basic forms: rectangle, square, linear, triangle, L-shape and irregular shapes. However, the analysis concluded that all six forms of the gardens are not connected to the neighboring residential areas because of the presence of large internal streets. In addition, all these parks are located in residential neighborhoods that do not have sidewalks network (Figure 3.15).
Figure 3.15 Summary of the analysis of ten sites of developed neighborhood parks throughout Jeddah.
There is evidence that the current development of parks is still weak. Mandeli (2011) pointed out that the building materials used in the gardens located in modern neighborhoods in Jeddah are not reflective of intelligent design. He added that these parks do not meet the required function. In defense of municipal policies, it has been argued that: “funding the development of jeddah public open spaces is still considered as a major problem. At present, jeddah municipality utilizes part of maintenance contract budget to develop some of the neighborhood parks, but that is inadequate. The municipality of jeddah urges the ministry of finance to subsidize the development of the city public open space as jeddah urban fabric is growing, but the ministry of finance still considers public open space is not important” (A. Alturki 2011, cited by A. Nawaf, 2014, p.86).

In other words, the responsibility to finance and build gardens falls between the municipality and the authorities of the country. The gardens of the residential district in Jeddah are rare in any recreational activity because the big figure 82% of the city’s gardens is still not developed.

**Pedestrian malls & plazas:** Open public spaces that are associated with pedestrian malls and commercial centers are very limited in Jeddah. Analyzes concluded that there is no real form of open spaces except for narrow sidewalks that are not connected to each other beside the street shops. There is a little Pedestrian malls and squares in old Jeddah that represent 1% 6 ha of the total public open spaces of the city.
According to an interview with Dr. A. Adas (2011) cited by (A. Nawaf, 2014, p.89), “The historical city of Jeddah, which is responsible for the development and the maintenance of the urban environment of the historical city, lacks both fund and management plan for the area. This results in many tangible issues: no streetscape furniture or landscape design: poor maintenance and infrastructure: poor regulation regarding shop frontages and signs: and considerable conflict between vehicles and pedestrians.”

The streets of Jeddah are unattractive due to the poor design of sidewalks and crossroads (Jeddah Municipality, 2009). This is in spite of the fact that the city has two types of sidewalks designs on the streets of Jeddah (Ministry of municipal Rural Affairs 2005, Jeddah Municipality, 2009). There are three main reasons for this: lack of adequate parking, heavy vehicle ownership in the Kingdom and limited transportation diversity in the city (Jeddah Municipality, 2009). Therefore, The sidewalks were reduced to provide more parking in the streets.

Mosque Gardens: The idea of the mosque garden appeared in the Jeddah environment in 2007. Mosque gardens were found to represent 4% of all open spaces in Jeddah (refer to Figure 3.4). Most mosque gardens that have developed on the gardens land are located on undeveloped neighborhood (A. Alturki 2011, cited by A. Nawaf, 2014). Only 295 of the total land Mosques’ gardens are developed for passive recreation, with 25% for active recreation, and 46% of them remain undeveloped. In
addition, mosque gardens are only located on the planned land around the city.

The Municipality of Jeddah has worked to create a design standard for the development of mosque gardens. It can be summarized into four main aspects. First, the mosque garden must reflect the Islamic design. Second, it should provide its users a space for the weekly market, which will always be after Friday prayers. Thirdly, its form must be capable of performing prayers on occasions when the mosque is full. Finally, the plants that must exist are only those mentioned in the Qur’an (ibid.).

Gardens Mosques are mostly created for the passive recreation, but in some cases, they can contain services for for active recreation. This happens when the park is big enough to host a sports ground that must be located far from the mosque to avoid inconvenience (ibid.).

The analysis of the five sites of the mosques gardens that developed in various areas in Jeddah indicate that all these gardens do not have a sidewalks network or points of intersection of the passage passions (Figure 3.16).
Figure 3.16 Summary of the analysis of five sites of developed mosque gardens in Jeddah.
Community Squares: The idea of multipurpose community squares was reflected in the urban environment of Jeddah in 2009. The courtyard is mostly developed on the lands of the neighborhoods gardens in undeveloped neighborhood m (A. Alturki 2011, cited by A. Nawaf, 2014). These squares represent 5%, 34 hectares of public spaces of Jeddah. The multi-purpose social squares were found in the planned land between the north of the Old City and the south of the Bahor Corniche.

The idea of these squares was established in Egypt first under the name (Municipal Courts). This idea moved to Riyadh city and then moved to Jeddah. In fact, the concept of multi-purpose social spaces was modified when it was applied in the residential districts of Jeddah, and contains playgrounds, sports grounds and places of residence for families (ibid.).

These squares can be described as a square or large rectangular square surrounded by clusters of residential buildings. The arena is between 3000 and 5000 meters. These squares can be used in celebration and can be used as a place for traditional dance or as a place to practice sports. It can also be used as a reception area in a state of solace (ibid.).

When reviewing the five sites of these squares in the urban fabric of Jeddah, it can be observed that all of these areas are not connected to the adjacent urban fabric due to the local streets that have become barriers to entry to these squares (Figure 3.17). The speculations also revealed that all these squares are located in residential neighborhoods that have no sidewalks network for pedestrians. Thus, multi-purpose social spaces require people to cross through poorly designed, unsafe streets.
Figure 3.17 Summary of the analysis of five sites of developed multipurpose community squares in Jeddah. Source: (Alhajaj, 2009, modified by the author 2019).
**Major Roads Traffic Islands and Roundabout Parks:** An idea of the major roads traffic islands parks emerged in the urban environment of Jeddah in 2001. This type of garden has been developed by the unusable islands of the city (A. Alturki 2011, cited by A. Nawaf, 2014). Analyzes indicate that these gardens represent 4%, 23 ha of the total open spaces in the city. This constitutes about 13%, 0.22 km of the total tract of islands.

In fact, the main reason for the development of traffic islands is to increase the availability of open public garages in the city. To elaborate: “Jeddah has no parks at the city level. The Municipality creates new parks along the large traffic islands to possess city park and to increase the provision of public open spaces in the city. The design of road traffic island parks here follows a linear open space development along major roads of jeddah which in my view would encourage people to walk and reduce their dependency on cars” (A. Alturki 2011, cited by A. Nawaf, 2014, p.96)

The distribution of these gardens indicates that all these types of gardens were created on the traffic islands beside the main roads from west of Jeddah. The width of these gardens ranges from 10 to 125 meters. Analytical studies have found that all these gardens are not connected with their adjacent urban fabric through major thoroughfares. Thus access to these gardens is dangerous because there are no intersections for pedestrians.

Roads of traffic islands were just decorated green spaces before they were used as gardens. Because the city lacks open public spaces, the municipality has redeveloped these islands as parks for people to
The idea of redevelopment of these large unused parks in the city may seem a positive development (A. Alturki 2011, cited by A. Nawaf, 2014). However, there are two aspects that may affect this type of garden in the city.

Firstly, from a security point of view, all these parks are not connected to their adjacent fabric by large main roads carrying loads of cars (Figure 3.18). This put life at risk, due to the lack of intersection points for pedestrians who come from neighboring areas. In addition, there are no active parking spaces except for informal roadside parking which is also a hazard to users. The issue of protection here comes from the fact that Jeddah has a very high proportion of car accidents (Jeddah Municipality 2009).

Secondly, from the health point of view, the existing island gardens are exposed to air pollution from heavy vehicles. Because the width of these gardens ranges between 10 and 125 meters, this spaces can not offer enough plants to prevent the effects of car emissions of carbon dioxide (Spirn 1984). In addition, the sand in these islands is also harmful: Smith and Spirn pointed out that “The soil adjacent to a busy city street may contain thirty times the lead of a nonroad side soil in its upper five centimeters” (Smith, cited in Spirn 1984, p.103). Thus, It can be said that the island gardens are unsafe and unhealthy for people who wish to practice their activities in public open spaces in Jeddah.
Therefore, according to the studies, the current land available from open spaces in Jeddah is not enough for people’s needs as it offers less than 2 square meters per person. This figure is less than the prescribed specifications of 9 square meters per person (Thundiyil 2003: Emmanuel 2009: Singh et al. 2010). Also, more than half of Jeddah’s residential districts provide less than 1 square meter per person of gardens (Jeddah Municipality, 2009). In addition, in the unplanned neighborhoods of Jeddah, where 1.1 million live, one-third of the population density does not have open public spaces (Jeddah Municipality, 2009).
Figure 3.18 The location of all traffic island in Jeddah, showing their disconnection from surrounding urban areas by major roads. Source: (Alhajaj, 2009, modified by the author 2019)
The open spaces in Jeddah do not encourage any physical activities. This is because of the separation of nature from most of the forms of open public spaces, as the surrounding area is completely separated from them by wide streets and roads that are often of several lanes. Also, all forms of open public spaces are present in areas where there is no network of road paths through which these spaces can be accessed. This issue is in addition to bad design of open spaces (Mandeli, 2011) and unfair distribution (Jeddah Municipality, 2009).

Another issue that affects the physical activities of the city's residents is the lack of places where recreational activities are available, or public sports fields. According to Jeddah Municipality (2009), 40% of Jeddah's population is under the age of fifteen. Spaces designed for activities ... are available only in multi-purpose social spaces and some mosque gardens: estimated to constitute only 6% of the total open spaces in Jeddah. Therefore, this leads to the use of dangerous places as an alternative, such as side roads or local streets.

Open public spaces are still planned and designed as an isolated land use in the city, and are not integrated with urban fabric, which makes it encouraging to walk or practice physical activities. It require crossing over wide roads or using the vehicle for those who live far away. Even with the future treatises of open public spaces such as Wadi Al Asla project, several forms of gardens offered to the residents of Jeddah that will create outside 2030 boundaries of urbanization (Jeddah Development & Urban Regeneration co 2010). With the fact that the city still has many land available unplanned. Thus, it is not surprising that only 1% of Jeddah residents rely on walking. From here, the current development in open
public spaces added pressure to the city’s road network rather than reducing dependence on cars and encouraging people to walk.

In addition, the current open public spaces are insufficient to address air pollution and carbon dioxide. Air polluted reached the highest levels in Jeddah (Jeddah Municipality, 2009), where 30% of hospital patients in Jeddah suffer from diseases caused by air pollution (Presidency of Meteorology & Environment 2010). Most of the existing areas with open public spaces are insufficiently populated. The cultivation of open public spaces covers about 0.01, ie about 2.5 square kilometers of the total proportion of the construction of Jeddah. This figure is far from the recommended figure of 40% of the total land in order to preserve the health of the environment.

However, the study reveals that the open spaces in contemporary Jeddah suffer from several issues. This research focuses on the issue of connectivity, which shows through this study that the open spaces that created in contemporary Jeddah are designed in a separate and isolated manners. All open spaces are surrounded by wide streets and they can only reached by car. These spaces can not connect public to private space and therefore they do not have the ability to connect people from public to private life and vice versa. Therefore, this means the former built environment after wall demolition was composed of a public space and private space, whereas in contemporary Jeddah it consists of three spaces are not linked with each other.
3.3 Summary.

The urban environment of Jeddah has witnessed great growth in modern times, which is considered as extension of growth after the Wall demolition. Although the boundaries of the public-private relationship have not changed, the open space has given clear attention by local authorities due to the lack of open public spaces in the city. Accordingly, this chapter focused on the study of the open space according to the subject of this research. This study shows that open spaces in Jeddah are not connected with private nor public spaces. The study concluded that this disconnections in particular reduces the quality and use of these spaces. In addition, it increases the transition between the public and private spheres.
Part 4 : The Digital Space
4.1 Definition and Uses.

According to the University of Guelph (2006), Digital space/media are any media that are encoded in machine-readable formats. Digital media can be created, viewed, distributed, modified and preserved on digital electronics devices (Ibid). This service enables us to do many things including:

- Build friendships
- Find and form communities
- Seek or share help and expertise
- Build reputations
- Find out who is trustworthy and reputable
- Do business and make money
- Find jobs
- Have fun

According to the Ministry of Communication and Information Technology (2016), the number of Internet users in the Kingdom is 14,328,632 users. The average time spent online per day on laptops, desktops is 4 hours and 57 minutes, while the average Internet usage of mobile phones is about 260 minutes.

An expert in human and professional development (2015), revealed that Saudis spend eight hours a day online. 58% of the total population in
the Kingdom uses social media. Users spend an average of two hours and 48 minutes a day tracking social networks. It is worth noting that 94% of the Internet users in the Kingdom have an account on any of the social networks, while 89% of them accounts on Facebook, and 77% have accounts on Twitter, and comes Google ranked third by 75%.

Moreover, in Jeddah city, a survey has conducted as apart of this studies about internet usage and online shopping. Two hundred persons has participated in this questionnaire. The proportion of males is 27% while females is 74% (Figure 4.1). Six age groups participated in this questionnaire: 4% of the participants were under 20 years of age, 25% were between 21 and 30 years of age, 41% were between 31 and 40 years of age, 26% were between 41 and 60 years of age and 6% of the participants were more than 60 years of age (Figure 4.2).

This survey shows that the proportion of people who use the Internet everyday reached 83% (Figure 4.3). 34% of participants spent approximately 2 to 4 hours per day, while 52% of the participants use the Internet for more than four hours per day (Figure 4.4). With regard to the internet usage, 68% of people use the internet for shopping, working, learning and entertaining (Figure 4.5).

Moreover, Figure 4.6 shows that 76% of respondents believe that online shopping is convenient, and 55% believe that online shopping is easier and more convenient than traditional shopping (Figure 4.7). 80% of respondents believe that online shopping save more time than
traditional shopping (Figure 4.8). In addition, 66% believe that online shopping will eventually supersede traditional shopping (Figure 4.9).

<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>UNITS SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>147</td>
</tr>
<tr>
<td>Male</td>
<td>53</td>
</tr>
</tbody>
</table>

Figure 4.1: Participation levels by gender
<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>UNITS SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-20</td>
<td>7</td>
</tr>
<tr>
<td>21-30</td>
<td>49</td>
</tr>
<tr>
<td>31-40</td>
<td>81</td>
</tr>
<tr>
<td>41-50</td>
<td>25</td>
</tr>
<tr>
<td>51-60</td>
<td>26</td>
</tr>
<tr>
<td>60+</td>
<td>12</td>
</tr>
</tbody>
</table>

Figure 4.2: The distribution of respondents by age
<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>UNITS SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyday</td>
<td>166</td>
</tr>
<tr>
<td>More than once a day</td>
<td>30</td>
</tr>
<tr>
<td>Once a day</td>
<td>3</td>
</tr>
<tr>
<td>Once a month</td>
<td>0</td>
</tr>
<tr>
<td>Less than once a month</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 4.3: Internet usage rate
<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>UNITS SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 hour a day</td>
<td>7</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>23</td>
</tr>
<tr>
<td>2-3 hours</td>
<td>33</td>
</tr>
<tr>
<td>3-4 hours</td>
<td>33</td>
</tr>
<tr>
<td>More than 4 hours a day</td>
<td>104</td>
</tr>
</tbody>
</table>

Figure 4.4: Internet usage rate by hours
<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>UNITS SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping</td>
<td>5</td>
</tr>
<tr>
<td>Work</td>
<td>17</td>
</tr>
<tr>
<td>Education</td>
<td>12</td>
</tr>
<tr>
<td>Hobby</td>
<td>18</td>
</tr>
<tr>
<td>All of the above</td>
<td>136</td>
</tr>
<tr>
<td>None of the above</td>
<td>12</td>
</tr>
</tbody>
</table>

Figure 4.5: Internet usage by type
**Figure 4.6**: level of agreement with following statement:
Shopping on the internet is convenient.

<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>UNITS SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>55</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>96</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>32</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>12</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>5</td>
</tr>
</tbody>
</table>

**Pie Chart**

- Strongly agree: 28%
- Somewhat agree: 48%
- Neither agree nor disagree: 6%
- Somewhat disagree: 5%
- Strongly disagree: 3%

Die approbierte gedruckte Originalversion dieser Dissertation ist an der TU Wien Bibliothek verfügbar.
The approved original version of this doctoral thesis is available in print at TU Wien Bibliothek.
Figure 4.7: level of agreement with following statement: Online shopping is more convenient than traditional shopping

<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>UNITS SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>42</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>67</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>40</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>40</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>11</td>
</tr>
</tbody>
</table>
### Participant Units Sold

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>94</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>65</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>24</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>13</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>4</td>
</tr>
</tbody>
</table>

**Figure 4.8: level of agreement with following statement:**

Shopping on the internet save time

### Pie Chart

- **Strongly agree**: 47%
- **Somewhat agree**: 33%
- **Neither agree nor disagree**: 12%
- **Somewhat disagree**: 7%
- **Strongly disagree**: 2%

The Digital Space
Figure 4.9:  level of agreement with following statement: Online shopping will eventually supersede traditional shopping

<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>UNITS SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>47</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>83</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>35</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>20</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>15</td>
</tr>
</tbody>
</table>
This survey shows that public life in Jeddah has been taking place in the virtual world, which has become a substitute for public space. Furthermore, it shows clearly that the virtual world has better connectivity than the public space in connecting people to public life, creating a gap between digital and physical world.

Accordingly, media technology is now more than ever integrated into everyday life, which in turn creates difficulties and pressures on people to be connected and not wanting to miss updates, discussions or published material. Responding to emails, phone text messages and keeping up to date with social media adds a new times for the day. (Boyd 2007, Turkle 2008). Modern media is available in all sizes of mobile phones or tablets which makes it easy for people to carry and being connected at all times and places. These devices have erupted the geographic dimensions between space and time, and have created a conflict between public and private life. The permanent contact of people convert the private into public space (Turkle, 2008). Therefore, these technological platforms have provided a space for the publics in which people gather, causing the boundaries between the public and the private towards the integration. This integration between these two domain is no longer dependent completely on the physical place anymore.

4.3 International Cities Case Studies
Several cities can be cited when it comes to the poor connection of people to public space. The City Park Facts database (2015) shows that the amount park space exists for each person in cities across the United States. These data show that the number of open spaces in high density cities is few. For example, cities like New York and Chicago have 4.6 acres per 1,000 residents whereas cities with low density such as Anchorage have 2,397.2.

According to the white paper by The Trust for Public Land (2003), the open spaces in US cities are poor and populations face many difficulties in accessing parks and open spaces.

The report also pointed to the lack of open-spaces in low income neighborhoods. In the city where the white majority lives in Los Angeles, 31.8 acres of parkland per 1,000 people—a number that reduce the park space of African-American and Hispanic neighborhoods (1.7 and 0.6 acres per 1,000 people, respectively).

In Chelsea, the Corniche, which runs along the freight train line, stretches over some of the city’s richest areas. It is an attractive place for tourists and residents of this city in one of the wealthiest neighborhoods in the city. Although there is no system to prevent unwanted people from entering, the rise in rents and the increase of cost living around them eventually led to the evacuation of existing businesses and poor populations to other parts of the city, making access to these new parks expensive and time consuming.

While most New York City gardens need government funding, Budget cuts have limited the government’s ability to invest and support
public open spaces and parks in low income neighborhoods. According to New York Daily News, the city's garden management staff has been reduced by 40% since 2008. In addition, the budget of tree trimming and removal of the trunk was reduced from $7 million in 2008 to $1.4 million.

On the other hand, many wealthy philanthropists who finance and contribute to public projects such as the High Line are actually serving their own interests and needs by investing in areas that are close to their homes and workplace (Figure 4.10). In fact, many prominent parks in rich neighborhoods such as Hay Lane, Bryant Park and Central Park are supported and funded by public and private, reducing the impact of government budget cuts.

Figure 4.10: People stroll along Manhattan’s High Line Park.
Source: David Berkowitz/flickr, CC BY
Furthermore, instead of giving priority for family gathering and physical activities in the open public spaces, private financiers tend to favor certain types of facilities such as amphitheaters, footpaths and gardens that do not have the capacity to accommodate large groups or physical activities.

However, private financiers are not the only culprits when it comes to reducing accessibility and connectivity. In fact there are some regulations that prohibit access to open public places.

For example, cities stretching from San Francisco to Philadelphia now have anti-homeless measures such as camping restrictions and cutting down on homeless food services. A few years ago, workers at San Francisco’s Bill Graham Civic Auditorium began making loud noises throughout the night to prevent the homeless from sleeping on front of the building.

Other cities have public places deliberately designed in ways that restrict "undesirable" such as homeless from being too comfortable. These boundaries is achieved being through using arms on benches and spikes on flat surfaces to prevent homeless from lying down (Figure 4.11).

Comprehensive surveillance and additional security - which have increased since the advent of global terrorism - not only reduce groupings
and reduce services in the public open space, they also transform the public domain in ways that make them more dangerous.

As a result, as open public spaces have become insufficient, less open, less democratic, less comfortable, less enjoyable, connecting people to public life in the open public spaces has weakened.
From public space to digital space

As people life is being almost separated from open public space, digital space has successfully connected people to public life causing not just a gap between digital space and physical space, but contradiction between them. According to the Pew Research Center, about 65% of Americans adult use social networking services, a figure that is expected to only raise.

Internet, digital space and other means of communication provide opportunities for people to participate in facing public challenges and practicing public life. In this regard, a term called e-democracy has been established in order to enable people to access transparent information through social networking or forums. These platforms may enhance participation and voting equality.

Meanwhile, expressing solidarity, raising awareness of global events can also take place in social communication platforms through in what some have called "hashtag activism." For instance, during Greece’s controversial bailout deal with European Union, a Hashtag’s had started to appear on twitter that called "#ThisIsaCoup". The analysis shows that within a month, it was used in more than 600,000 tweets worldwide, while reaching audiences on platforms other than Twitter.
However, the public life provided by the digital space also includes several activities such as e-shopping, online banking and government transactions, work, entertainment and other activities that have shifted from physical public space to digital space. This shift has reduced the role of the public space in shaping people’s public life causing a gap between the physical world and the digital world in connecting people to public life.

4.3 The Physical Space and the Digital Space.

After the demolition of the Jeddah fence, the city experienced a great growth that caused a separation between public and private, all the city functions have been dismantled from each other, traffic congestion and pollution. The weakness of physical connection between public and private space has disconnected public life form private life. However, although this disconnection has reduced the use of the public space, causing some public activities to move public to private space, these negatives and segregations did not prevent the public life to be experienced in the public space because it was the only option for people at that time.
After the advent and spread of the virtual world widely, a second option has become available that has the ability to connect people to public life. Since this time, public life can be experienced in two areas: the first is the physical world while the second is the digital world. By giving people the digital space as a second choice, public life started to move from the physical space to the digital space. To find out why this transition occurs, it is necessary to understand the relationship between the physical space and digital space.

The digital world is seen as an extension of physical activity. These modern technologies are allowing people to feel connected while they are separated by time and space. The digital world was able to connect people with the physical world without the need for physical presence in the space (Figure 4.12). Live communications have allowed us to communicate across vast distances, meet others, share interests with them and build public relations for many years. The digital space can connect people to the public life anytime and anywhere.

On the other hand, the physical space in Jeddah city has lower connectivity than the digital space has, lower interaction between public spaces and private spaces in addition to the many built environment issues such as traffic congestion, and pollution.
Accordingly, in Jeddah city, as digital space has more and better connectivity than the physical space, people actually prefer to experience their public life in digital space more than in the physical space. In the
light of the current situation of built environment in Jeddah city, it can be argued that as communication between digital space and physical space increases, the use of the digital world increases whereas the use of the physical world shrinks.

There are many examples that can explain the relationship between digital space and physical space. Online shopping is one of the examples that has become widespread today. One of the advantages of e-shopping is saving time and effort. This feature is not present in traditional shopping that requires people to travel far distances. With the segregation, poor communication between people and shops in addition to the traffic congestion and air pollution in Jeddah built environment, many people these days prefer buying things online over the conventional method of going into stores. According to a study conducted by Communications and Information Technology Commission on e-commerce (2017), the e-commerce market in the Kingdom has witnessed a great growth and development over the last few years, where the value of e-commerce transactions between consumers and companies exceeded SAR 29.7 billion in 2016.

The e-Library is another example of how physical space is connected with the digital space. In 2014, a four-year study at the University of Denver in the United States was conducted by Leven Clark on the use of e-books, which showed that there are more than 7,000 libraries around the world and more than half a million titles on e-library and EBL Library. In Saudi Arabia, the Saudi Digital Library is one of those libraries with more than 310,000 scientific references covering all academic disciplines. It is
the largest academic gathering of information resources in the Arab world. Thus, many people can read or own a book by being in a private space such as a home without having to move to the physical Library space.

The connection between physical world and digital world is also present in several other examples, such as online banking, which enable a bank customers or other financial institution to conduct a series of financial transactions through the financial institution’s website without having to visit bank. Saudi e-Government transactions (YASER) in which citizens, residents, companies and visitors from anywhere can access the e-government services in the Kingdom of Saudi Arabia and apply transactions quickly and efficiently.

Most public activities that took place in the physical public space are now also occurring in the digital world. Because digital world has more contact with people than the physical world has, the digital world has become the preferred alternative for many people while the physical world has become less in use. Accordingly, if connectivity is a key factor in connecting people to public life in public space, then the question that should be raised is: why we still use the sharp modern elements that divide between public and private sphere?

Before answering this question, it is important to note that the notion of public space after the emergence of the digital world in contemporary times should be different from what it was after the destruction of the
wall of Jeddah. The reason for this is that the public space that was used after Jeddah wall demolition could not resist the changes that took place in the contemporary era after the appearance of the digital world. Thus, the answer for that question is by stating that our thinking about the city has not yet confronted the fact that we live not simply in places, but in cities constructed as simulations and complex webs.

The second question that must be raised is: why public life need to be exists in the public space if it is already exists in digital space? In fact, The real answer to this question lies in the fact that the poor interrelationship between public and private space was just a problem people had to adapt to it. Nowadays, people are no longer forced to adapt to this situation as digital world has succeeded in linking people to public life as second alternative. Thus, when the interconnection between the public and private space exists, it creates several ways for people to experience their public life whereas the disconnection between these two spaces creates a single choice for the people that is the digital world.

Therefore, the answers to these questions show us two main points: the first is that reviving the role of public spaces in Jeddah city is very important, and that requires a new vision of connectivity in the city that connect people to public space. The second point is that this new vision should not eliminate the role of virtual communication, but must be complementary and compatible with it. In order to achieve this, the traditional concept of the city must be developed by changing some traditional architectural policies that are no longer effective and feasible in contemporary times.
4.4 Summary.

Experiencing public life has change since the advent of the digital world. The digital world is able to provide a more interactive public life experience than the physical world. As a result of this gap between the two worlds, according to the statistics conducted in this chapter confirms that the use of the digital world is increasing. Therefore, as the urban environment that connect people from private to the public space is weak compared to the digital world, the role of public space in shaping people's public life has been greatly weakened as well. From this point of view, this chapter stressed the importance of developing the urban environment that is responsible for connecting people from private to public space and vice versa by reducing the gap between digital the physical world.

In old Jeddah, there were many connections between the public and the private spaces. These connections has always blurred the boundaries between public and private life. As these connections started to disappear gradually after wall demolition in 1947, the boundaries between the public and the private became very sharp. By loosing these connections, the meaning of public space has change, decreasing the role of public space. As a result, some public activities has disappeared while others has moved from the outside to the inside, increasing the amount of time people spend in indoor private spaces whereas decreasing the amount of time people spend in outdoor public spaces. In contemporary times, although the results of the separation of the public space from the private space is the cause of the problem in Jeddah after the demolition of the wall, the
reliance on the idea of separation is still going on to the present time. Moreover, this problem is no longer the only one after the emergence of modern communications that have managed to transfer public life from the physical world to the digital. In addition, public life in the digital world is different from physical world. The digital world which connect public and private life with each other is contradicted with the physical space that disconnect public space from private space.
Part 5 : Towards a New Vision of Connectivity
5.1 Discussion.

The current Jeddah city has a lack of communication and connection between public and private spaces (Figure 5.1). This weakness has reduced use of public space significantly especially after the appearance of digital world that has a high ability to achieve a communication as well as interaction between public and private life. Therefore, Jeddah city needs a vision of connectivity that connect people to public space in order to revive the role of public spaces.

![Diagram](image.png)

Figure 5.1: Low interaction between public and private space.
However, this vision must take into account that the interaction between public and private life is present in the digital world. With this consideration, therefore, the success of this vision depends primarily on reducing the gap between digital world the physical world.

With this arguments, the question that needs to be answered is: Can the traditional connection be successfully applied in the current time and in the current built environment? However, as mentioned in chapter one, hierarchy is the concept of connectivity that was applied in old Jeddah city (Figure 5.2). It was effective method in connecting public space and private space. This type of concept depends on a series of spaces starting from the private house and ending with the public space. This connection is based on the assumption that house is the most private space, and that privacy gradually decreases as we move away from home. This spatial hierarchy reinforces the notion that people who live near each other have more connections with each other than those who live far away. Thus, as the house is considered a private space, the spaces that connect these houses to each other are considered a semi-private spaces, while the spaces that has no direct connection to buildings is a public space.

However, to answer the question above, it can be argued that with the advent and spread of the digital world, this system has become less effective in the current time for many reasons: firstly, the digital world has managed to connect people closer regardless of their locations in the
city or in the world and people have infinite choices in forming relationships and communities. On the other hand, the traditional hierarchy in old Jeddah connect people closer based on only in one small geographical location, and people have limited choices in forming relationships and communities. Secondly, the traditional connection was successfully applied in time when to Jeddah was smaller and had lower population density. Now, with the city’s large population density, this connection has become inefficient and inadequate.

Figure 5.2: More privacy towards the center.
One of the most important features of using digital world is the rapid and immediate interaction between the public and private at any time and anywhere. On the other hand, the traditional connection in the physical environment is limited to a particular space and time (Figure 5.3). Thus, in order to reduce that gap, the level of interaction in traditional communication should be increased.

Figure 5.3: The traditional connection in the physical environment is limited to a particular space and time.
5.2 Urban Strategies.

The individual experience of the built environment in Jeddah city shows that everything is considered a public except home. The private space is confined only around the idea of home. Therefore, any interaction between the public and private should occur in the geographic location of the house only. This means that public activities that can interact with the private activities of the home are limited.

The built environment of Jeddah present the principle of choice between public and private by entering or leaving the house. Getting into a house means entering into private domain while getting out of it means going out into the public domain. This means that in addition to the fact that the house constitutes the only intersection point between the public and private sphere in the city, the urban strategies that form the physical frame for this intersection separate public and private domains as well.

As a result, public-private interaction points need to be increased in the city. This can be achieved by saying that the dwelling is a single point of interaction within a range of interaction points in the city. Housing is also considered a function of several functions located in the city. Each
function can become a point of interaction between public space and private space (Figure 5.4).
Each activity has a different degree of privacy than the other. Thus, communication between public and private spaces is achieved by linking activities with each other. In addition, the concept of communication must be based mainly on the logic of less and more rather than the logic of or. As a result, the individual becomes more privately isolated as they move toward the space of individual learning while less as they move towards the lecture hall. This logic is completely different from logic of or which allows the users to deal with the principle of choice between private spaces or public.

Each space differs from the other in terms of the number of users and the type of activity. This difference is the primary determinant of the degree of privacy of each space. In addition, each space is a means of connecting to another space.

In applying this concept, educational buildings, for example, which are considered as one of the public functions in the city, can become a point of interaction between public and private. This can be achieved by creating private spaces that interact with public spaces within the educational institution. When looking at the activities in the educational buildings, it can be said that several activities can create interaction between the public and private such as lecture, seminar, workshop and individual learning. Each of these activities has a different degree of privacy than the other. According to the participants number and the required space in each activity, individual learning is more private then the workshop and seminar while the lecture is the most public space. Thus, educational buildings that are now in their current state just a
A public place can become a point of interaction between the public and private.

Open public spaces can also become a point of interaction between public and private. When looking at activities associated with open public spaces such as parks, squares, and others, several spaces can be created for several activities such as intimate, personal, social, and public. Several spaces create several activities that differ in their degree of privacy from others. Therefore, providing degrees of privacy in an open space helps people to communicate quickly and immediately between public and private lives.

This strategy promotes access to public and private space in every functional institution in the city. However, the physical connections between these functions in the current environment of Jeddah is very weak compared to the level of connections offered by the digital world. To reduce this gap, the second strategy suggests that all these interactive points must be connected with each other (Figure 5.5). This connection achieves access to these points, allowing all public and private activities communicate with each other in the city (Figure 5.6).
Figure 5.5: Point connections
Figure 5.6: Activity connection
In order to promote the public realm and enhance the connections between people and public space in the current built environment of Jeddah, it is essential to emphasize the following suggestions: Firstly: Restructuring life into three fields: leisure, work and living. Secondly: Reconnect all the fields with each other. Thirdly: Transforming the physical frame of each fields from one level to several levels of privacy from public to private. Fourthly: Connecting all the physical frames of each fields with each other by applying the logic of less or more.

These recommendations change the way architecture users experience built environment, by giving them the power of communication between the public and the private, and available in the hands of people in all places and times. There is therefore no public or private place, due to the fact that every public place has its private place and every private place has its public place as well. This communication and permanent integration between public and private reduces the gap between the physical and digital vacuum.

5.3 Summary.

This study suggests that in order to increase the dependence on physical spaces and revive its role in the city, the built environment must be built based on the concept of interaction. This study emphasizes the importance of interaction between public and private spaces. Thus, the two strategies presented by this study create a new level of physical interaction between public and private space. In addition, these strategies
change way architecture users experience built environment as well as putting the power of choice into people. Moreover, the application of these strategies contributes to reducing the gap between the physical and virtual world in the public and private domains.
Conclusion

The aim of this research is to reduce the gap between physical space and digital space in connecting people to public life. This research has examined the connection between people and public life through the relationship between public and private spaces in old Jeddah city and in current time. Several questions have arisen: How the boundaries between the public and private space has formed the level of connections between people and public life in Old Jeddah and how has changed in the present time? What are the architectural and urban elements that have defined the level of the boundaries between private and public space in Old Jeddah and how has changed in the present time? What is the level gap between the digital world and the current physical world regarding the level of people’s connection to public life? What are the urban strategies that create interaction between the public and the private, through which connections between people and public life increases in the public space? This research conducted a comprehensive investigation of this issue to find out how this separation occurred between public life and public space.

The investigation found that the urban environment of the Old City of Jeddah contains public and private spaces. Between these two spaces, there are urban elements that connect public space to private space, such as the open space, which includes semi-private and public spaces. Not only that, but there is also an architectural elements that connect the private space to the public space such as Dahleez, Roshan, Kharijah, door, stairs and others. All these points connect people to public and private life as well. These physical points connect public life to private life. The
study of this part of the research found that these connections are the reason for the success of public space in Jeddah.

After 1947, old Jeddah could not accommodate the increased population density. For this reason, the plan was to demolish the wall in order to let Jeddah expand. This demolition changed the city of Jeddah through two directions: First, The demolition of the wall made the city without borders, which in turn has changed the strategy of expansion from vertical to horizontal, transforming Jeddah from a small town to a city. Second, The new development, which was designed to meet the increase in population density, has divided Jeddah into two parts: Old Jeddah and New Modern Jeddah.

Old Jeddah, which had only four neighborhoods connected with public spaces, now has more and bigger residential neighborhoods. With the urbanization of the city, walking as movement is no longer viable and cars started to appear. Thus, the boundaries of each neighborhood is defined by major streets as clear edges, in order to reduce the time of traveling between all city destinations. Accordingly, the public space that had a role in connecting the neighborhoods with each other is no longer exists in the new Jeddah, reducing time and opportunities for people to use the public space.

During the new expansion, Jeddah has divided into an old and modern part. With the recovery of the state economy and rising land prices, wealthy families moved to the northern part of the new part while poor families live in the old and southern regions of the new area. That social and spatial division has segregate the workplace from the place of life.
People are no longer working in the same place where they live. From now on, people need to move daily from workplace to home and vice versa. The separation of the workplace from the place of the house divided people’s lives into two parts: public life and private life. This separation has weakened the connection between public and private life. Thus, the semi-public space has lost and the boundaries between the public and private became sharp.

Through the time, and with the increase in the numbers of immigrants in the city, the number of cars increased, causing traffic jam as well as increasing travel time. In response to the congestion issue, some streets have widened, new streets and bridges have created. In the past, all neighborhoods were surrounded by car streets, now the streets are exist inside most neighborhoods, having a direct contact to the houses. The functional role of public space has lost, decreasing opportunities to use the public space.

The spaces between the places diverged and separated from each other. The spaces between the buildings have grown and are exposed to sunlight all day long. Cars have become everywhere, the air has become polluted and the level of noise increased. People feel uneasy to be outside at all and they perceive the outdoors to be not entirely comfortable, and secure. Many public and private activities that was taken place in open space have been disappeared, and people spend most of their lives indoors.
As a result, the urban elements that connect public space to the private space has lost. The open space, which includes the semi-private and public spaces are no longer exists. The lose of those connections has weaken the transition from private life public life. Moreover, public and private activities that took place in the open space in Old Jeddah have completely disappeared and people’s lives have all become internal.

Because the quality of the external environment has deteriorated and is no longer a suitable place to use, the traditional buildings that were an element that connect the inside with the outside turned into an element that separate the inside from the outside. All the architectural elements that connect the private to public such as Dahleez, Roshan, Kharijah, door, stairs and others have been replaced by other elements that separate the inside from the outside. All these points that elements that connect public life to private life have completely disappeared.

In contemporary Jeddah, although many open public spaces were created, they were designed separately and not connected with private space nor public space. Accordingly, all urban and architectural elements that connect people to public and private life have been disappeared. This means that the transition between public and private life has become more difficult than the past. Despite all these problems, practicing public life in the public space has not been greatly affected due to the lack of other alternatives.
In this rigid environment that facing difficulties in connecting people from private to public and vice versa, the digital world has a high level of communication and has the ability to connect people to public life at any time and anywhere. The use of the digital world in the current urban environment of Jeddah has created a contradiction between physical world and digital world. While urban and architectural elements separate public life from the private life, the digital world integrates and connects them. This also means that the digital world has a high connection while the physical world has a low connection. Thus, because connecting people to public life through the digital world is faster and easier than the physical world, most aspects of the public life of most people are practiced in the digital world, reducing the role of the public space in shaping people public life.

However, after finding out the reasons behind the separation between public life and public space, the result of this investigation confirms that the concept of practicing public life in the public space must be completely different after the emergence of the digital world. The current architectural and urban elements that are designed to separate the public space from the private are no longer appropriate in the present time. This research suggests that in order to restore the role of public space, strategies should be developed to re-connect public life to public space by drawing more interactive boundaries between public and private spaces. These new boundaries reduce the gap between digital world and physical world.

This research found that the application of the traditional model, which relies on a single interaction that revolves around the house is
insufficient to reduce the gap between the digital world and the physical world. Thus, this research has developed this principle by suggesting that the dwelling is a single point of interaction within a range of interaction points in the city. Each interaction point is a hierarchical series of public and private spaces, which means that each and every function is an interaction point between the public and private. These functions may include educational buildings, open spaces, recreational buildings and others. These interactive points guide all architectural and urban elements in the city to connect the private and public spaces. However, since the physical connections between these functions in the urban environment of Jeddah are very weak compared to the level of communication provided by the virtual world, the second strategy suggests that all these interactive points must be linked to each other. Thus every functional institution is linked with each other.

The aim of this research is to reduce the gap between physical space and digital space in connecting people to public life. The implementation of these two strategies creates a connection between private space and public space in several parts of the city. These contacts strengthen the connection between people and public life. Thus, these strategies contribute to increasing people’s use of public space and reduce the gap between the physical world and digital space. However, for further research, the role of the relationship between indoor and the outdoor in dividing public and private activities still required further research.
6.1 References


Alhajaj, N (2010), New forms of public space in the city of Jeddah: Urban design scenarios for increasing the provision of POS to enhance the urban
health of a rapidly growing Saudi Arabian metropolis, University of Western Australia, Australia


Al-Shahrani, M 1992, An Inquiry into Leisure and Recreation Patterns and their Relationship to Open Space and Landscape Design: The Case of Jeddah, Unpublished PhD, University of EDINBURGH.


Adas, A. (2013), the author conducted an interview with Dr. Adas in December 2013 regarding the built-heritage conservation in Saudi in general and Jeddah in particular


Bokhari, A. Y. (2006), Conservation in the Historic District of Jeddah, Proceedings of the International Conference on redeveloping and rehabilitating traditional areas, King Saud University, Riyadh, KSA.


Bagader, M. (2010), Investigation of How the Hejazi Architecture Responded to Climate Change During History Until Contemporary Times: Jeddah’s buildings as a case study, Unpublished Master thesis, University of Liverpool, the UK.

Badeeb, A. (2012), Old Jeddah’s Public Institutions: from Past to Future, public lecture in the Cultural and Literary Club of Jeddah, on 24 July 2012 [in Arabic].


Daghistani, Al 1993, A case Study in Planning Implementation Jeddah, Saudi Arabia in Global Urban Research Unit, University of Newcastle upon Tyne, Newcastle.


Jeddah Municipality, 2009a, Jeddah Strategic Plan: Building our Future, Preserving our Heritage and Values, Jeddah Municipality.

Jeddah Municipality, 2009b, Jeddah Local Plan: Building Regulations (in Arabic), Jeddah.


Lawrence, T.E. (1935), Seven Pillars of Wisdom, London, Jonathon Cape, pp. 72-73.


Ministry of municipal Rural Affairs 2005 a, Recreational Areas Planning Manual (in Arabic), Ministry of municipal Rural Affairs, Riyadh.


Ministry of municipal Rural Affairs 2005 c, Sidewalks and Road Traffic Islands Manual (in Arabic), Ministry of municipal Rural Affairs, Riyadh.
Miran, J. (2009), Red Sea Citizens: cosmopolitan society and cultural changes in Massawa, Indiana University Press, Bloomington


Thundiyil, K 2003, Rising Temperatures and Expanding Megacities: Improving Air Quality in Mexico City through Urban Heat Island Mitigation, Master, Massachusetts Institute of Technology. [25 May 2010].


List of Figures

Figure 1.1: Location Map Jeddah. 2
Figure 1.2: Tihama coastal. 3
Figure 1.3: The growth of Jeddah city. 4
Figure 1.4: A 1938 aerial view of the Old City of Jeddah before the wall demolition. 7
Figure 1.5: A map of the Old City of Jeddah. 9
Figure 1.6: Mecca Gate. 10
Figure 1.7: Medina Gate in the 1940s.

Figure 1.8: Public and private distribution in old Jeddah.

Figure 1.9: Jeddah as the Portuguese archives show it in 1517.

Figure 1.10: The uses of ground floor of the entire buildings.

Figure 1.11: The uses of first and upwards floor of the entire buildings.

Figure 1.12: The commercial heart of old Jeddah in 1920.

Figure 1.13: Old Jeddah’s quarters map.

Figure 1.14: Old Jeddah Connectivity.

Figure 1.15: Old Jeddah’s Mosques and Zawiyahs.

Figure 1.16: Plan of Old Jeddah.

Figure 1.17: The layout of the streets of the old Jeddah.

Figure 1.18: The layout of the streets of the old Jeddah.
Jeddah.

Figure 1.19: The hierarchy of spaces in the old town of Jeddah.

Figure 1.20: Air pressure differences.

Figure 1.21: Air turbulence.

Figure 1.22: These differences in street quality that result from solar exposure produce a natural thermosyphonic effect.

Figure 1.23: Camels were unloaded at Makah gate in 1918.

Figure 1.24: The loads were distributed through the narrow streets to the final destination by camels.

Figure 1.25: Old Jeddah Barahats.

Figure 1.26: Old Jeddah souks.

Figure 1.27: Public spaces in Sham quarters.

Figure 1.28: Public spaces in Sham quarters.

Figure 1.29: Mastaba.
Figure 1.30: Marques.

Figure 1.31: The average height of floor.

Figure 1.32: Cross ventilation.

Figure 1.33: Cross ventilation.

Figure 1.34: The traditional doors.

Figure 1.35: The ground floor plan of AL-Jukhdar house.

Figure 1.36: The ground floor plan of Noorwali house.

Figure 1.37: Air distribution through stair.

Figure 1.38: Air flow in AL-kharijah.

Figure 1.39: The kharijah in Noorwali House.

Figure 1.40: The hierarchy of relationship between the indoor and the outdoors in Noorwal, house.

Figure 1.41: The Roshan.

Figure 1.42: Private to the public connection through the Roshan.
Figure 1.43: Woman discussions while sitting in their home Roshan.

Figure 1.44: A rowshan used as a bed.

Figure 1.45: A Rowshan used as a sitting.

Figure 1.46: Ground floor of Nassife house.

Figure 1.47: Intermediate floor of Nassife house.

Figure 1.48: Third floor plans of Nassife house.

Figure 1.49: Roof Terrace.

Figure 2.1: Jeddah after wall demolition in 1947.

Figure 2.2: The physical districts boundaries.

Figure 2.3: King Abdul Aziz Street

Figure 2.4: Sample areas in the transitional part of the city.

Figure 2.5: Al-Saheifah (Sample Area No. 6).

Figure 2.6: Connections between public, open space and private space.
Figure 2.7: Separation between public space and private space.  
Figure 2.8: An example of apartments during the fifties.  
Figure 2.9: An example of apartment plans.  
Figure 2.10: An example of Villa plans.  
Figure 2.11: An old villa in Jeddah.  
Figure 2.12: An external view of a shutter window.  
Figure 2.13: The total number of imported air-conditioners to Saudi Arabia.  
Figure 2.14: An external view of an aluminum window.  
Figure 2.15: Total weight of imported all types of wooden seats to Saudi Arabia.  
Figure 2.16: Total weight of imported sanitary equipment to Saudi Arabia.  
Figure 2.17: The total weight of imported decorated glass items to Saudi Arabia.  
Figure 2.18: The total weight of imported vacuum cleaners and parts to Saudi Arabia.
Figure 2.19: The total number of residential construction permits by the municipality of Jeddah.

Figure 3.1: Jeddah spatial-temporal changes.

Figure 3.2: Jeddah Districts.

Figure 3.3: Jeddah Districts.

Figure 3.4: Percentage of the area available in hectare for each type of Jeddah official public spaces.

Figure 3.5: Percentage of active and passive recreation in Jeddah official public spaces.

Figure 3.6: Jeddah four Corniches.

Figure 3.7: Public open spaces in the middle corniche.

Figure 3.8: Percentage of public open spaces in the middle corniche.

Figure 3.9: The percentage of Public open spaces in the northern corniche.

Figure 3.10: Public open spaces in the northern corniche.

Figure 3.11: The public open spaces in the Obhor creek corniche.
Figure 3.12: Percentage of Public open spaces in the Obhor Creek Corniche.

Figure 3.13: Percentage of landscaped and unlandscaped neighborhood parks.

Figure 3.14: Percentage of analysis of neighborhood parks with open space infrastructure.

Figure 3.15: Summary of the analysis of ten sites of developed neighborhood parks throughout Jeddah.

Figure 3.16: Summary of the analysis of five sites of developed mosque gardens in Jeddah.

Figure 3.17: Summary of the analysis of five sites of developed multipurpose community squares in Jeddah.

Figure 3.18: The location of all traffic island in Jeddah, shown, their disconnection from surrounding urban areas by major roads.
Figure 4.1: Participation levels by gender. 160
Figure 4.2: The distribution of respondents by age. 161
Figure 4.3: Internet usage rate. 162
Figure 4.4: Internet usage rate by hours. 163
Figure 4.5: Internet usage by type. 164
Figure 4.6: Level of agreement with following statement: Shopping on the internet is convenient. 165
Figure 4.7: Level of agreement with following statement: Online shopping is more convenient than traditional shopping. 166
Figure 4.8: Level of agreement with following statement: Shopping on the internet saves time. 167
Figure 4.9: Level of agreement with following statement: Online shopping will eventually supersede traditional shopping. 170
Figure 4.10: People stroll along Manhattan’s High Line Park. 172
Figure 4.11: Raised bricks installed to prevent people from lying down. 176
Figure 4.12: Physical space and digital space. 176
Figure 5.1: Low interaction between public 183
and private space.

Figure 5.2: More privacy towards the center. 185

Figure 5.3: The traditional connection in the physical environment is limited to a particular space and time. 186

Figure 5.4: A series of interactive points between the public and private space. 188

Figure 5.5: Point connections. 191

Figure 5.6: Activity connections. 192

List of Tables:

Table 2.1: The increase in number of imported electrical home appliances in Saudi Arabia. 106

Table 2.2: Number of Rooms per Household in Jeddah, 1971 and 1978. 58. 110

Table 2.3: The increasing number of wooden furniture factories in Saudi Arabia. 112

Table 2.4: A comparison between the increase of wooden chairs imports in Saudi 116
Arabia and the increase of residential permits in Jeddah.

Table 3.1: Types of Public Space.