THE ENLARGED WINDOWS IN CONTEMPORARY DOMESTIC CULTURE IN RIYADH, SAUDI ARABIA

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ABSTRACT

THE ENLARGED WINDOWS IN CONTEMPORARY DOMESTIC CULTURE IN RIYADH, SAUDI ARABIA

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The Saudi home environment has been significantly transforming since the mid-twentieth century. After the discovery of oil in the country, the rapid economic growth associated with social changes enforced the adoption of the villa-type dwelling with its new spatial organization to enhance the living environment. However, this new house type was not designed based on conventional principles and values, contrary to the traditional houses. Therefore, the local inhabitants have been modifying their villas to represent their identity that comprises their socio-cultural values.

One of the significant differences between the two types of houses is the windows' directions affecting the rules of enclosure and exposure in the Saudi home environment. While traditional houses' windows were opened toward the courtyard, the contemporary villas' windows overlook the outside. Resulting in two different and opposing effects on dwellers' perception of houses windows. The first predominant reaction is the tendency to block houses' windows in various ways to maintain the required privacy. The second response, which has recently accelerated, is the enlargement of houses' windows to improve their home environment. This phenomenon represents the mismatch between contemporary houses' design and their residents' psychological and socio-cultural needs.

This study attempts to analyze the meaning of contemporary houses' windows restricted by the privacy rules in Riyadh through the lens of women, who are experiencing the recent social change. In order to understand the meaning of the change of the living experience within its context and to unfold the contemporary Saudi residents' needs that are manifest in houses' windows.

Keywords: Home/Domestic Environment, Domestic Culture, Windows, Contemporary Riyadh houses, Women in Saudi Arabia.

ÖZET

SUUDİ ARABİSTAN, RİYAD'DA
ÇAĞDAŞ KONUT KÜLTÜRÜNDE BÜYÜK PENCERELER

Bairakdar, Ala'a

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Suudi ev ortamı, yirminci yüzyılın ortalarından bu yana önemli ölçüde dönüşmektedir. Ülkede petrolün keşfinden sonra, sosyal değişimlerle bağlantılı hızlı ekonomik büyüme, yaşam ortamını iyileştirmek için yeni mekansal organizasyonu ile villa tipi konutun benimsenmesini zorunlu kılmıştır. Ancak bu yeni ev tipi geleneksel evlerin aksine geleneksel ilke ve değerlere göre tasarlanmamıştır. Bu nedenle yerel halk, villalarını sosyo-kültürel değerlerini ve ihtiyaçlarını oluşturan kimliklerini temsil edecek şekilde değiştirmektedir.

İki tür ev arasındaki önemli farklardan biri, Suudi ev ortamındaki kapalılık ve açıklık kurallarını etkileyen pencerelerin yönleridir. Geleneksel evlerin pencereleri avluya açılırken, çağdaş villaların pencereleri dışarıya bakmaktadır. Bu durumlar, konut sakinlerinin pencere algısı üzerinde iki farklı ve zıt etkiyle sonuçlanmaktadır. İlk baskın tepki, gerekli mahremiyeti korumak için evlerin pencerelerini farklı şekillerde kapatma eğilimidir. Son zamanlarda hızlanan ikinci tepki, ev ortamını iyileştirmek için evlerin pencerelerinin büyütülmesidir. Bu olgu, çağdaş evlerin tasarımı ile konut sakinlerinin psikolojik ve sosyo-kültürel ihtiyaçları arasındaki uyumsuzluğu temsil etmektedir.

Bu çalışma, yaşam deneyiminin değişiminin anlamını kendi bağlamında anlamak ve çağdaş Suudi sakinlerinin evlerin pencerelerinde kendini gösteren ihtiyaçlarını ortaya çıkarmak için, Riyad'daki görsel mahremiyet kurallarıyla sınırlanan çağdaş evlerin pencerelerinin anlamını son dönem toplumsal değişimi yaşayan kadınların gözünden incelemeye çalışmaktadır.

Anahtar Kelimeler: Ev/Ev Ortamı, Konut Kültürü, Pencereler, Çağdaş Riyad evleri, Suudi Arabistan'da Kadınlar.

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LIST OF ABBREVIATIONS

ARAMCO	Arab-American Oil Company.
CPVPV	Committee for the Promotion of Virtue and the Prevention of Vice.
KSA	Kingdom of Saudi Arabia.
MEP	Ministry of Economy and Planning.
MoMRA	Ministry of Municipal and Rural Affairs.
RCRC	The Royal Commission for Riyadh City.

Chapter 1
Introduction

Architecture is a physical manifestation of what is happening in its context. It reflects and affects the living experience consciously and unconsciously. The traditional architecture used to be designed for an essential purpose while fulfilling the needs of their localities. Hence, they materialize the culture and traditions of people in its region. According to Rapaport (1969), "*the forms of primitive and vernacular buildings are less the result of individual desires than of the aims and desires of the unified group for an ideal environment. They, therefore, have symbolic values, since symbols serve a culture by making concrete its ideas and feelings*." (p. 47).

In contrast, during this age, the rapid and continuous change in all aspects of life due to urbanization and modernization, which is supposed to meet the world's needs, has affected domestic cultures and altered dwellers' preferences. Modern cities are responding to new technologies and concepts from all over the world, increasing the opportunity for changes that influence their domestic environment.

Since the economic boom after World War II, the rapid and continuous change in Saudi cities to modernize and improve the quality of human life is blurring the uniqueness of the domestic environment in Saudi Arabia. Like any indigenous environment, the traditional Saudi built environment that evolved according to the local traditions was in harmony with the psychological and socio-cultural needs of the dwellers. However, due to the extensive adoption of modern technologies, architecture and urban concepts, and lifestyle, significant vernacular traditions have been abandoned in the contemporary built environment. Thus, the way of life of the local inhabitants has been disturbed after numerous changes in their living environment.

One of the significant changes in the Saudi built environment is the imposition of new imported residential types (villa and apartment buildings) and construction techniques. The design of these houses was based on foreign culture, ignoring the local's needs and the nature of the different regions of Saudi Arabia. Significant architectural elements in the vernacular houses that manifest cultural values and social needs, such as courtyards and '*Rowshans'* (wooden lattice bay window) , have

disappeared. Consequently, that has changed the perception of the Saudis of such significant elements, and their meaning has been lost.

Over time, inhabitants' modifications of the foreign villa-type house have reflected their needs and desires, creating a hybrid villa that combines foreign form and local needs. The Saudi villa looks similar to the suburban western detached house with its front and back yards; however, it has high solid fences and two different and opposing windows' treatments. Some villas have small or sealed windows, while others have large or panoramic windows. This contrariness brings forward many questions about its meaning, especially since it has been evident after the recent social reform.

Understanding the meaning of the house form is complex as it relates to various continuously changing factors. According to Rapoport, socio-cultural factors influence house form (1969). Thus, despite all factors that influence residential architecture, any change in the house form has its interpretation within its social and cultural context.

Many Saudi scholars have studied the interaction between the residents and their houses from various perspectives. In an attempt to understand the contemporary housing requirements, Bahammam (1992) has identified the socio-cultural needs of Saudi residents by figuring out the social reasons behind their alterations of contemporary houses in Riyadh. In comparison, to understand the contemporary home environment, Alharkan (2017) has investigated the change in the home environment of Jeddah through the transformation of housing morphology and gender roles in Saudi families and society.

One of the essential traditional cultural values in the Arab-Muslim world is the nature of the relationship between the family members and society, which created gendered spaces. The separation and seclusion of women manifested in various forms of barriers, widely misinterpreted as exclusion while allowing women to see but not be seen. This logic exists indoors and outdoors according to the notion of female's privacy (Al Nafea, 2006). Therefore, this study focuses on women's view of their privacy as they are the concerned members of society.

In conventional Islamic architecture, houses' windows in their different sizes, forms, and materials are significant symbols of the culture. For instance, the window facing a courtyard and the wooden lattice window place, "Mashrabiy'ya" or the "Rowshan" as known in Saudi Arabia, manifests the rules of enclosure and exposure

in the home environment. Therefore, the change in the window can be interpreted as a change in the rule of the separation between public and private.

In the context of Saudi Arabia, the wave of modernization has changed the physical living environment. Although, it has been prevented from influencing the traditional social life throw the imposition of social rules and regulations in public spaces, which kept the conventional role of women prominent in the public domain. In addition, the prevalent image of dwellings in the country with its high fences and sealed windows resulted from the alteration of foreign architecture concepts to fulfill their need for privacy. This condition has shaped a widespread assumption of the Muslim context, that the public domain is exclusively for men, and women's right to participate and express themselves is violated. Since women's visibility in public is limited by gender norms, such as the veil and the rules of gender segregation. However, Maneval (2019) has argued that the social restrictions in Saudi Arabia have constrained the movement of men and women alike. Sameer Akbar has studied the change of windows in Saudi houses in his research paper titled the diminishing role of windows (1994). He focused on the traditional window place of houses in Jeddah city, "Rowshans," replaced by a window hole in modern houses. The abolishment of a significant element in the traditional houses resulted in a change in the role of the window in Jeddah's home environment. He argued that this change resulted from a technological change, such as air-conditioning and social change, as people tended to express their social status throw adopting the new element in their home environment. However, he did not outline the cultural dimension in the contemporary houses' windows.

1.1 Problem Statement

The recent social reform in Saudi Arabia influences various aspects of the domestic environment manifested in its architecture. The strict social regulations became liberated to some extent, giving more opportunities for women to participate in the public according to the way they prefer within limits according to Islamic moral principles. This transformation has brought about various questions like whether the reform means an abandonment of some socio-cultural values such as women's privacy that needs an answer from inside the social context. Therefore, this study investigates the meaning of houses' windows within the contemporary Saudi domestic

environment in correlation to the recent social change in gender norms, particularly the rule of gender segregation through the lens of women.

1.2 Objectives

The main objective of this study is to read and define the meaning and the role of windows in contemporary houses as Saudi women perceive them. This attempt will be questioned and traced through the female residents' authentic attitude and interaction with their home environment in general and houses' windows in particular. Understanding the functional and symbolic meaning of the window of home within its real-life context, through the lens of women, and in correlation to the socio-cultural values, will reveal the ambiguity of the recent changes in the society and the built environment.

This study will answer the following questions:

1. What is the symbolic meaning and role of windows in the Saudi society?
2. Why are houses' windows being enlarged in Riyadh, Saudi Arabia?
3. How do women in Saudi Arabia perceive the windows of their houses?
4. What are the main factors that influence the design of windows in the contemporary Saudi home environment?
5. What is the difference in the experience of windows in the traditional and contemporary Saudi home environment?

1.3 Scope of the Study

The study will attempt to understand the meaning of houses' windows as products of culture and a significant element in the domestic environment in Saudi Arabia, which has been transforming throughout the last seventy years. It will investigate the old meaning of home windows that people in Riyadh have maintained and the new generated meaning, throw the analysis of their perception from inside towards out concerning the external surrounding rather than the internal spatial organization, besides the observation of their attitudes and physical traces. Due to the significance of women's visual privacy preserved indoors and outdoors according to the Islamic principle adopted in Saudi Arabia, this study will focus on the living experience of Saudi women in the contemporary villa-type dwelling in Riyadh, the

capital. The recent alteration, particularly the enlargement of houses' windows and the empowerment of women in such a conservative society who used to separate men's and women's spaces, brought about the topic of the study. Accordingly, this thesis will unfold the meaning of contemporary domestic windows, their use and perception, through the lens of Saudi women who are experiencing the change.

This thesis will contain five chapters, divided into two core parts besides the introduction and conclusion, as shown in (Figure 1). The first part, including chapters two and three, covers the theoretical research of the study background and reviews the literature related to the study. It aims to furnish the thesis with background information about the context and the key concepts of the study from the literature, establishing the study framework. The second part, chapter four, consists of information about the case study area, methods of collecting and analyzing data, and survey findings and discussion. The following part will explain the content of each chapter in this thesis in detail, to illustrate:

The first chapter is an introduction; it will provide background information of the study, identifying the statement of the problem, the research objectives, scope, limitations, and methodology of the thesis.

The second chapter will review the experience of transformation in Saudi Arabia and its domestic culture in general up to the home environment and the houses of Riyadh city. Through tracking the changes that have impacted the Saudi domestic environment over time, this chapter will establish the study background by revising the history of the study context from the literature. To clarify, this chapter examines the changes from the previous studies that have been already carried out in the area from the perspective of various levels to build up a clear picture of transformation in the Saudi domestic culture. It begins with the change in the general architectural approach on the country level; afterward, the home environment on the social level, then the change on the level of Riyadh's houses.

The third chapter will consist of a literature review of the windows of the home. In order to understand the window according to its position as a transitional element, the chapter will start by defining the boundaries between public and private in the home environment. After that, the meaning of the windows and how it has been modified over time in the home environment. This chapter aims to establish the framework of the study. Therefore, other studies' approaches to defining the meaning of physical elements in the home environment will be discussed. Then the use and

symbolic meaning of windows in the Saudi home environment from various sources (theses, books, newspapers, and multimedia) will be deliberated before getting into the survey of this study.

The fourth chapter describes the study area, Riyadh city, from which the in-depth cases were selected. Then, it clarifies the data collection and selection of the samples methods. Last but not least, the fifth and final chapter includes the discussion and conclusion of the study. It discusses the research findings and concludes the study with beneficial findings for researchers and decision-makers in the field.

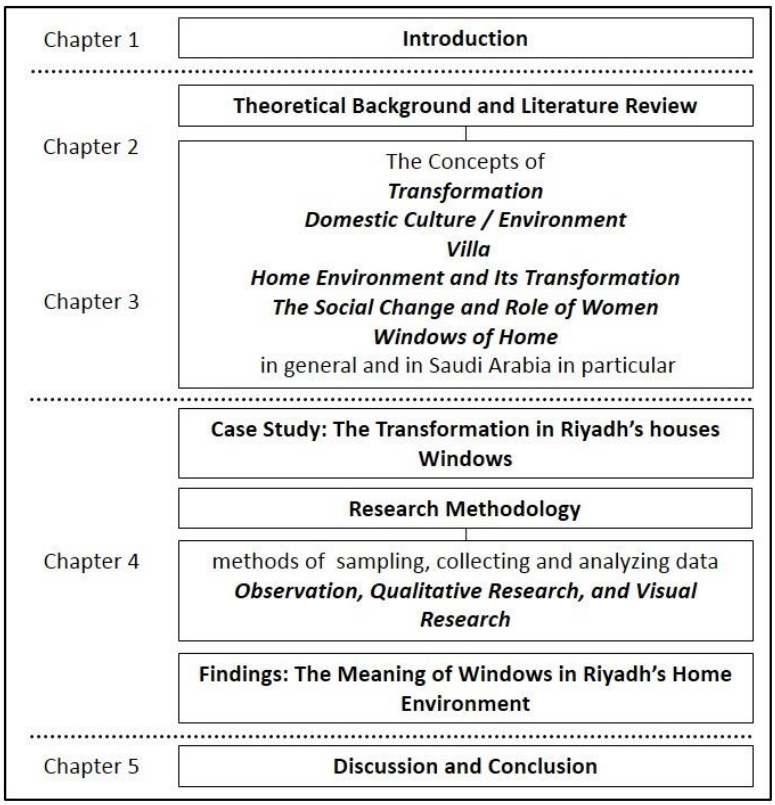

Figure 1. Design of the research (By author, 2021).

1.4 Limitations of the Study

Despite all the endeavors to infer the best result from this study, some inevitable factors and circumstances limited its outcome. The limitations of this study were mainly related to the cultural context, the period of the study, and the lack of reliable data. First, the background information about the conception of the window in Saudi society was limited to the available sources. There was limited information about the intangible experience of the inhabitants in the sources about the Saudi home

environment. Hence, that has set a difficulty as it requires expanding the search in other literature.

Second, and most significant, the sample size was limited due to the study context and time condition. As within Saudi culture, the residents commonly restrict their house's entry to people they already know. Although the researcher was familiar with and known by many Saudi families in Riyadh, it was challenging to reach a sufficient number of participants. Moreover, the interviews and observations were hindered for more than ten months because of the global Covid-19 pandemic and the imposed lockdown. Accordingly, the pandemic has added an obstacle as people hesitated to welcome others to their homes even after the curfew. This situation has narrowed the fieldwork period of the study; thus, a more normal situation and a flexible period of research would allow to increase the sample size and conclude with more detailed results.

1.5 Methodology

The objective of this study will be achieved through a qualitative research approach. The qualitative methodology can be used to examine people's lived experiences, behaviors, feelings, and cultural phenomena (Corbin and Strauss, 1998). Due to the complexity of the home environment and the various variables that require unfolding to clarify the meaning of windows, the study focuses on a small number of case studies. According to Yin, Case studies are the preferred method in design studies that require answers to "how" and "why" questions, as they concentrate on a contemporary phenomenon within its context. "*A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*" (Yin, 2003, p. 13).

The investigated architectural element (the window) is a transitional element between inside and outside. Therefore, it has to be studied from both sides within its context to unfold its meaning (perception and use).

The study will use literature review, observation, semi-structured in-depth interviews, site visits, and reflexive photography.

The literature review:

Domestic architecture is constituted and affected by various continuously changing economic, political, social, and cultural factors. The meaning of an element in the domestic environment cannot be reached unless we track the changes on that element through time. “The design and use of domestic architecture cannot be understood solely by a synchronic investigation, such as observation and documentation by fieldwork” (Lawrence, 1983a: 467). Therefore, data about the evolution of houses’ windows in different time intervals, from traditional to contemporary, are collected from theses, books, newspapers, and multimedia.

The fieldwork:

The data collection combines the use of two methods in the fieldwork: First is a systematic observation of the houses’ windows and physical surroundings accompanied by documentation, second is a semi-structured interview with female residents of a selected sample.

The observation data collection method is used in two stages of this study. In the early stage, as a pilot study, the observation was enacted informally through several visits to various neighborhoods in Riyadh. It aimed to investigate if the enlarged villas’ window phenomenon appears in different city districts and discover the recurring patterns of behavior and interactions between the inhabitants and their physical surroundings. In addition, in the primary research data collection stage, a formal structured observation was carried out, which included observing the physical traces (artifacts) in the sampled houses’ boundaries and visible windows from outside and observing the interviews participants’ behavior and interactions from inside.

In-depth semi-structured interviews with twenty females living in Riyadh’s contemporary villas were conducted to reveal women’s perceptions of home windows within their domestic context. The fieldwork’s objective is to explore the function of windows and the visual connection to the outside in the contemporary home environment.

The qualitative in-depth interviews are more like conversations than formal questing events (Rubin and Rubin, 2011). However, the semi-structured question of the interviews was prepared to ensure the discussion of the response categories across all the interviews. People are most probably respond differently to the same question; thus, some questions were added during the interviews.

Reflexive photography

Visual data are essential in this study to clarify the physical transformation of houses' windows over time. Photographs represent the reality of cultural and contextual circumstances (Langmann and Pick, 2018). It is an effective method to gather and record information about physical elements in their context. Accordingly, the researcher used photography as an associated method to collect visual information about the changes in the windows of houses in Riyadh, particularly the phenomenon of window enlargement and detailed insight into its meaning in the domestic environment. Reflexive photography is a technique that is used in social studies to collect information about the participants' perceptions. In this method, the participants reflect their personal experiences by generating photographs combined with the interviews. It is the best way to generate authentic data about the meaning and interpretations of things in the participants' eyes (Langmann and Pick, 2018). Therefore, the researcher asked the participants to photograph a window in their domestic spaces from their perspectives.

Chapter 2
Transformations in Saudi Arabia and Domestic Culture

This chapter narrates the story of the transformation in Saudi Arabia and its domestic culture in general up to the home environment and the houses of Riyadh city, the capital. Through tracking the changes that have impacted the Saudi domestic environment over time, this chapter will initiate the study framework by revising the history of the study context from the literature.

Initially, it is essential to define the meaning of the transformation concept and how it influences a nation's elements, such as the social order and the physical or material basis. Transformation is continuous, and it is a result of what was happening. It is conceptually related to change due to several conscious and unconscious changes accrued through time.

"The only thing that is constant is change" – Heraclitus

In defining the relationship between transformation and change, Durmus indicated that "change is a state originating from the nature of existence and thus defines transformation" (2012, p.26). Humankind tends to lead their actions to maintain their existence then improve their living environment according to their desires and needs. As a result, the actions of people emerge in their physical surroundings. In the scale of a country, in which different groups of people are integrated under a political structure sharing the domestic environment. The transformation could result from the following factors: the interaction between the citizens and the domestic environment (for the continuity of the civilization), the change in the societies, and the implementation of the development plans for a better future. To simplify, all the changes that happen within the country from the government's vision, institutions' goals, and individuals' decisions alter the national image at various levels.

Saudi Arabia has undergone drastic transformations over the past nine decades. It has evolved from an underdeveloped economy with a rural, nomadic, and agricultural society into a modern industrial state with a global economic power (Mubarak, 1999). Several domestic factors, such as economic, political, social, and

cultural, played a significant role in the transition of everyday life in the country. These transformations started after 1932, when King Abdul-Aziz Al-Saud unified Saudi Arabia, the largest area of the Arabian Peninsula, establishing a modern nation-state based on Islamic law (Shariah)[1] as the main legal system of the country (Mubarak, 1999) (Figure 2). The country was constituted of several tribal societies sharing the Arabic language and Islamic faith, living in small isolated regions, scattered within a vast desert area (Al-Naim, 1998). The major cities were small walled commercial centers depending on their history, geographical location, and local natural sources. However, the differences in the traditional societies in Saudi Arabia were based on the variety of the natural environment that had a significant influence on differentiating the built environment and customs of the occupants. Before the country's unification, the traditional forms of houses were developed independently in each region according to the experiences of its occupants (Fadan, 1983). Therefore, the integration of the various provinces and tribal communities under a political structure based on Islamic religious beliefs unified the society. They all became a part of the whole image of the country, being affected and influencing the nation's status. Another benefit of the unification is that it enhanced the security in the nation, as new neighborhoods started to appear beyond the settlements' walls, which began to disappear due to the lack of its significance (Saleh, 2002). Hence, the event of the unification has directly influenced the social structure and the development factors in all the country's regions.

[1] Shariah Law is the regulations that are derived from the religious precepts of Islam to govern everyday life and social behaviour.

Figure 2. Map of the Arabian Peninsula shows the location of Saudi Arabia (Source*:* *https://turtledove.fandom.com/wiki/Arabian_Peninsula*).

The built environment in Saudi Arabia started to transform due to economic development after the discovery of oil in 1938. It brought about booming economic growth that altered the physical characteristics of the country. The rapid urban development has changed the regional qualities of the Saudi towns and cities, influencing its domestic culture. Although all these changes have improved the region's urban form, it has introduced new urban and architectural ideas which are incompatible with the local norms and culture (Jomah, 1992). Saleh (2002) expresses that the introduced urban concepts have negatively impacted the privacy and security levels that the locals maintained in the traditional settlements by the hierarchy and segregation of space. The locals used to organize the traditional urban fabric in the region in an organic pattern similar to the typical Arabian-Islamic urban system that exhibited the cultural identity (Al-Naim, 1998). However, the introduced modern gridiron pattern was not designed for this region's inhabitants and did not reflect their identity (Saleh, 1998). Thus, it has affected the indigenous domestic environment in the country.

2.1 The Modernization and Development of the Residential Environment in Saudi Arabia

The government of Saudi Arabia has been making significant efforts to improve the living environment. Since the unification of the nation, the urban and social

development projects have been continuously planned and steadily implemented based on revenues of the oil wealth. The rich natural resources and the intensive administrative actions have moved the country forward as it becomes one of the world's significant countries (Ministry of Foreign Affairs, 2017). After World War II and during the modernization era, the increased demand for oil created an economic boom in Saudi Arabia. The rapid economic growth resulted in a dramatic transformation following the movement to modernize the Saudi cityscape influenced by the trend of the era.

One of the significant steps in modernizing the entire country was the adoption of master plans for major cities, which were designed by foreign experts, imitating western concepts. It has produced a housing environment that matches the modern view of development capable of coping with the modern inhabitants' needs (Jomah, 1992). However, some of the adopted concepts that were intended to develop the living experience have negatively impacted the Saudi domestic environment. Regulations such as land subdivision layout, lot sizes, and building setbacks affected the production of buildings and domestic architecture that have influenced house-life traditional culture. Hence, the development process is still ongoing, with the efforts of both the citizens and the government, through expressing their needs and enhancing the regulations accordingly.

2.1.1 The introduction of new spatial organization principles (1930 – '50s).

The first introduction of new spatial organization principles to Saudi Arabia goes back to the event of oil discovery. In 1938, oil was discovered by the Arabian-American Oil Company (ARAMCO) in the eastern region of the country, where they built housing projects for the American staff there (Al-Naim, 1998). The oil company's camps consisted of blocks arranged in gridiron pattern for the first time in Saudi Arabia (Figure 3).

Figure 3. The first oil-camp in Dhahran 1936 (Source: https://www.aramco.com/-/media/publications/books/aramco_80_years_ar.pdf).

At that time, Saudi towns were remarkably traditional and conservative, almost unaffected by modernization features except for electricity, drainage system, water closets, cars, and telephones. Natives of the various Saudi regions lived in different traditional houses' forms, which they developed and constructed according to their needs, environment, and resources (Alafghani, 1990). Until the late 40s, cities were expanding according to their natives' traditions in an irregular organic urban pattern, using local materials, and maintaining their local home ideas (Al-Hathloul et al., 1985 p.206). Facey (1992) described the development in the 40s in Riyadh as: "*Despite the mushrooming development of the city outside the walls, traditional methods of construction continued to be employed*." (p.302)[2]. Therefore, the intervention of a new spatial organization created the first conflict between the traditional and modern spatial concepts in the local society (Al-Naim, 1998).

In 1947, the eastern province governor requested assistance from ARAMCO to assign its experts to control the random growth and plan the cities near the oil area (Al-Hathloul et al., 1985). Therefore, the layout plans of Dammam and Al-Khobar, which foreign engineers and surveyors produced, were based on new spatial and architecture concepts (Figure 4). Accordingly, the initial urban plans of these cities were the first implementation of the gridiron pattern and wide streets in the country before it spread around all the major cities and changed the traditional living pattern (Figure 5). Even though the urban plan of the eastern region was not directing the house types, the new spatial concepts significantly influenced the conventional home image (Al-Naim, 1998).

[2] Cited in Al-Naim, 2011, p.124

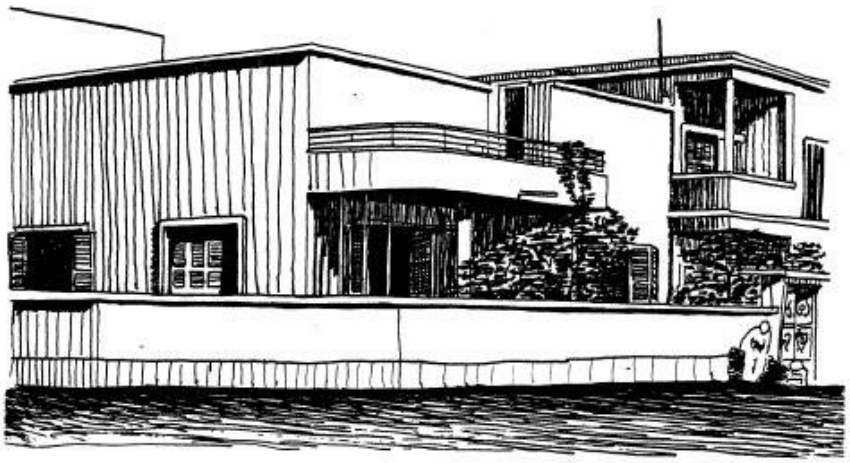

Figure 4. A typical detached dwelling built by ARAMCO in Dammam (Al-Hathloul, 1981, p.168).

Figure 5. An areal view of the gridiron pattern of detached houses (Eben-Saleh, 2001).

2.1.2 The implication of the new dwelling types (1950 – '60s). The 1950s was the turning point in the traditional Saudi residential environment. In 1953, when King Saud succeeded his father, he aimed to modernize the county, particularly its capital, Riyadh, to exemplify the modern Saudi nation. His aim, combined with the first rapid economic growth, urged the modernization of the major cities' urban and architectural approaches. He decided to move the governmental ministries from Makkah to Riyadh.

Thus, an urgent construction of a new district with its facilities was required to meet the transferred government employees' demand for housing.

Consequently, during the reign of King Saud, Riyadh underwent unprecedented growth. Large urban development projects were sponsored by the government, such as 'Annasriyyah'3 and 'Al-Malaz'4 neighborhoods, which were called New Riyadh (Al-Naim, 1998). Hence, these projects were seen as the ideal national development model and symbolized modernity in their sharp contrast with the traditional.

These projects introduced the gridiron pattern and new dwelling types (villa and the apartment building) to the capital for the first time; thus, the local scholars marked these projects as a turning point in the nation's living pattern (Al-Hathloul, 1981, Fadan, 1983, Bahammam, 1992, Al-Naim, 1998). At that time, the absence of local architects and the lack of experience of the master builders in planning such a large project enforced the involvement of foreign architects in the design of '*Al-Malaz'* housing project[5]. Accordingly, they introduced a new house type related to western suburban detached houses more than traditional Saudi houses (Fadan, 1983, Bahammam, 1992).

Fadan described the new housing as "*a completely different conception of a house, cluster, and neighborhood has been introduced. It starts from the tiny details of the house construction, and spreads to the internal spatial organization of the rooms and finally to the external appearance and the relationship of the house to those in the neighborhood*." (1983, p.97).

Eben-Saleh asserts that "*the Saudi villa has emerged as a result of the influence of exotic models and the consequences of modernism*." (2001, p.185). The foreign planning and architectural principles that were implemented in the *Al-Malaz* housing project determined the architecture of the early modern houses in the country because it was considered the ideal image for the future development of housing (Figure 6). Hence, this was the beginning of adopting the villa[6] dwelling type in the Kingdom. However, it was neither designed nor developed according to the Saudi inhabitants' values and needs.

[3] Annasiryyah is a royal residential neighborhood that introduced reinforced concrete construction for the first time in Riyadh in the late 1950s.
[4] Al-Malaz is a residential neighborhood that is the first housing project constructed for government employees.
[5] It consisted of two houses' types. The majorly was 754 detached housing units (villas), and the minority was 180 apartment units in three buildings (Al-Hathloul, 1981, p.162).
[6] See the subsequent section (The Introduction of Western Concepts of House: The Villa)

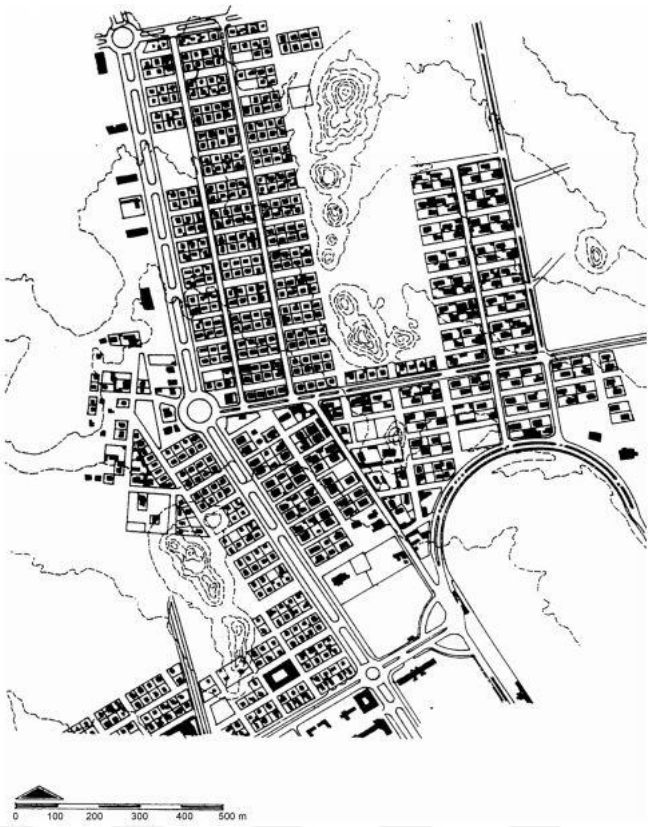

Figure 6. A layout plan of the Al-Malaz housing project in Riyadh (Al-Hathloul, 1981, p.164).

During the 1960s, to manage the rapid urban expansion, the first building regulations were issued. All municipalities and town planning offices in the country stated the requirements for issuing building permits[7]. Consequently, the maximum building heights were restricted to eight meters; the built area was limited to 60 percent of the land area, and setbacks on all building sides were mandated (Al-Said, 2003). These rules have played a significant role in pervading the new dwelling model "villa" throughout the country (Bahammam, 1992). The lack of local architects and imposition of building regulations limited the choices and forced people to adopt the new house's type to fulfill the building permit requirements. Therefore, the detached private house called "villa" has been the dominant single-family dwelling type in all cities and towns of the Kingdom from that time on.

The government institutions had strongly controlled the urban form of the home environment in Saudi Arabia with the requirement of the setbacks. They required a

[7] "*in 1968 (1388 H.)Doxiadis Associates undertook the task of planning the capital. The Doxiadis Plan can be termed as a milestone in the history of urban planning in Saudi Arabia. It was the first formal attempt towards the study and analysis of the existing conditions of the city of Riyadh, and the first to emphasize the need for planned development of the city as a whole*". (Al-Hathloul, S. and Anis-ur-Rahmaan, S., 1985, p.208).

minimum of two meters of unbuilt spaces from all sides of the building to the boundary walls, which are illegal to build on (Al-Said, 2003). This regulation was imposed to maintain an adequate distance between the neighboring buildings and the street to the building (Figure 7). The specialists who implemented this exotic planning regulation aimed to provide natural daylight and ventilation for the interior spaces. Also, they wanted to facilitate access for firefighters to control fire spread, which barely existed in the traditional urban layout (Eben-Saleh, 2001).

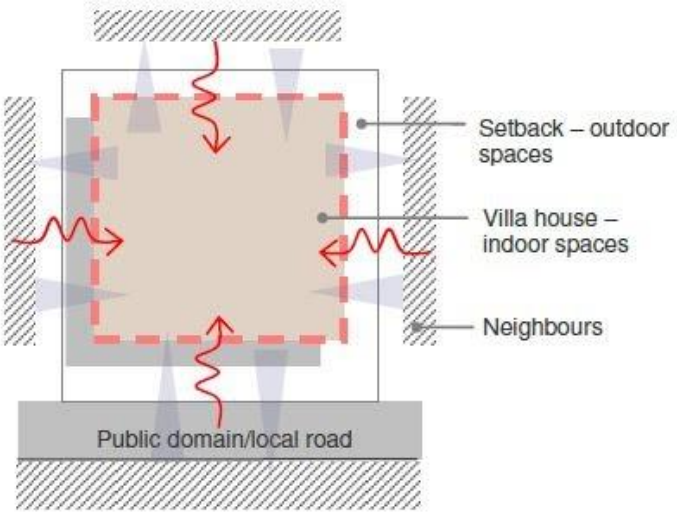

Figure 7. The setbacks in villa dwelling type (Almehrej, 2015).

According to Eben-Saleh, "*The layout of a typical model is characterized by the imposition of setback planning regulations, creating an island building design*" (2001, p.185). The setback imposition has shaped the typical dwelling as a concrete box surrounded by open spaces (Figure 8). It created privacy and security problems as all houses' openings face outward, either wide streets or the neighboring building[8] (Bahammam, 1992).

[8] This matter will be clarified in the transformation in Riyadh's houses windows.

Figure 8. The new dwelling type (villa) in Al-Malaz housing project (Al Eqtisadiah, 2019).

The new houses types during the 60s were only for ARAMCO's and governmental employees, who had already experienced different cultures, as they were either foreigners or Saudis who had studied abroad (Al-Naim, 1998, p.38). The detached house type (villa) was associated with the distinguished social class of the governmental employees, who were highly educated elite in a largely illiterate society. While the families who inhabited these houses started to modify them according to their lifestyle, the new home concept influenced the entrenched local home concept. It was clear for the families who experienced the new houses that they did not convene their social and cultural values. However, other families were more enthusiastic about experiencing the new houses as they symbolized modernity. Accordingly, people living in traditional houses started to make changes to imitate the exterior facades of the houses in *Al-Malaz*. For example, they plastered the mud surfaces of traditional houses with cement and sharpened their edges to get the neat edges of the concrete; they also replaced the traditional wooden external gates with steel ones similar to the houses gates in *Al-Malaz* (Al-Naim, 1998). These changes in traditional houses' exterior were observed both in Riyadh and in the cities of the eastern region (Al-Nafea, 2006; Al-Naim, 1998). The modifications indicate that people were ready to and agreed on developing new meaning within their homes.

2.1.3 The pressure to modernize "the construction boom" (1970s – '80s). During the early 70s, Saudi Arabia experienced a significant acceleration in the modernization process. The process, which started in the 1930s with the modern nation's establishment, reached its peak by the 1970s with the new economic base.

The increase in the national oil production and the sharp rise in the international oil prices, particularly after 1973, brought about the second rapid economic growth, which was a crucial period in the history of the country's development.

Within the late 1960s, the Ministry of Economy and Planning (MEP) prepared the first five-year development plan (1970-1975) that was flowed by consecutive development plans. The primary purpose of planning has been to provide a framework for the development process in all its social, economic, and industrial dimensions.[9] Consequently, the Ministry of Municipal and Rural Affairs (MoMRA) was established in 1975; it has been responsible for the urban planning of the Kingdom's cities to control and enhance the municipal and rural areas' services over the entire country (Al-Said, 2003). Subsequently, MoMRA became responsible for announcing and developing the building regulations to accomplish the planning purposes (Figure 9).

Height of buildings	Max 12m (floor height 2.7m–3.5m)
Height of fences	Max 3.5m
Ratio of building size to site area	Max 60% (included annex)
Setbacks towards road (Road width – min 12m)	1/5th of road width up to 6m (min 2m)
Setbacks towards neighbours	Min 2m (projection should not be permitted within these areas)

(Source: MOMRA, 2007)

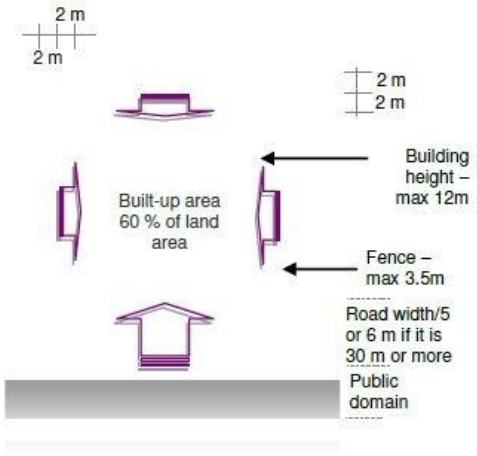

Figure 9. The building regulations were followed in the residential building before its alteration in 2018 (Almehrej, 2015).

The stage between the 1970s and the 1980s, called the construction boom, was attributed to the extreme expansion of cities and the massive urban development projects (Akpinar, 1992). Several sectors improved, particularly infrastructure, built environment, and social services such as healthcare, education, housing, and transportation. These improvements mainly relied on imported ideas developed in other countries and were implemented by the foreign guest workforce. Therefore, the construction boom shifted the traditional society and the urban environment unprecedentedly, influenced by the imported western concepts, which were seen as the ideal images to keep in progress and develop the country.

[9] https://www.mep.gov.sa/en/development-plans

Many scholars have argued that the tremendous transformation executed by adopting alien concepts, architectural notions, building techniques, and construction materials due to the economic change has significantly influenced the local identity, resulting in socio-cultural changes. Jomah (1992) the adoption of a non-indigenous lifestyle is manifested in the modern houses in which traditional cultural values and religious beliefs are neglected result from the pressures of acculturation, which made people feel "they are missing out on developments elsewhere." and led to the loss of identity. Fadan (1983) indicated that the fascination with the western lifestyle at that point took the attention away from clearly understanding and evolving the conventional living environment. The attraction to modern architectural ideas prevented the inhabitants from preserving the valuable characteristics of the traditional architecture and cultural heritage (Fadan, 1983, p.15). Other researchers listed that the experts who introduced foreign planning principles assumed that the locals' lifestyle would change eventually after the urban development; thus, the issue is a matter of time until people get used to it (Hakim, 1988)[10]. However, the introduced urban form and spatial organization created substantial problems and were inadequate for the people with the Arabic-Islamic cultural background (Al-Hemaidi, 2001, p.189).

Furthermore, conservative people have extensively blamed the extraordinary change in the traditional society and living environment, describing it as getting out of traditional and cultural notions, such as privacy. As pointed out, many studies discussed the issue regarding the Saudi identity at that time. Several of them accused the use of western concepts as the reason behind losing the local spirit. In contrast, others considered the intrusion of the new ideas made people feel the threat to their identity and encouraged the social resistance towards the introduced concepts by preserving essential values and beliefs to distinguish themselves from others.

1979 was a turning point in the history of Saudi Arabia. With the rise of the awakening movement and the Grand Mosque's siege by the religious extremists, the country became more conservative than ever before. Gender segregation rules and women's dressing codes become significant, as the religious police, known as the Committee for the Promotion of Virtue and the Prevention of Vice (CPVPV). They were assigned to monitor social behavior and enforce people toward the moral law in public spaces. The aim was to resist the effect of imported ideas from the world's

[10] Cited in Al-Hemaidi, 2001, p.189.

cultures by imposing rules on all citizens and residents to control social life in public spaces.

In essence, the tremendous urban changes associated with the construction boom and the rapid adoption of alien concepts in several life aspects had significantly influenced the local's lifestyle. On the one hand, it forced the nation's modernization. On the other hand, it evoked the need to preserve its identity.

2.2 The Introduction of Western Concepts of House: The Villa

This study focuses on the idea of the villa, which is the dominant western concept of dwelling within the residential developments in Saudi Arabia. In the mid-twentieth century, two modern housing concepts were introduced to Saudis, the villa and the apartment building. Substituting the traditional house, the majority of the residents preferred villas as they are single-family detached houses, contrary to the multiple-family apartment building that was an entirely new concept of living. In the beginning, Saudis distinguished between the types of houses by calling the traditional "*Bayt Arab"* Arabic house and the imported detached house "new house" (Al-Naim, 1998, p.36). After that, as it became the prevalent house type, the new house became known as a villa even in the Saudi building code.

The term villa goes back to the 1610s, an ancient Roman word that signifies an upper-class country house "country mansion" [11]. Since that time, the idea and function of a villa have evolved significantly. After the fall of the Roman Republic, it became a small fortified farming compound, and then in the middle ages, it has re-evolved into an upper-class house. However, in the modern language, the word villa refers to several meanings, types, and sizes of houses, ranging from semi-detached or double villa to detached houses in urban or suburban areas for the upper or middle class. Merriam-Webster dictionary defines the villa as: "a country estate" or "The rural or suburban residence of a wealthy person" in British "a detached or semidetached urban residence with yard and garden space."

The adopted detached house type that became the prevalent in Saudi Arabia, is known as a villa even in the Saudi building code. According to the Population Study of Riyadh City (1437 AH / 2016 AD) [12] conducted by the High Commission for the

[11] Online Etymology Dictionary https://www.etymonline.com/word/villa
[12] https://www.rcrc.gov.sa/en/research/population-study-of-riyadh-city-1437-%D9%87%D9%80

Development of Arriyadh, the villa type is the prevalent dwelling in Riyadh. It represents 52% of the usage pattern among the types of residential units. In the second place, apartment units appear in 42% of the preferred dwelling type, while 2.5% of the preferences are for Arabic houses (Table 1).

Table 1

Types of Housing Units in Riyadh - 2016

Housing Types	Percentage
Villa	52%
Apartment	42%
Arabic house (Courtyard house)	2.5%
Other types	3.5%
Total	100%

Source: Population Study of Riyadh City (1437 AH / 2016 AD) Available from:https://www.rcrc.gov.sa/wp-content/uploads/2019/07/007523.pdf

In Saudi Arabia, the villa is a modern type of housing introduced in the mid-twentieth century. The term villa signifies an urban detached "villa" or semi-detached "duplex villa" house type for the upper and middle classes, constructed in reinforced concrete, surrounded by private fenced yards. It occupies 60 percent of its total land area. Residential houses' lands typically range from 300 to 900 square meters (Bahammam, 1992). The villa consists of two stories with an upper annex (Figure 10). The ground floor is usually for guests, living, dining, and kitchen; however, the second floor is for bedrooms and living.

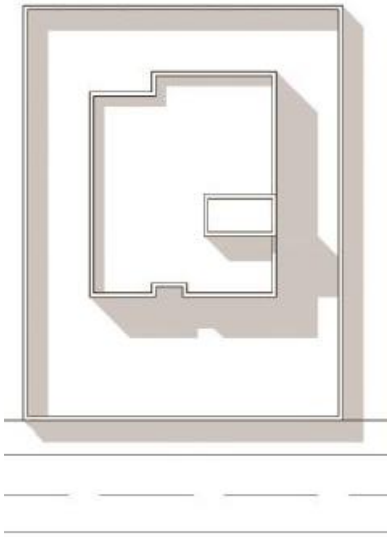

Figure 10. A typical detached villa layout (Hakky, 2012, p.154).

The villa in Saudi Arabia is typically surrounded by high-soled boundary walls (from 2 to 3 meters). According to Ar-Riyadh Municipality, semi-detached houses "duplex villas" are only allowed to be constructed when the land is for a single owner or company (a property developer). Therefore, the detached private house "villa" has been the dominant single-family dwelling type in all cities and towns of the Kingdom since the 1960s (Eben-Saleh, 2001; Bahammam, 1998; Mubarak, 2007). The requirement of the setbacks had significantly influenced the physical form of dwellings, preventing the traditional house's form. The setbacks are unbuilt spaces from all sides of the building to the boundary walls. It was mandatory to have unbuilt spaces of two meters minimum from all the property boundaries and up to six meters from the street lines. Thus it was constituting surrounding yards around the house.

However, in 2018, the private dwelling setback regulations justified acquiring the needs of the contemporary Saudi family. In an implication of the country's vision 2030, they allowed building only the ground floor on a maximum of two sides of the property, as shown in (Figure 11).

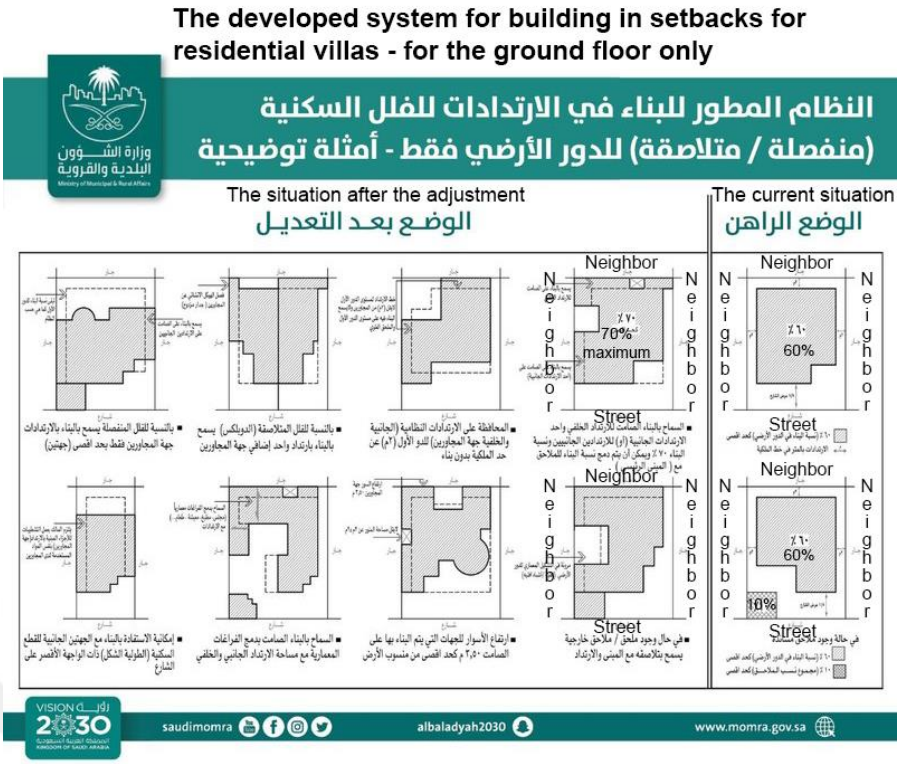

Figure 11. The alteration on the residential setback regulation in 2018 (Source: *https://momra.gov.sa/ar/qarar/847*).

The turning point in housing in Saudi Arabia was the imposition of building regulations. In 1960 the Ministry of Interior issued a circular for all municipalities to implement the planning policies throughout the Kingdom. Al-Said described this regulation as "*the turning point in Saudi Arabian contemporary built environment physical pattern and regulations. It requires planning of the land, subdivision with cement poles, obtaining an approval for this from the municipality, prohibited further land subdivision, controlled the height of the buildings, the square lot ratio of the built, require setbacks*…" (1992, p.258).

Accordingly, the 1970s were called the period of institutionalizing the change from traditional to the modern home environment, when the Saudi families responded to the institutional regulations. Before that, the influence of the new home image was limited to the new development areas. However, the acceleration of urban expansion and population growth has increased the demand for housing, which forced people to experience a new way of living because all the newly constructed houses had to pass through the new design process. Therefore, these regulations have played a significant role in pervading the new dwelling model "villa" throughout the country (Bahammam, 1992). Moreover, the impact of the economic boom at this period enabled the

government to subsidize Saudis to construct new houses and move from their old houses to a new house type (Al-Naim, 2006). As a result, native people of different regions started to filter the new house's image and modify it according to their cultural values to keep the sense of belonging. According to Al-Naim it was one of the goals of the government to melt and unify the social and physical diversities of the local societies to originate a unified national identity (2006, p.66). It is essential to point out that Saudi Arabia is considered a collectivist society, in which the trends in the country often influence individuals' conception. In that sense, the meaning of villa house type for Saudi families is affected by its common meaning in society. Chapter four elaborates on the conception of the villa in Riyadh through the change in its villas' windows.

2.3 The Effects of Transformations on Domestic Culture

Modernization efforts led to the drastic urban transformation that occurred after the rapid economic growth in Saudi Arabia. As mentioned in the first section of this chapter, the fascination with the imported ideas and the massive adoption of new concepts took the attention away from developing the indigenous concepts. Hence, besides the physical changes in the urban environment, the new ideas significantly influenced Saudi society. According to Jomah, "*The sudden transformation of a way of life in Saudi Arabia, which had remained at a pre-industrial stage for centuries, had a deep impact on the society*." (1992, p.37). The locals started to react toward the new notions differently, as several were more receptive than others, especially when accepting things that may impact sensitive religious values.

2.3.1 The preservation of the nation's distinct cultural identity (1980s – '90s).

"*Urban developments in Saudi Arabia during the 1950s till late 1970s has been characterized by abandoning local traditions and adopting imported Western ideas. In 1980s things have changed*" (Al-Qawasmi and Babsail, 2014, p.102).

In the 1950s and within thirty years, domestic life has unprecedentedly changed all over the nation, especially in the major cities. People living in major cities started to adopt new ideas and lifestyles, introduced with the development, such as cinemas, sports, and women working outside their houses. However, these remarkable changes were opposed by conservative people who perceived the development led by

modernization as a westernization process substituting the traditional way of life. The opposition correlated to the Islamic Awakening movement (Al-Sahwa Al-Islamiyya). It is a worldwide 'Islamic revival' movement, which emerged in the 1970s/1980s; it was against the modernization that was going on in Muslim countries, considering it a westernization [13] of the Muslim society (Almahmood *et al.*, 2018, p.6). Therefore, Since the 1980s, all the introduced social practices have been banned to protect Saudi traditional life and culture.

In the 1980s and 1990s, the country has enforced rules regulating social life according to religious values and local cultural norms and practices. As a conservative country, Saudi Arabia has a unique cultural life and living environment. For instance, gender segregation in public spaces has a significant role in urban and architectural design as it is considered locally as the core of Muslims public life (Almahmood *et al.*, 2018). Therefore, public spaces in the KSA are separated according to the users' genders; there are public spaces for women-only, other for families, and spaces for men-only in urban life (Sultan, 2019).

Furthermore, several rules restricted women living in the country. Women were not allowed to travel without getting permission from their guardians and were banned from driving. Besides, women were forbidden to go out unveiled in public; even non-Muslim women visiting the country had to live and experience women's dressing code in public life. All women in the country had to wear a veil 'hijab', and a black cloak 'abaya', when they went out. Moreover, public cinemas and music halls were banned soon after introducing them during the oil boom as these facilities may combine unacceptable practices. However, most of the young generation population used to travel to neighboring countries to enjoy entertainment facilities. Thus, these rules have been rethought by the supervision of the inhabitants' needs. [14]

The conservative cultural climate in Saudi Arabia in the 80s and 90s has influenced the local architectural identity in two opposite ways. From one side, locals paid more attention to their distinct identity and attempted to search for the Saudi identity in the urban environment. Several architects referred to the local and traditional Arab-Islamic architectural elements and concepts. Besides, most studies of the built environment during the 80s focused on identity and suggested reviving the

[13] 'westernization' is the adoption and emulation of Western concepts and lifestyle in non-western society as an influence of the cultural contact with the West.
[14] See the following section.

traditional urban image (Elsheshtawy, 2008, p.131). However, on the other side, there were intensified attempts to express social identity and protect socio-cultural values in a way more than implied in the traditional built environment. The inhabitants conveyed their identity through extensive alterations to the modern built environment. They also emphasized privacy protection by adding physical boundaries (blocking elements) between public and private spaces, especially in the domestic environment, which became distinctly isolated (Maneval, 2019). Maneval stated that houses' boundary walls height increased from 2 to 2.5 meters in the 1970s to over 3 meters in the 1990s (2019, p.142). As a result, these changes have altered the overall image of the country.

2.3.2 The national transformation program: The implementation of social reform (since 2016). The public life policies imposed in Saudi Arabia created a paradox between the modernized appearance of the cities' urban spaces and the experienced urban life. It is just like the socio-cultural norms were conserved "frozen" to prevent any change over time that kept the traditional life's primary condition through the imposed social regulation.

The conservative environment in the country during the 80s and the 90s was strictly affecting women's lives. As mentioned in the previous section, women were banned from several public life activities that excessively avoided change in women's traditional role in social life[15]. Therefore, in the current development plan, the government aimed to reform social life and allowed women to work in different fields and move through the public spaces the way they prefer while referring to Islamic law. Regarding the development and social reform plan of vision 2030, Prince Mohammed Bin Salman stated that "*Together we will continue building a better country, fulfilling our dream of prosperity and unlocking the talent, potential, and dedication of our young men and women*.".

In 2016, the national transformation movement started according to the development plan of vision 2030, which aims to reduce the country's dependence on oil revenues by diversifying the economic income to promote a sustainable future and improve the quality of life. According to the Ministry of Economy and Planning

[15] Women were banned from driving cars, working in certain professions, and traveling without permission from their father, husband, or brother.

(MEP), “Our Vision is built around three themes: a vibrant society, a thriving economy, and an ambitious nation.”. This development plan focuses on enhancing public services such as infrastructure, health, education, recreation, and tourism. According to the BBC news, “A vast and hitherto largely closed country is now there to be experienced.” After a long period of isolation, the country re-opens to the world.

One of the changes during the implication of the country’s vision occurred in 2018 when private dwelling setback regulation justified acquiring the needs of the contemporary Saudi family since the old setback regulations were causing many problems in the domestic environment, as mentioned previously.

2.4 The Transformations on Home Environment

Before going through the story of the Saudi home environment transformation, it is essential to clarify the composition of the home environment and how it changes. The home environment is a system established out of the interaction between the various elements of a particular environment and its inhabitants. It includes spatial surroundings and emotional experiences of inhabitants in a domestic living condition. Through the use of spaces and physical objects in the house, people create relationships and experiences with the surrounding material elements to develop a sense of balance between their physiological and psychological needs (Rapoport, 1969). In other words, the home environment implies people’s choices based on their culture to match their values and support their activities and lifestyle. It varies according to the natural environment, the physical material elements, and the choices of people who inhabit it. Rapoport stated that:

“The diversity of cultural landscapes generally, and home environments, is the result of different groups with different lifestyles making home environments congruent and supportive with these lifestyles. They may do this through designing and building, but more typically today they do it through choice and subsequent modification and personalization …” (p. 383)[16].

The changes that affect the home environment occur on different levels: cultural, subcultural, social groups, and individuals. However, this study focuses on the home environment transformation of the majority of the population in the Saudi context,

[16] Cited in Al-Naim, 1998, p.24.

who share the cultural and religious background, rather than going through individuals' preferences and choices. The home environment includes material culture and social customs handed out from the previous generations. People give meaning to their physical surroundings consciously and unconsciously from their previous experiences. However, they modify and generate new meanings as their requirements change over time (Figure 12). Therefore, understanding the historical process of the changes in the home environment is significant in analyzing contemporary change patterns.

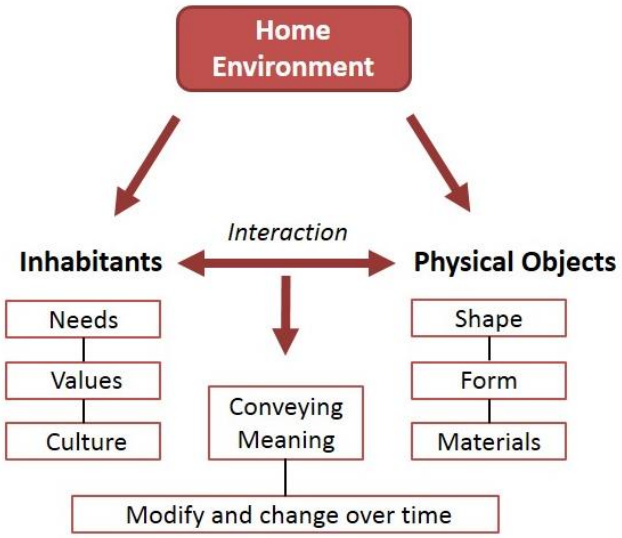

Figure 12. The change in the home environment (By author, 2021).

2.4.1 The transformation of the Saudi home environment. Saudi home environment has been transforming since the mid-twentieth century due to economic growth, exposure to other cultures, and social development. Several scholars have discussed the change in Saudi society and the home environment from various perspectives. For instance, Hamdan has studied social change in the Saudi family in his dissertation (1990). He clarified the main aspects that caused the transformation of Saudi families, such as education, living conditions, technology, women's work outside the home, marriage age, and family size. However, he did not explain the influence of social change on architecture and housing design. Akbar, in his study "Home and Furniture: Use and Meaning of Domestic Space, Jeddah, Saudi Arabia" (1998), has examined the meaning of the interior spaces furniture in both traditional and contemporary houses in Jeddah concerning Saudi's cultural values and its influence on the home environment. He found out that traditional furniture matched

the use, values, and express the identity of Saudis. Conversely, modern furniture is mismatched with cultural values and merely used for its function due to the resistance of change in cultural values.

According to Al-Naim, "*the contrast between traditional images and the new images in the minds of local people can be considered the beginning of physical and social changes in the Saudi home environment.*" (1998, p.34). The conflict between the traditional and western ideas was the beginning of the transformation in the domestic environment in Saudi Arabia. Hence, the inhabitants adopted the new physical elements for their function that did not necessarily reflect the culture.

Furthermore, in the study of "Housing morphology, Gender, and Family relationships in Jeddah, KSA (1940 – 2017) ", Alharkan (2017) has investigated the change in the home environment of Jeddah through the transformation of housing morphology and gender roles in Saudi family and society. Physical and social changes influenced the Saudi home environment at various levels and in different phases. In the search for continuity and change in the home environment, Al-Naim indicated that the Saudi home environment has transformed at both its macro and micro levels, he stated that:

"*The process of producing the physical environment had shifted from the incremental mechanism which used to occur daily on a micro level to a rigid process imposed on the macro level without a real understanding of people's cultural needs. It was a complete contrast to the traditional home environment…*" (1998, p.320)

The institutions imposed a fixed organization of the Saudi built environment after initiating the master plans for all cities between 1967 and 1976. This circumstance has forced Saudis to adapt to the changes and alter their needs with time. After demonstrating how the material environment has changed in the previous section of this chapter, the subsequent section will discuss the social change through their adaption.

2.4.2 Social relations and behaviors within the home environment. In order to understand the socio-spatial relationships in the home environment, we have to grasp the role of the individuals and families in the larger social order. In Muslim societies, Islamic moral principles guide the interaction between the community members to preserve the social order. Individuals' responsibility goes beyond their

family to the whole community 'ummah'[17] as a single entity. Thus people retain a strong coherence with others regardless of any racial or social differences. This close relationship and cooperation between community members have predominantly influenced the morphological development of cities in Saudi Arabia. It is embodied in the urban compactness and close distances between houses of the traditional cities. Also, it is reflected in the successful combination of different tribes in a single nation without variances (Mortada, 2003).

Compared with Western individualistic society, Saudi society is a collectivistic society in which individuals belong to a group that is the primary source of their identity. This strong relationship between the community members has maintained consistency at the macro-level of the home environment. However, families have been adapting to the changes at the micro-level to create the needed balance between their social relations and the domestic physical environment (Al-Naim, 1998).

In the traditional setting of the Saudi home environment, locals' customs and lifestyles shaped the form and spatial arrangement of the entire cities and houses. The social spaces in the traditional built environment existed at various levels of social inclusion in the city according to the relationship between its users. First, the central public area consists of a mosque and a marketplace that gathers most of the city's inhabitants and visitors. This space was the focal point in the urban fabric of all the old Islamic cities, which enhanced social relations and interactions at the city's largest scale.

Second, the squares or the cul-de-sacs between dwellings, where the neighbors meet regularly enforced their constant contact. Furthermore, due to the compactness of the old residential areas, the spaces between houses were hard to reach by strangers and considered semi-public only for the residents. Thus, spaces and pathways between houses were convenient places for women and children to socialize, meet, and interact (Saleh, 2002, p.519).

Third, the last social domain is the guests' reception spaces inside houses that are considered a semi-private zone in the house, open to welcome guests. Men's guest rooms were isolated from the family domain and more connected to the external domain. It had the only windows in the house opened toward the alleys and a separated

[17] 'ummah' is the collective community of Muslims in which the members are bound together by religious ties reflecting solidarity and brotherhood relationship.

entry which was usually kept open as a sign of hospitality to allow neighbors who pass by to join the reception (Al-Naim, 1998). Accordingly, as the traditional built environment allowed, people maintained a good relationship and regular contact with others, especially neighbors.

However, in the contemporary home environment, various factors have restricted the previous relation and interaction between the people in their domestic environment. On the city's scale, the rapid urbanization and the sprawling expansion have eliminated the citizens' opportunity to meet in a central public space. Modern Saudi cities have been divided into numerous districts that include all the facilities needed by their residents. Within districts, the absence of pedestrian walkways between houses and the reliance on cars in transportations, even for walkable distances, have considerably limited residents' chances to communicate unless they intended to (Saleh, 2002). The institutional building regulations have a significant influence on the contemporary design of urban and residential spaces, as they have prevalent control over communities' decisions. Saleh has asserted that the "unlimited access of space" in the design of the modern neighborhoods, which lack the implication of cultural requirements in their scheme, has limited the spaces to only public and private (2002, p.515). Therefore, semi-public spaces have been excluded in the contemporary home environment, resulting in losing cohesiveness between the different domains and discouraging social integration among the neighbors.

2.4.3 Men and women within the home environment. The nature of the relationship between men and women in the Saudi community is influenced by significant traditional cultural values and norms, which are ambiguous for other societies. Although there were strong relationships among the community, the relationship between men and women was circumscribed by various barriers according to gender norms. Based on the traditions and Islamic principles, the conventional relationship between genders is restricted socially and spatially by maintaining women's privacy in public and private domains (Al-Nafea, 2006). This preservation is manifested in the physical demarcation between spaces and in both genders' behaviors in the home environment.

In the traditional environment, spaces were organized mainly according to cultural values and roles of males and females in the family and society. On the one hand, females' roles were crucial in their private houses between motherhood and

managing the household[18]; thus, the house form offered the required amount of privacy. On the other hand, male domination was in public spaces as the breadwinner; hence, women wear a veil when they go out among the non-Mahram[19] men. While, among the family, kinship bond diminishes the separation between genders. So, women are permitted to remain unveiled in their private houses in the presence of their Mahrams – such as their husband, father, brothers, uncles, nephews, and sons –.

Therefore, the traditional houses consisted of two sections regarding the level of privacy needed. The first section is the family domain located away from the main entrance as it requires maximum privacy. The second section is for male guests or people not related by either blood or marriage to the family, located near the entrance and connected more to the outside (Fadan,1983,p.307). Al-Naim pointed out that the main façade of traditional houses in Al-Hofuf [20] "responds strongly to the relationship between the members in the community"; thus, outward openings were an indication to welcome guests (1998). Accordingly, gender segregation rules significantly impacted domestic spaces' form, use, and meaning.

Women's privacy is a significant cultural value in the Saudi home environment as in other Muslim societies. This cultural value has a significant impact on the design of the traditional built environment and social behavior. The internal organization of spaces and openings were separation men and women domains. For instance, in the traditional Saudi houses of the central region (Najd), the courtyard-looking windows maximized women's freedom of movement inside their houses without being viewed by strangers. While, in the central region, houses windows used to be covered with lattice woodwork. Besides, men's guest rooms were separated from other family spaces with an entranceway only for guests (Figure 13). Also, men are supposed to call out before entering houses other than their own to inform women about their existence.

[18] According to Al-Nafea in the traditional socity "it was a matter of pride that women stayed at home" (2012, p.37).
[19] Any man with whom marriage is generally permissible.
[20] Saudi city located in the Eastern Province of Saudi Arabia

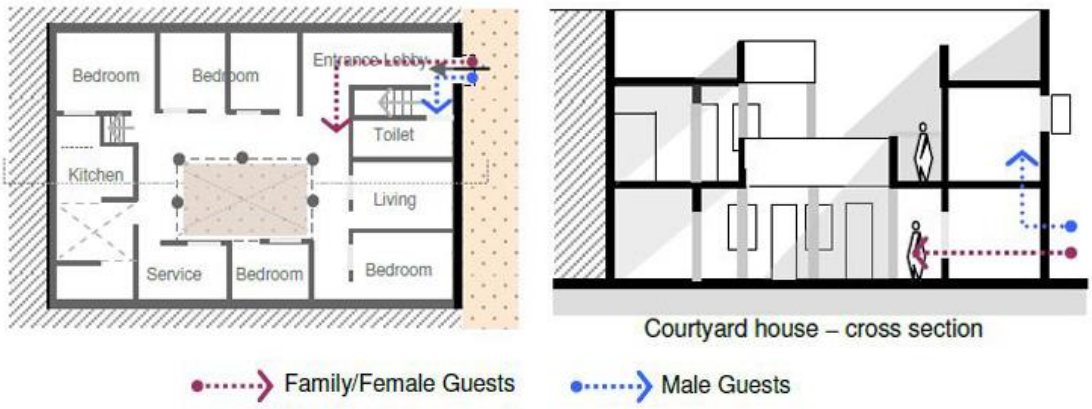

Figure 13. An example of a courtyard house with separate access for family and men guests from the entryway (Almehrej, 2015, p.82).

In the contemporary environment, and after the imposition of the new urban layout and house form, the spatial organization has lost its previous significantly in supporting the cultural values. The conversion of houses' orientation from inward to outward has interrupted the convenient guaranteed physical separation between the domains of private family and others. Therefore, it becomes the responsibility of each individual and family to adapt to the new physical environment and create the barrier they require.

Through time, people created solutions by blocking some of the windows and increasing the heights of the boundaries. Consequently, they create enclosures that isolate the houses from the outside world, affecting the occupants' lives, especially women who spend most of their time in their houses (Maneval, 2019). This phenomenon altered the worldwide image of the country, and it became known as a strict conservative country in which women were isolated and not given their rights. Stefan Maneval called this emphasis on privacy protection "New Islamic Urbanism" in his study of the changing relationship between public and private space in the city of Jeddah, Saudi Arabia. He argued that the change in the conception of public and private separation in Saudi Arabia during the 20th century equally influences males' and females' lives in the country.

2.4.4 The role of women in the home environment. Women's role in the family and society significantly influences the home environment. Apart from the duty of all community members to act upon and implement their culture and values in all aspects of their lives, women's primary and most distinguishable role is to transmit cultural values, principles, morals, and beliefs to their children. For that reason,

women's role within the household guarantees the continuity of the cultural and social identity through time. Furthermore, the role of women influences the physical form of the domestic environment in different cultures. Rapoport (1969), in his book 'House Form and Culture', has highlighted five main socio-cultural factors that affect the house form. One of these aspects is the position of women in the home and society. He demonstrated that houses of societies that require a higher level of privacy for women are built to prevent people other than family members from having a direct connection with the private family spaces. That is evident in the Saudi home environment as women's position strongly influenced the traditional Saudi house's form, as discussed in the previous section. Accordingly, women's role significantly impacts culture's material and nonmaterial aspects.

In the traditional Saudi environment, according to the norms, the role of women was delimited within the family domain. Al-Nafea, in her study about Woman's Role in the Traditional Home Environment, argued that women had a significant indirect influence on the traditional environment. She indicated that "*although she had very little direct role in the decisions in the home environment, her indirect influence was very deep and effective in forming men's decisions to respect their existence in both internal and external domestic spaces*." It was the responsibility of men to consider and respect women's needs while making decisions in their absence in the public domain. At the same time, women were entirely responsible for household matters and family stability.

The long process of continuous changes in Saudi Arabia collaborated to expand the role of women in family and society. The change in the role of women started with the beginning of formal education for girls in the early 1960s. Before that, there were no formal schools for girls, and their education focused on the Arabic language and Islamic religious studies (Hamdan, 1990). However, Saudi elite families who wanted to educate their daughters in the 40s were sending them to study abroad in other Arab countries where they resided for several months of the year (Altorki, 1977, p.285). While many Saudi families appealed to develop the local formal schools to ensure a better future for their daughters, some aggressively protested against girls' education to keep women away from any change (Al-Nafea, 2012). The more conservative people had doubts about any new idea introduced to their lives, especially concerning women. After that, conservative families confirmed the idea of girls' schooling due to King Faisal's effort; people ensured that the education was within the Islamic

framework, and schools for girls and boys were separated. This step has prepared Saudi women to expand their role outside the household to public life.

Since that time, for more than 40 years, female work opportunities in Saudi Arabia were limited for a long time to sectors specified for women only, such as teaching in girls' schools and colleges. The majority of the Saudi women were not yet ready to work in other sectors, and they did not need to as they guaranteed that men were responsible for everything they needed. However, between the 1960s and 1970s, the acceleration of change in various aspects has significantly influenced the Saudi home environment. As most of the population has moved to a new house type, at that time, the residents started drastic alterations on the new spatial organization and lifestyle. This situation has driven Saudi women to redefine their role in the family and their position in society. Thus, the attitudes about women working outside the home have changed over time (Hamdan, 1990).

During the 1980s, the conflict between accepting the new and preserving the traditions intensified. The rapid physical and social transformation in life aspects was not simply adaptable for the conservative Saudi society. It is human nature to hold on to the traditions and to resist the new in different ways. Therefore, a reformist movement arose to prevent the influences of modernization, the so-called '*Al-Sahwa*' as an awakening movement after the changes. Saudi Arabia has imposed rules regulating social life according to religious core values and local cultural norms and practices. Thus, the government banned all the introduced social practices to preserve the traditional living pattern. Since then, women's lives influenced by this movement the most as they were prevented from participating in society and the public realm while their experiences and knowledge were expanding. They became more responsible and required the community to recognize their new role in public.

Consequently, women in Saudi Arabia started to suffer from the domination of men in all aspects of life. Al-Hussayen (1996), in his study on women and the built environment in Najd (the central region of Saudi Arabia), found that women in the traditional home environment enjoyed more freedom than in the contemporary ones. He indicated that the change in the built environment has restraint women even inside their houses. Besides, the social regulation rules were limiting their activities in public spaces. At the beginning of the twentieth century, with the first wave of feminism, Saudi women expressed their need for freedom in public. Although it was illegal for women to drive cars, few women attempted to drive cars in the streets of Riyadh in

1990 to demonstrate their requirements (Al-Nafea, 2012, p.30). However, their attempt was restricted as they were blamed by society and detained by the religious police. This reaction indicates that the community was still not ready to accept the change in women's life.

Since 2005, at the beginning of King Abdullah's rule, Saudi women's role started to expand to provide equal opportunities for both genders in several governmental sectors. According to King Abdullah: "*We reject the marginalization of the role of women in Saudi society in the context of their work. According to Shari'a regulations and after consultation with many Islamic scholars, who have appreciated this approach and supported it*"[21]. The first step in reducing gender segregation was integrating the separated boys and girls educational ministries to become 'The Ministry of Education' that serves both genders. After that, in 2009, the King established the first mixed-gender university campus, King Abdullah University of Science and Technology (KAUST), which provides equal higher education opportunities for both males and females (Alharkan, 2017). In 2011, King Abdullah allowed Saudi women to participate in the consultative council '*Majlis al-Shura*' and the municipal councils for the first time in the country.[22] In addition, he announced that they would be allowed to vote and join as candidates in the municipal elections in 2015.[23] These decrees have made a significant shift in the role of women in the Kingdom, as they got the right to declare their needs and discuss the country's issues from their point of view in the public sector.

Subsequently, in September 2017, King Salman announced that starting from June 2018, women will be allowed to issue a driving license and to drive cars in Saudi Arabia, after decades of restricting driving to men. It reflected a significant societal reform and a new trajectory of Saudi politics, which aims to enhance the quality of life in the country. Since then, males and females have had similar opportunities in the Saudi labor force. The long process of changes in the Saudi society collaborated to build up a new image and expand the role of women both in family and society. After being limited inside the house for decades, finally, in the last few years, they are involved in almost all domains in accordance with modern living requirements.

[21] Cited in Alharkan, 2017, p.70.
[22] https://www.alarabiya.net/articles/2011/09/25/168601.html
[23] https://www.bbc.com/news/world-middle-east-20986428

Women's empowerment has clearly been reflected in contemporary architecture, particularly in housing, as they helped deal with built environment problems.

2.5 Chapter Conclusion

The domestic culture in Saudi Arabia has been passing through tremendous changes over the decades, and the transformation process is continuing. The constant change in various aspects in the country has shifted the social and physical environment from a traditional to a modern way of life. However, the change mechanism resists the transformation in the core cultural values. The change in an architectural element of houses concretizes the overall transformation in the context. Therefore, the correlation between physical and social changes has been the focus of this study. The transformation narrated in this chapter is a brief of the significant factors that might have influenced the study topic.

To sum up, it is essential to point out the correlation between physical and social changes over the historical timeline (Figure 14). The change in the Saudi home environment started from the introduction of a new spatial arrangement to the country, particularly the date of the new housing type adoption. Then, it passed through the process of social adaptation, recognition, and rejection of change in their cultural values. Lastly, the recent social reform has created a new modern local image of the Saudi environment reflects on housing architecture.

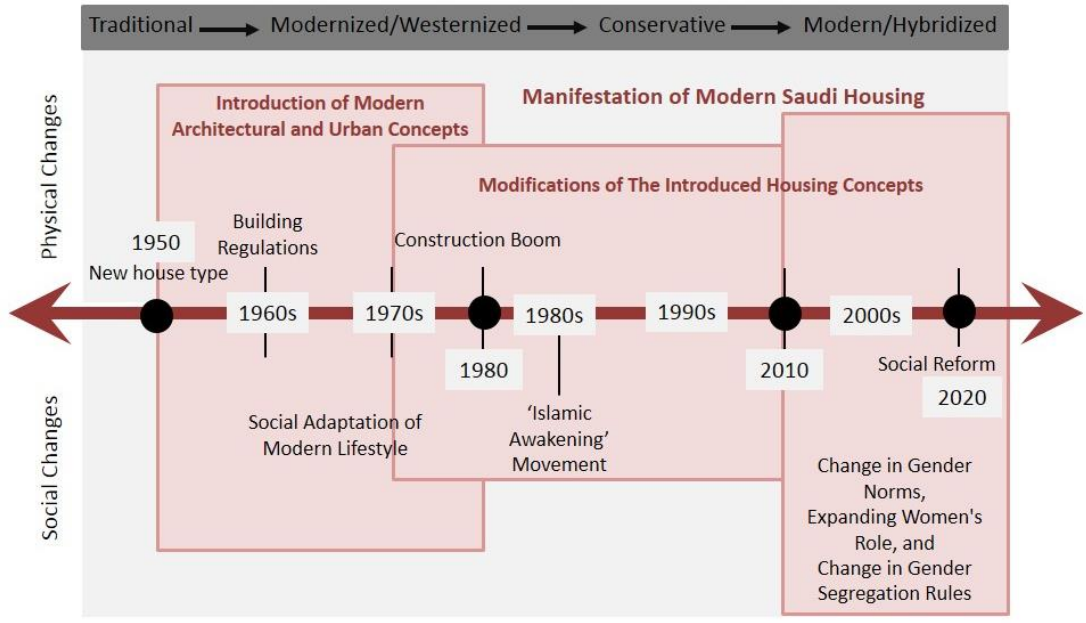

Figure 14. The historical timeline of the transformation of the Saudi home environment (By author, 2021).

Chapter 3
Windows of the Home

A window is a communication tool between one and others, a place where the inside meets the outside, a transition space that connects the private with the public, and a physical interface between a place and the space. Houses windows are particularly significant elements for the residents as they break the seclusion of the shelter from the external environment.

There are several distinct meanings of windows in each region in the world. People define windows according to their perception that is affected by their life patterns. Hence, people conceptualize the windows according to their experiences. For instance, Alexander, in his book 'The Timeless Way of Building' stated, "A window with a "window place" helps a person come to life. But a room which has no window place, in which the windows are just "holes," sets up a hopeless inner conflict in me which I can't resolve" (1979, p.111). He considers the window place as a conditioning feature to fulfill windows functions within the space as a sitting place where people release their inner energy. This conception comes out of his perception of the window. However, due to the differences in cultures, traditions, and life patterns, not all societies conceive the window similarly.

This chapter reviews the literature about the functional, symbolic meaning, and importance of windows in the home environment. First, it defines the boundaries in general between public and private in the home environment; then, it explains the meaning of the windows of the homes in the Arab-Islamic regions in general and in Saudi Arabia in particular.

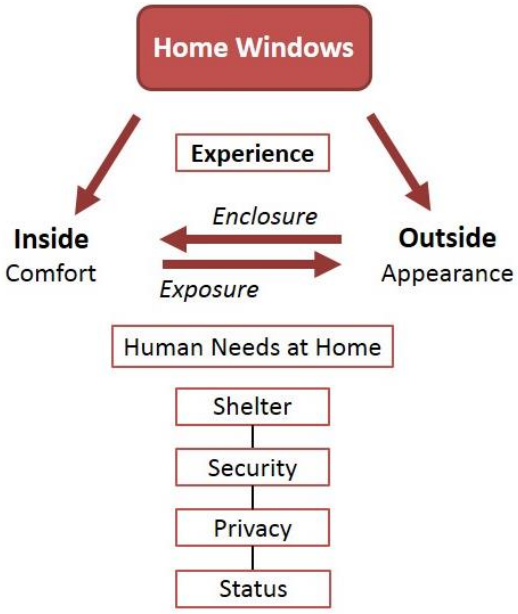

Figure 15. Illustration of the notion of home windows (By author, 2021).

3.1 Boundaries Between Public and Private in the Home Environment

Public and private places are separated by several architectural elements with functional and symbolic meanings. The physical separation elements such as building facades, fences, walls, doors, or windows, are created to limit the connection between two different domains. The site's features, the users' needs, and the society's requirements influence the shape and use of these elements. Therefore, the boundaries and the amount of exclusion between public and private varies from one context to another.

According to Semper's theory in 'The Four Elements of Architecture,' the enclosure membrane of the building is the element that constructs to convey meaning within its tectonics. He gave precedence to the frame of the building over other elements, as he considered it the base of all civilization (1851). From this point of view, building facades materialize and display the social and cultural values, which they are made for in a particular context through converting the raw materials to achieve the requirements for the people inside, outside, and the surrounding natural environment.

Buildings facades are functional, practical, and representative. In 'between the building and the street', Melvin and Willimott pointed out that "penetrating the facade can be easy or difficult, but should never happen without being marked in some way"

(2017). Although one of the importance of the façade is to provide a secured sheltered enclosure, it is required to be controlled by the inhabitants. Along with this, it indicates that the outsiders are allowed of what goes inside or not. In modern architecture, there is a tendency to reduce the symbolic role of the façades by making them transparent. Thus, they became just a dividing element whose meaning lies in use rather than its visual appearance.

Privacy and comfort are fundamental human needs in the home environment despite all cultural diversities. These notions were of a primary influence on vernacular domestic architecture. However, the balance between privacy and comfort in modern domestic architecture has been disturbed. The international tendency of seamless facades has pot the privacy and comfort in two opposite sides, in which the consideration of one influences the other. Hence, that has created a duality in the function of the façade between enclosing and disclosing.

House boundaries play a significant role in fulfilling the need for a home; they aid in providing control, privacy, security, belonging, and identity. These concepts effectively shape the boundaries to achieve the needs and generate a home environment with limited connection to the natural environment. The inhabitants need connection with outside the home environment to create accesses for light, air to exchange, sound to penetrate, and a view out, except for the necessity to provide gates to get in and out. People control these openings using different methods according to their rules, decisions, and ideas of privacy.

This issue manifests in contexts where there is an emphasis on privacy protection, such as Saudi Arabia. Modernization has exaggerated the conflict of the duality of the boundaries. While traditional houses morphology and façade design significantly preserved family privacy, modern houses design increased the connection to the public outside. The use of transparent glass for outwards openings has allowed visual intrusion from outside to inside, which was formerly restricted. Therefore, the typical reaction of the inhabitant was to overemphasize their need for privacy (Figure 16). They blocked the openings that made the building livable until they criticized their responses and found a way to balance their core values and basic human needs[24].

[24] See The Transformation in Riyadh House's Windows

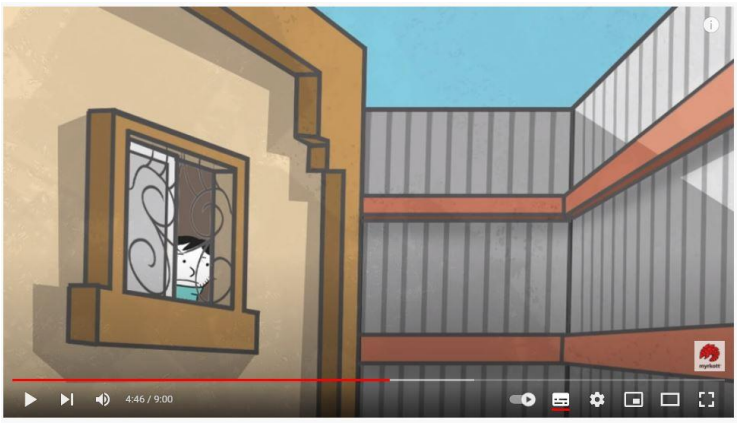

Figure 16. An image from a Saudi cartoon show, 'Masameer'criticizes the exaggeration of privacy in Saudi houses (Source: (Myrkott, 2012). Available from: https://www.youtube.com/watch?v=RPz5kyYgXLc).

3.2 The Meaning of Window

To unfold the meaning house windows have for Saudis, particularly women, we need to explore what determines objects' meaning and how that meaning represents. In a study of the meaning of material objects in the domestic environment, Csikszentmihalyi and Halton stated that: "Things embody goals, make skills manifest, and shape the identities of their users."(1981, p.1). Hence, physical objects symbolize their user goals and identity. However, people's preferences for objects are not neutral and change over time. Thus, the shared meaning of an object has to be traced from the way people use it during a defined period.

Figure 17. The framework of the study (By author, 2021).

Traditional houses windows in the Arab-Muslim regions were of three main types: holes opened below the roof '*taqa*', small windows '*shubbak*', and bay windows '*mashrabiya or rowshan*' (Ragette, 2003). The small holes were perforated above the eye level in various rooms when the inhabitants only needed a source for natural ventilation and illumination. While the windows, usually cased with wooden doors, were either opened toward the courtyard in the family section or toward out in guest reception areas (Figure 18). The screened bay window with its unique treatments

was the only place that connected the family section to outside the house (Figure 19). This variety of windows types conveyed important Islamic cultural values in their form, orientation, and treatment, such as privacy and hospitality. Accordingly, these windows existed in several Muslim contexts across multiple geographic regions and varied based on the regional climatic conditions.

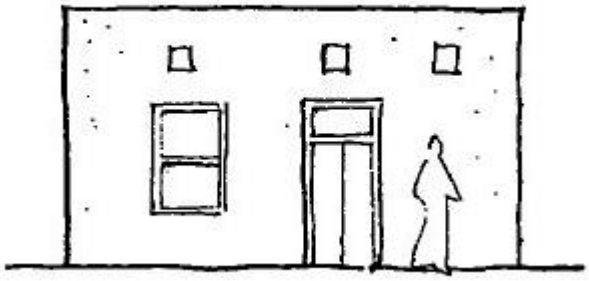

Figure 18. Basic housing unit elevation shows the difference between the window and the small hole window (Ragette, 2003).

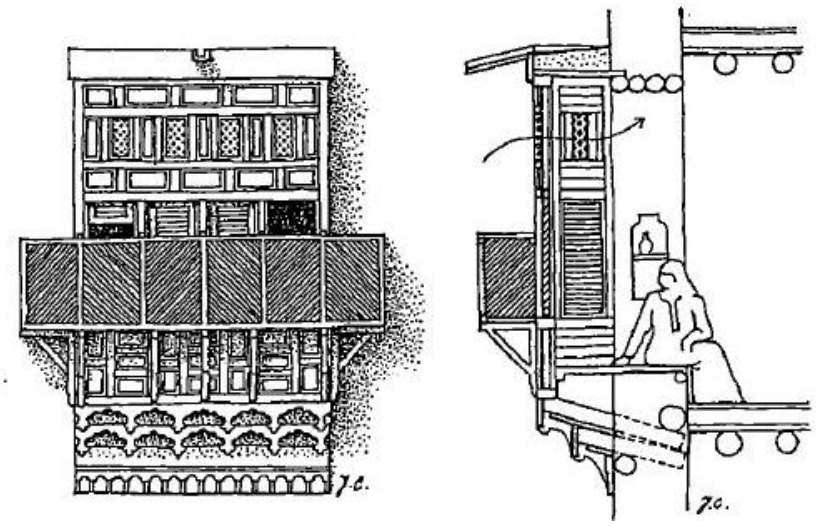

Figure 19. Detail of 'Rowshan' window in Saudi Arabia (Ragette, 2003, p.207).

In the traditional Arab-Muslim context, houses' windows in their different sizes, forms, and materials are significant symbols of the culture, such as the 'Mashrabiya' or the 'Rowshan' as known in Saudi Arabia, which manifests the rules of enclosure and exposure in the home environment. From this point of view, Bechir Kenzari and Yasser Elsheshtawy have interpreted the distinct kind of transparency in the Mashrabiya in Arab-Muslim architecture. Their research (2003) aimed to reveal

women's experience inside the Mashrabiya and its mechanism that is similar to the veil. They defined the meaning of transparency in Arabic and linked it to the woven fabric of women's veils and the wood-lattice screens of windows' openings, which imply the same meaning of "covering holy things," as they argued.

Sameer Akbar has studied the change of windows in Saudi houses in his research paper titled the diminishing role of windows (1994). He focused on the traditional wooden lattice window places '*Rowshan'* in houses of Jeddah city, replaced by window holes in modern houses. According to Akbar, "I*n the traditional houses of Jeddah, windows played an important social, symbolic and climatic role. The rowshan was a great interior and exterior element. It was a window to let air and light get in, a piece of furniture to let people sit and sleep, a communication means for women with neighbours and alleys, and a representative of the household's identity.*"

The abolishment of such a significant element in the traditional houses resulted in a change in the role of the window in Jeddah's home environment. He argued that this change resulted from urban pattern, technological, and social change, such as air-conditioning, gridiron street pattern, and people desire to express their social status through adopting new elements in their home environment.

Chapter 4
Case Study: The Transformation in Riyadh's Houses Windows

This study investigates the meaning of houses' windows within the contemporary Saudi domestic environment in correlation to the recent social change in gender segregation rules. Therefore, case studies of houses in contemporary neighborhoods were analyzed to explore the recent transformation of Riyadh's houses windows. The study area of this research is Riyadh city, the capital of Saudi Arabia, where the investigated phenomenon was observed; hence, in-depth case studies were selected from different residential districts of Riyadh. In order to understand the recent houses windows' enlargement phenomenon in Riyadh, the reasons behind this phenomenon, and the meaning of home windows, we have to look into the city's historical development and its houses windows.

4.1 An Overview of Riyadh City

The site of Riyadh was called Hager or Hager Al-Yamamah in the pre-Islamic times. It was the capital of the ancient Al-Yamamah region, which is a part of the current Najd region in Saudi Arabia (Bahammam, 1992). The city of Riyadh was established on the ruins of several communities' settlements in the seventeenth century. However, present-day Riyadh is a twentieth-century city (Elsheshtawy, 2008, p.122). Riyadh is located approximately in the center of the Arabian Peninsula. It is situated in the Al-Nufud desert, on Najd plateau rises on an average of 700 meters above sea level (Figure 20). The climate of Riyadh is recognized as a desert climate, dry, long hot summers, and short moderate cold winters. There is a sharp drop between high and low daily temperatures; during the daytime, the temperatures may range from 27°C to 49°C in July, but at night, it may drop to 10°C between November and January. In addition, the local winds frequently blow carry along dust and sand (Bahammam, 1992).

Figure 20. A 3D topographic map of Saudi Arabia shows the location of Riyadh city (Source:(Ramspott)Available from: *https://fineartamerica.com/featured/saudi-arabia-3d-render-topographic-map-color-border-cities-frank-ramspott.html*).

4.1.1 Riyadh's urban morphology and residential districts. Since the mid-twentieth century, Riyadh has experienced tremendous expansion due to economic development and population growth (Figure 21). Riyadh's spatial organization and urban pattern have drastically transformed, influencing traditional life. This section reviews the transformation in the urban morphology of Riyadh city, beginning with a description of the old city, passing through its urbanization to its contemporary general urban characteristics. It aims to clarify Riyadh's change pattern and expansion before demonstrating the residential neighborhoods of the case study.

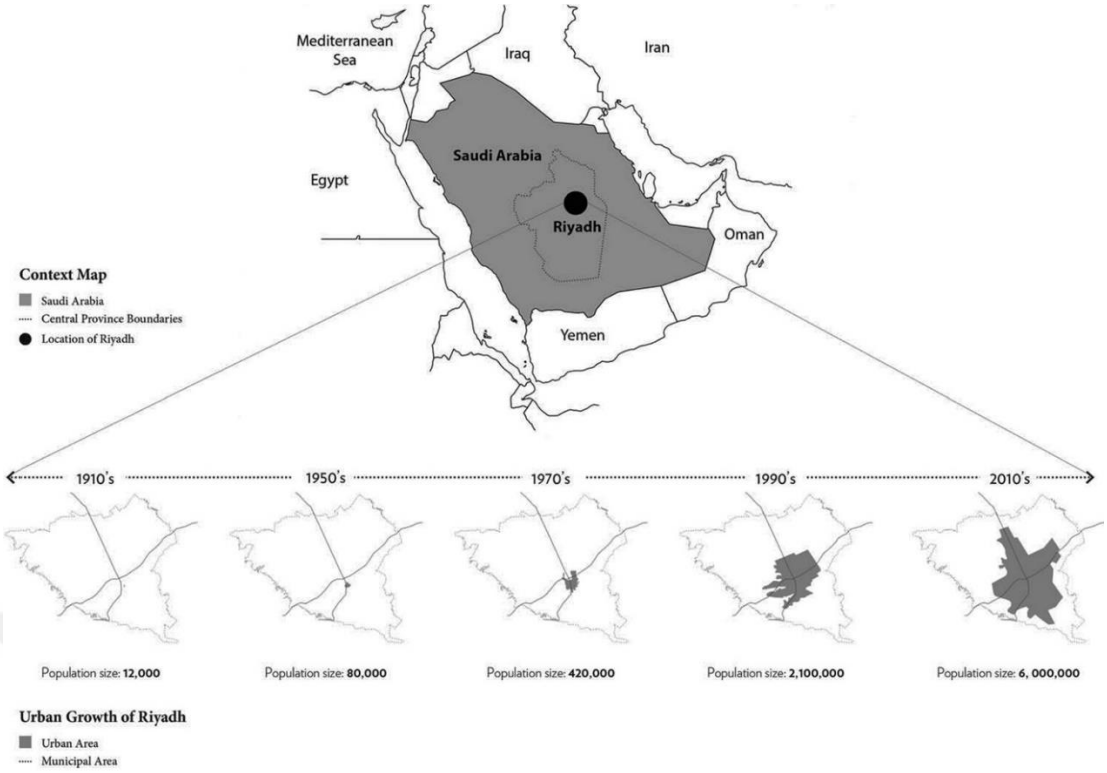

Figure 21. The urban and population growth of Riyadh city (Almahmood et al., 2018).

The vernacular setting for the old way of life was typically arranged as traditional Islamic cities in the region. Clusters of courtyard houses with narrow accesses arranged around the Grand Mosque and the Justice Palace "Qasr Al-Hokm" (Figure 22). It was a small compact walled city located within less than one square kilometer in 1920. At that time, the city was considered traditional and very conservative as it is located in the country's heartland and was free of any modernization (Elsheshtawy, 2008.p.122). The spaces in the city were organized in a hierarchy, from public open spaces to private alleys leading to houses. The streets were about 20 percent of the town's total area, considered as semi-public pedestrian walkways to connect houses with the public areas (Al-Hathloul, 1981) (Figure 23). In the dense residential areas, strangers got to lose their direction, as the alleyways were narrow curved or angular, continuously changing their direction, and reaching dead-ends or led back to the public spaces, much like a maze (Alafghani, 1990, p.83). Residential quarters mainly were consisted of houses of extended family or tribes, forming a homogeneous community (Figure 24). This traditional organic spatial organization and housing have ended with the rapid urbanization of the city and the implementation of the modern urban pattern.

Figure 22. Map of old Riyadh in the early 1900s (Harrigan, 2013).

Figure 23. Semi-public spaces between houses in Riyadh (Eben-Saleh, 2001).

Figure 24. A map of residential quarters shows the old Riyadh urban fabric with dense housing and narrow winding streets (Eben-Saleh, 2001, p.181).

After the consolidation of the Kingdom and the economic growth, the capital city walls were demolished, and it started to expand. The first economic growth in the country has created a social change in Riyadh, where the rich and poor used to live close to each other in a coherent and egalitarian society. Conversely, the suburbs started to be classified according to socio-economic status for the first time. According to Facey (1992), "*The growth of suburbs in the 1930s and 1940s took, broadly, two forms. Low-income groups, such as the Bedouin labourers and mechanics, congregated in concentrated suburbs to the east and south of the old city. The royal family and the well-to-do, by contrast, built their palaces and residences to the north and west, and adopted more spacious pattern settlements*" (p. 300).[25]

In the 1950s, during King Saud's rule, the neighborhoods constructed beyond the old city walls symbolized modernity as they sharply contrasted with tradition (Al-Hathloul, 1981). A neighborhood for the royal family '*Annasriyyah*' and a neighborhood for the governmental employees '*Al-Malaz*', introduced a quite new pattern of life to Riyadh in its urban and architectural form. These neighborhoods were the first constructed in a grid pattern with different materials, building technologies,

[25] Cited in Elsheshtawy, 2008, p.148

and housing types. The ratio of streets to houses areas increased the most; wide asphalted streets became the accesses for linking houses with the facilities. The direction toward houses became easily navigated and accessible by strangers[26]. Furthermore, *Al-Malaz* neighborhood integrated people (governmental employees) from various regions of the kingdom, contrary to the traditional neighborhoods that were consist of extended family and relatives (Al-Nafea, 2006, p.191). Thus, it was known as the intellectuals' neighborhood[27] to distinguish it from other traditional ones.

In 1968, the first master plan of Riyadh designed by Doxiadis Associates was executed to guide the city's expansion and development. This plan confirmed the modern gridiron scheme, mandating the building regulations implemented on *Al-Malaz* in new urban areas; thus, institutionalizing the setback regulations for all new buildings. Accordingly, the new urban and architectural form, which was limited to the high and middle class group of people, extended to include a wide range of people, especially after the government provided the long-term loan[28] to those who wanted to build a house (Bahamman, 1992). Other than the economic development that has increased the size of the middle class associated with the vast work opportunities, particularly in the capital. Furthermore, the change in the family structure has played a significant role in accelerating the housing change, as they started to move from the traditional extended family house to the modern nuclear family house (Hamdan, 1990). These factors have reduced the variation in the life pattern between the social groups, as all people have moved through time to the new housing types in a typical modern urban scheme.

During the 70s and 80s, the city has witnessed a great urban expansion. The growth in the country's revenues increased internal migration. Many people moved to Riyadh for jobs; thus, extensive demand for housing resulted in numerous new districts being constructed exceeding the city's urban development boundaries. Consequently, in the 1980s, the city covered an area of more than 300 square kilometers (Al-Hathloul, 1981, p.166).While it extended to more than 800 square kilometers in 1990s (Bahammam, 1992). However, the recent area of Riyadh city is

[26] Podcast Thamanyah, Things That Changed Us, Alotaibi,(11Nov. 2019)
[27] https://www.aleqt.com/2018/12/21/article_1510571.html
[28] One of the housing strategies provided by the Saudi Government to assist all Saudi families either to own a house for the first time or to build a new house (their dream house).

around 1900 square kilometers. The horizontal expansion of Riyadh is continuing at a similar scheme, oriented primarily northwards and eastwards. Hitherto, almost all the residential districts in Riyadh reveal similar characteristics, following the gridiron pattern with minor differences and having the villa as its dominant building type (Figure 25).

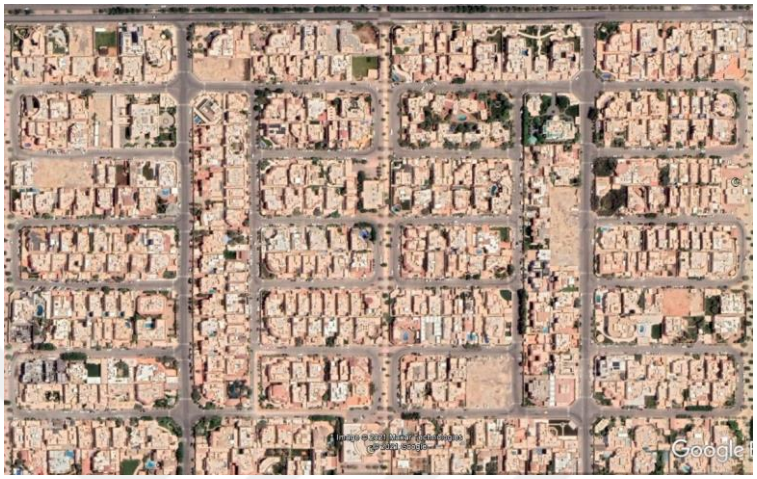

Figure 25. A map of one of the contemporary residential neighborhoods in Riyadh shows the typical urban morphology
(Source:*https://www.google.com/maps/place/Riyadh+Saudi+Arabia/@24.7284706,46.6634222,26249m/data=!3m1!1e3!4m5!3m4!1s0x3e2f03890d489399:0xba974d1c98e79fd5!8m2!3d24.7135517!4d46.6752957*).

4.1.2 Riyadh's houses windows. The macro-level transformation of the physical environment in Riyadh residential neighborhoods was associated with micro-level changes accrued in the home environment to create the needed balance. Since the influx of western urban and architectural influences on the city, traditional mud-brick courtyard houses vanished from the new residential developments. Consequently, the adaptation process started through the alterations and modification of new houses to absorb the drastic transformation, which has created echoes that continue until these days. In this study, we focus on houses windows' changes and meaning; thus, we will explore this micro-level change in the home environment of Riyadh. After the previous overview of the case study area's urban morphology transformation, this section will narrate the changes in Riyadh houses' windows.

In the old city of Riyadh, traditional houses were introverted complexes that comprised all the needs of their dwellers. Houses were grouped in dense clusters of 200 to 250 houses separated by narrow accesses, while each house was built around a roofless courtyard (Figure 26). This living pattern has enhanced community security

and provided safe alleyways between houses (Almehrej, 2015, p.72). The courtyard house was the dominant dwelling type, in which most of its openings are inward-looking, except for the guest reception room's windows (Al-Hemaidi, 2001). Correspondingly, these houses were offering shade in such a hot-dry climate, security, and private open spaces for a conservative society.

Figure 26. A cluster of courtyard houses in old Riyadh (Al Surf, Susilawati, and Trigunarsyah, 2013).

The traditional construction technique and the use of earth materials limited the span of the structure to a few meters and the height of houses to two stories. Building materials were obtained from the surrounding natural environment. The use of glass in covering the windows was uncommon; thus, windows were usually covered with wooden casements. Therefore, inner rooms had smaller windows 'holes' that were convenient for providing light and ventilation (Almubarak, 1999). Before using air condition, these small perforations contributed significantly to maintaining thermal comfort inside the rooms by circulating the hot air and introducing daylight (Figure 27). In addition, the inward orientation of windows created the feeling of freedom within the family home environment, as they did not need to make sure not to be seen by strangers. Accordingly, these traditional windows were not used to sit next to and view the outside; instead, the residents were sitting in courtyards or roofs.

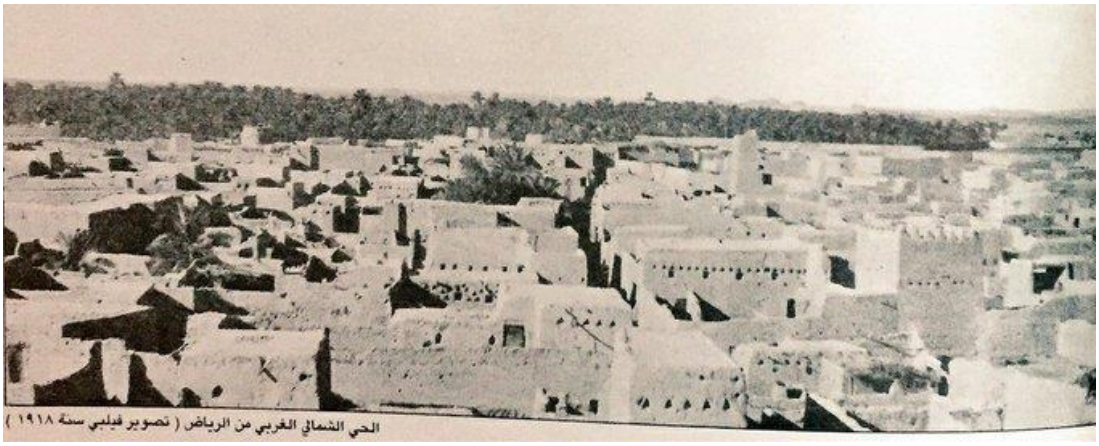

Figure 27. A cluster of houses in the northwestern neighborhood of old Riyadh shows traditional houses' external openings (Source: (taken by Philby in 1918) Available from: https://twitter.com/ksa9ss/status/1004474344242925570?lang=da).

The external façades of the courtyard houses were unpretentious and had few openings. The few windows facing outside were set high on the walls to avoid direct visual intrusion and prevent dust entry from the alleyways (Figure 28). Accordingly, windows facing the courtyard were the primary source of light and air for the house, while the external windows improved ventilation (Al-Nafea, 2006, p.104). The simplicity in the traditional houses was consistent with its residents' social values, incorporating all their needs.

Figure 28. An external elevation of a courtyard house in old Riyadh (Almehrej, 2015, p.72).

Since the 1970s, with the implementation of the new urban pattern and regulations, the villa housing concept became the dominant house type in the new urban development in Riyadh. Adapting the villa-type house that opposes the traditional courtyard house in its opening direction significantly influenced the Saudi home environment (Figure 29). This change sacrificed a significant feature manifested clearly in traditional houses, manly the privacy of houses' residents. At the same time,

people started to represent their status through the design of the façades of their houses, while traditional houses were sharing simplicity and unpretentiousness.

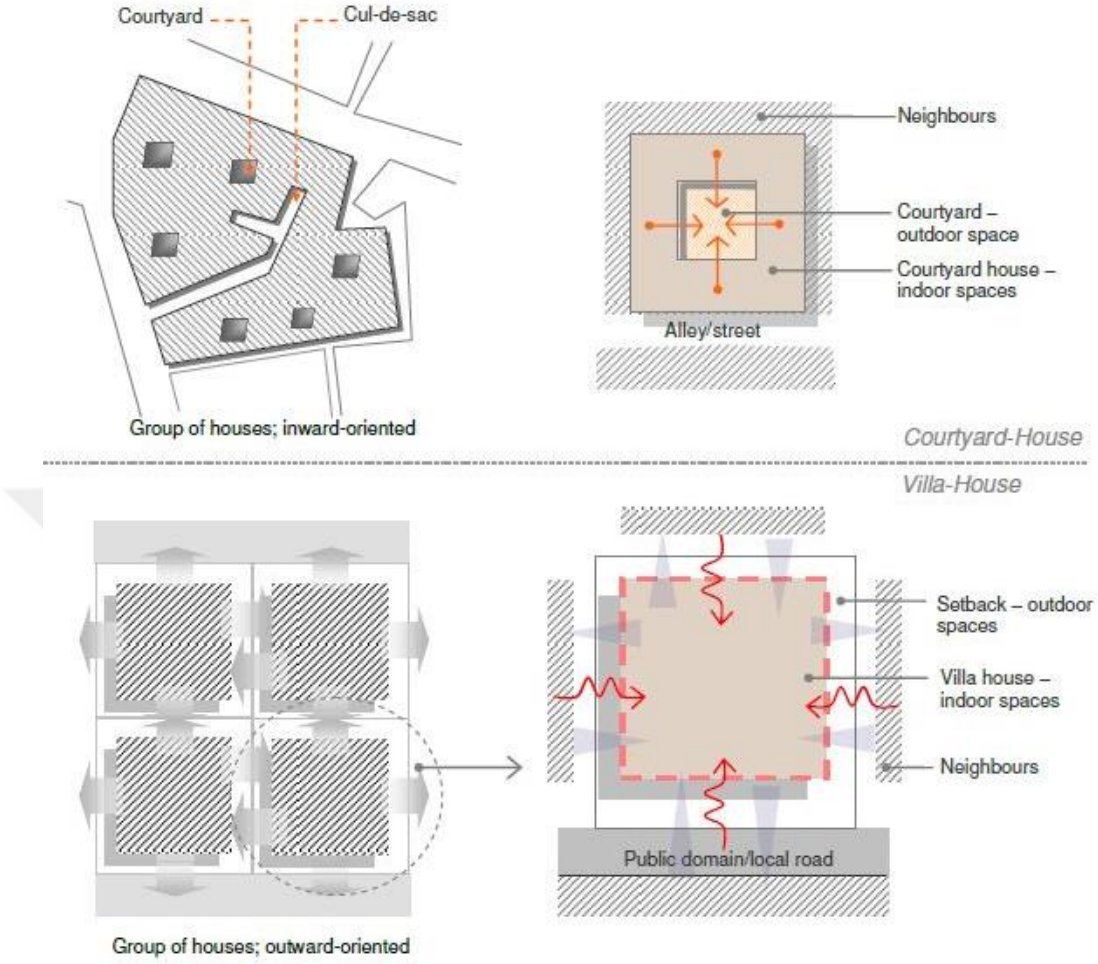

Figure 29. Comparison between windows' direction in courtyard and villa houses (Almehrej, 2015, p.12).

The alien architectural design of the villa did not fit Saudis' needs. As a result, that started the dilemma between accepting the new and developing the traditional living culture. In order to adapt to the physical change of houses, the residents began to modify their villas in various ways to accommodate their needs. Bahammam studied the modification and alteration of contemporary houses in Riyadh in his dissertation (1992) to identify the socio-cultural needs of Saudi residents by figuring out the social reasons behind houses' modifications. One of the remarkable modifications related to this study's scope is blocking or sealing the upper floor window or keeping the curtains closed all day long. Besides, increasing the heights of yards' boundaries walls (Figure 30). This phenomenon of sealed windows and heightened boundaries walls up to five-meter to cover the upper floor windows depending heavily on air condition and

artificial light. It became a common way dwellers used to preserve the privacy of their house, which appears almost in all Riyadh's neighborhoods and continues until these days (Figure 31).

Figure 30. Examples of extended boundary walls of contemporary houses in Riyadh (By the author: Visual survey).

Figure 31. Examples of sealed windows of contemporary houses in Riyadh (By the author: Visual survey).

Consequently, this reaction has created an isolated environment inside the houses separated from the outside world, which affects the occupants' lives, especially women's who spend most of their time in their houses (Maneval, 2019). Moreover, the concealment of houses' windows has distorted its external appearance, leading to a common dissatisfaction with the visual configuration of houses' façades, as many criticisms of this local issue arose in the community on social media. Therefore, more attention has been paid to the issue, and appropriate solutions have begun to replace the unpleasant blocking treatments, such as using reflective window glass or applying second-skin façade elements to filter the daylight and control the visual privacy from outside (Figure 32 and 33).

Figure 32. Facades of two villas showing the change of windows glass types (By the author: Visual survey).

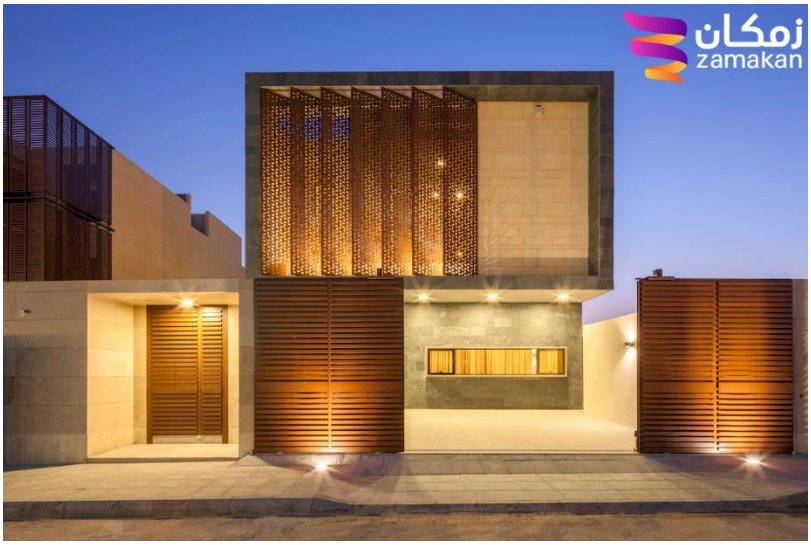

Figure 33. The use of second-skin for villa façade in Riyadh (Source: https://www.behance.net/gallery/44302893/Nuzul-Malqa-Part-1).

During the last few years, a new phenomenon (the enlargement of houses' windows) arose and spread in various neighborhoods of Riyadh. This phenomenon is associated with the socio-economic reforms that are changing domestic life all over the country. Furthermore, after the Covid-19 pandemic, more awareness about the importance of enhancing the quality of life inside houses appeared. A walk through residential neighborhoods in Riyadh nowadays demonstrates the ongoing change. It is obvious to see at least a house or two under renovation and modification, where its owner intended to enlarge windows or enhance the outdoor areas (Figure 34).

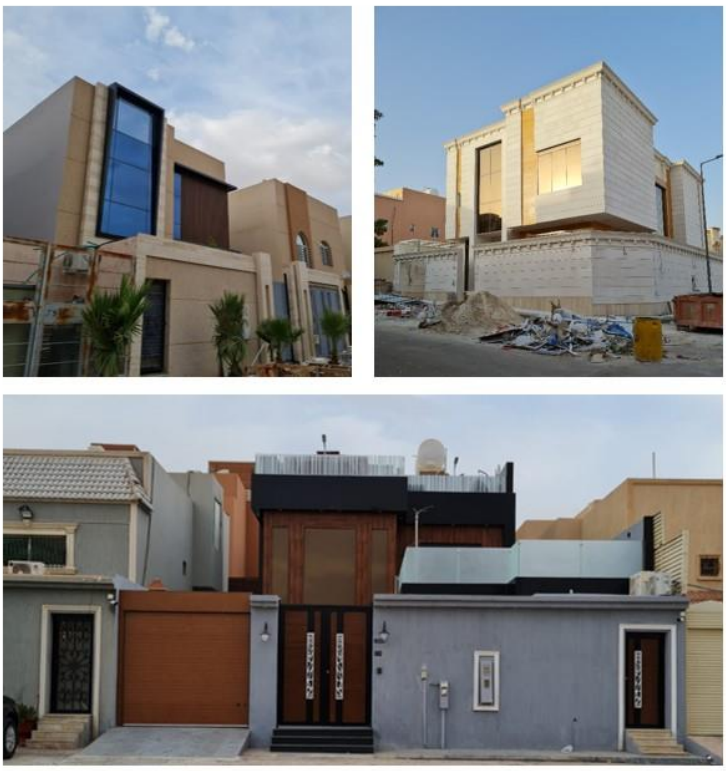

Figure 34. Houses under renovation from different neighborhoods in Riyadh (By the author: Visual survey).

Substantially, two controverted phenomena of windows' modifications exist in contemporary houses in Riyadh. The sealed and the large windows are currently existing side-by-side. This vague manifestation appeared simultaneously while the entire world was amazed by the sudden change in social rules and regulations in Saudi Arabia. Accordingly, this study's main objective is to reveal the ambiguous meaning of windows in contemporary houses in Riyadh related to social change.

4.2 The Districts and Houses of Case Study

Since it is impossible to investigate all villas' windows in Riyadh, a sample of houses from different neighborhoods in the city were taken to infer conclusions about the enlarged houses' windows phenomenon. In order to gain a deep understanding of the investigated phenomenon from representative cases in Riyadh, considering two variables, the date of construction and the surrounding situation. A sample of villas in various contexts was elected in a multistage cluster sampling approach. First, the residential neighborhoods of Riyadh that include villas were specified referring to

'The Digital Map of Building Regulations and Land Use' in Riyadh City [29](Figure 35). Second, the neighborhoods were divided into two types, old and new, according to the urban growth maps of the city reviewed from previous studies (Figure 36 and 37). This division was made to distinguish the general characteristics of the samples.

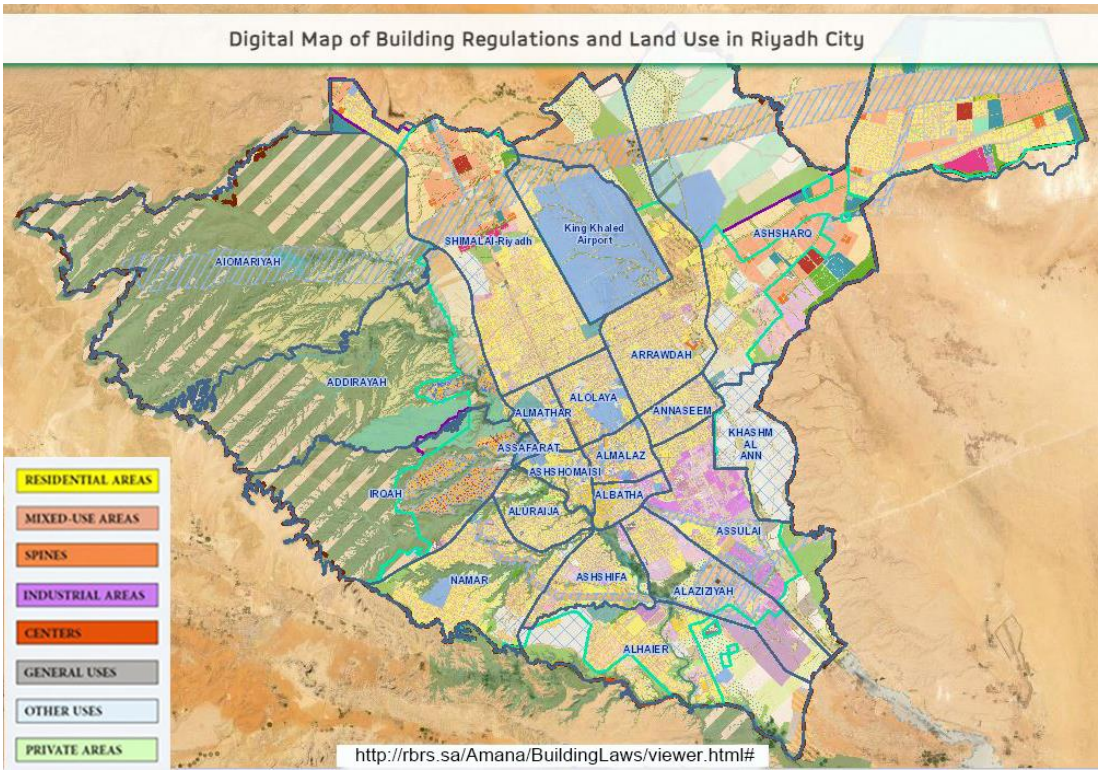

Figure 35. A Map of Riyadh City Showing the Land Use Scheme (Source: *http://rbrs.sa/Amana/BuildingLaws/viewer.html*).

[29] An up-to-date plan by the Royal Commission for Riyadh City (RCRC) http://rbrs.sa/Amana/BuildingLaws/viewer.html

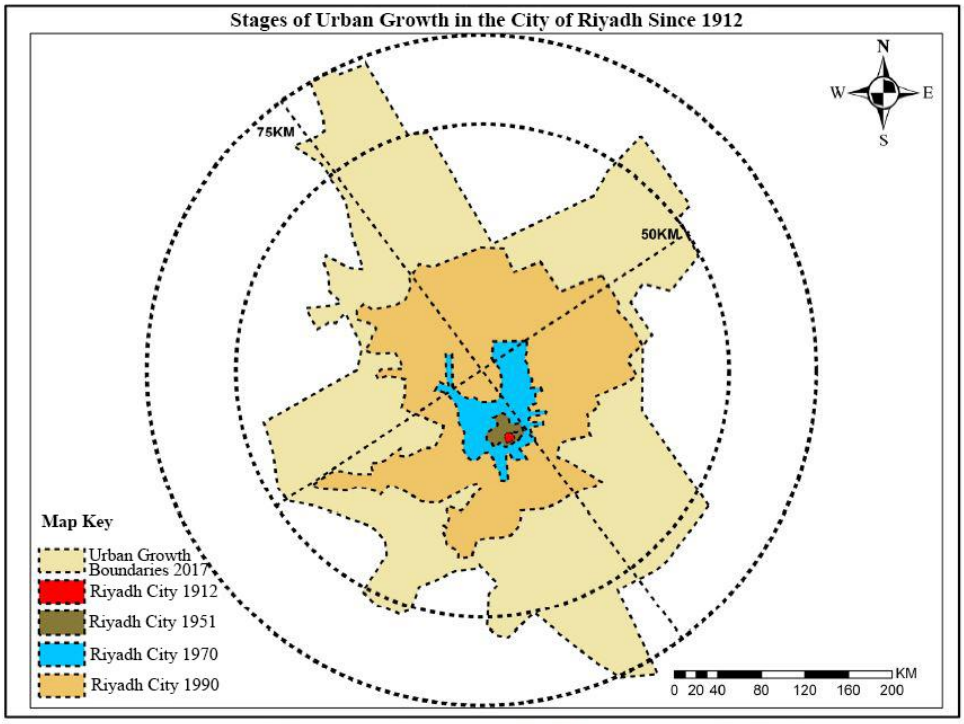

Figure 36. The Urban Growth Boundary in Riyadh City (1912 – 2017) (Alotaibi, Almudlaj, and Almalki, 2018).

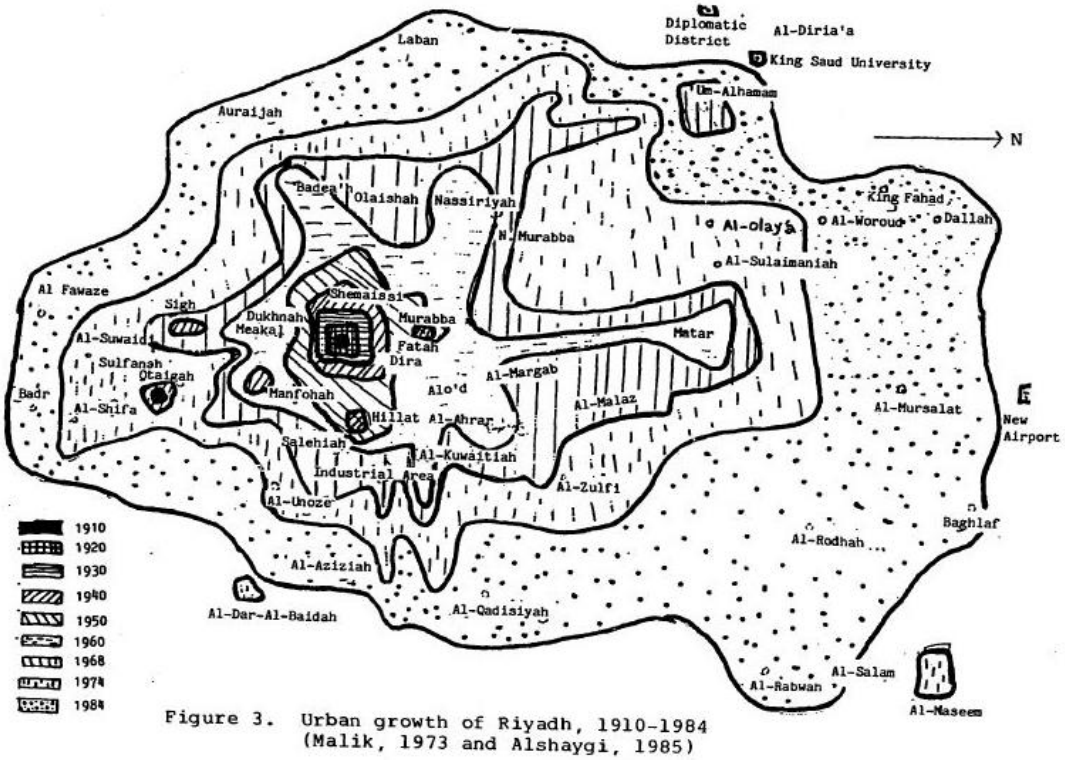

Figure 37. The Urban Growth Boundary in Riyadh City (1910 – 1984) (Hamdan, 1990, p.119).

After that, clusters of houses (on a single street) from each neighborhood were selected randomly through the cluster sample method. The number of houses in each street varies from three to ten houses in a continuous row, based on the availability of the villa-type house. The clusters of houses were preferred to be on the same street to focus on the samples' surrounding situation. Thus, to find out how different residents treat their houses' windows in various ways even when they have similar surrounding circumstances (at least the same street width or view).

Considering the limited time of the study and its requirement to do in-person visits to the representative residential neighborhoods and households, most of the neighboring houses of the in-depth interviews participants' houses were observed; thus, their neighborhoods consider as case studies. So, the case study included 17 sites from16 contemporary residential neighborhoods in Riyadh city, while seven sites were in old areas dated back to the 1960s, ten were in new neighborhoods constructed after the 80s.

4.3 Methods of Empirical Data Collection

This chapter will specify the data collection procedures implemented in this study. The first section is about the used methods in the fieldwork, its period, and phases. Then, the second section explains the design of the interview questions guide.

4.3.1 Fieldwork. The fieldwork is an essential part of this study as it requires observing the phenomenon and how people interact with it in its environment. Therefore, this part of the study was conducted in Riyadh to collect the necessary data for the research. The researcher, a resident of Riyadh, carried out several field trips during the study period between February 2021 and May 2021. Before the main field trips, a pilot study was carried out in Riyadh during February 2020 to provide the researcher with preliminary information on the enlarged windows phenomenon and test the possibilities of accessibility to case study sites.

Marshall and Rossman defined research in social science as *"a process of trying to gain a better understanding of the complexities of human experience… Through systematic and sometimes collaborative strategies, the researcher gathers information about actions and interactions, reflects on their meaning, arrives at and evaluates conclusions, and eventually puts forward an interpretation"* (2016, p.152).

This research employs many methods to reveal the meaning and use of windows in the contemporary home environment. The methodological framework of this study has been structured to reach the research aims by two main approaches: a visual survey approach, which involves observing physical traces of houses external physical characteristics that reflect people behavior and use of elements around windows, and an in-depth case study approach, which involves semi-structured interviews with female villa's residents inside their houses associated with observation and reflexive photography.

According to Zeisel, 'observing physical traces' is "*systematically looking at physical surroundings to find reflections of previous activity not produced in order to be measured by researchers*." (1984, p.89). Traces are of two types unconscious left behind and conscious changes people made in their surroundings. Environment-behavior researchers use these traces to understand "*how an environment got to be the way it is, what decisions its designers and builders made about the place, how people actually use it*" (Zeisel, 1984, p.89).

One of the objectives of this study is to understand the physical characteristics of windows in the dominant housing type from its outside to have an idea about various residents' behavior towards windows. Therefore, systematically observing the physical home environment characteristics in different residential neighborhoods (noticing the change and estimating its reason from its surrounding) contributed to understanding the intention of residents' changes on their houses' windows and surrounding from outside (see Appendix B). Since it is impossible to investigate all houses' windows in Riyadh, a sample of houses from different neighborhoods in the city were taken to infer conclusions about the enlarged houses' windows phenomenon, as mentioned in the previous section. The following section will define the technique of samples' selection based on the study background information.

4.3.2 Interviews questions guide. The interview guide designed for this study consists of twenty semi-structured questions to collect qualitative and visual data. The duration of the interviews ranged between 40 minutes to an hour. The questions were distributed into five sections according to the aim behind each group of questions. Bearing in mind that the order of interview questions affects the respondent's answer, the interview was designed to ensure a smooth transition between the questions. The interview starts with broad general questions to encourage the participant to open up

and get them involved effectively in the survey. After that, it gradually moves to more detailed questions to grasp information on the main study concern.

The first section contains broad questions in two parts; the first is about participants and their houses, while the second is about their perception of the home environment around windows, as shown in (Figure 38). The first part aims to collect information regarding the participant and her house to gather background data to categorize participant age groups and house construction dates, which is analyzed later in the In-depth interviewees' selection section of this chapter. The second part consists of seven questions designed to grasp the living experience of women in their houses in general and its connection to the outside in particular. These questions are intended to prepare the participant for the main interview interest, followed by more detailed questions in the subsequent sections.

QUALITATIVE DATA / INTERVIEW QUESTIONS GUIDE / First Section	Participant and the House	Q1. General Information			
		Q1.1.Name	Q1.2.Age	Q1.3. House location	Q1.4. Date of house construction
	Home Environment Around Windows	Q2. Tell me about your living experience in your house.			
		Q3.1. How comfortable are you at your house?			Q3.2. What makes you feel comfortable at your house?
		Q4.1. Did you have any problems that drive you to change or do something for your comfort?			
		Q4.2.What was the problem?			Q4.3.What did you do?
		Q5.1. What do you think about your house and its connection to the outside?			Q5.2. Are you happy with that? Why?
		Q6.1. Who can see inside your house from outside?			Q6.2. Why?
		Q7.1. What are the views from your house's windows?			Q7.2. Is there any issue with that?

Figure 38. Interview questions guide – first section.

The second interview section is regarding the use and preference of houses' windows (Figure 39). It includes four questions inquiring the participant to define the function of windows, their use, preference, and time they spend near windows in everyday life.

QUALITATIVE DATA	INTERVIEW QUESTIONS GUIDE	Second Section	Use and Preference of Windows	Q8. What is the function of windows in the house in your opinion?		
				Q9.1. How do you use your windows in your everyday life?	Q9.2. When do you open and close the windows?	Q9.3. Why?
				Q10.1. Which window do you prefer the most in your house?	Q10.2. Why?	Q10.3.Can you express its characteristics?
				Q11. How do you spend time near windows in your everyday life?		

Figure 39. Interview questions guide – second section.

The third section is window treatment and layering of the sight; it comprises two parts. The first part is about the used windows' glass type and the change on the windows. The second is concerning treatment around the windows, from inside and outside. Then, the fourth section is for visual data (reflexive photographs). In this part of the interview, the participants were asked to capture photographs of their houses' windows. It aims to observe women's perceptions of windows (through their photos), their selection of windows, and physical traces of the meaning of windows from inside. To conclude the interview, the fifth section involves an optional question where participants can add any information to the interview conversation (Figure 40).

QUALITATIVE DATA	INTERVIEW QUESTIONS GUIDE	Third Section	Window Treatment and Layering of the Sight	Window	Q12. What type of glass is used for windows?		
					• Clear	• Frosted	• Tented	• Reflective
					Q13.1. Did you make any changes to your windows?		Q13.2. If yes, What? and Why? (Enlarge, etc.)	
				From outside and inside	Q14.1. Did you install anything on windows from outside or inside? (Shutters, etc.)			Q14.2. Why?
					Q15.1. Did you make any changes to your house on the exterior?		Q15.2. If yes, What? and Why? (Boundaries, etc.)	
					Q16.1. Did you make any changes on and around the garden walls?		Q16.2. If yes, What? and Why? (Trees, etc.)	
					Q17.1. How do you organize the furniture near the windows?		Q17.2. Why?	
					Q18. Can you define your reasons for your selection of (curtains, blinds, etc.)?			
VISUAL DATA		Fourth Section	Windows Photographs		Q19. Can you take a photo of your window looking toward outside?			
		Fifth Section			Q20. Would you like to add anything related to the topics of this conversation?			

Figure 40. Interview questions guide - third, fourth, and fifth sections.

4.4 Sampling Design and the Participants

Selecting the study sample is a methodological challenge in qualitative research as there is no clearly defined rule to follow. Hence, the sampling design in qualitative studies depends on the objectives of the investigation. An adequate sample must be representative, accessible, credible, and achievable according to the available resources and time.

This study's question required exploring the meaning and use of homes' windows in the contemporary Saudi context. Therefore, the variation and restrictions of the data required to be analyzed in this study determined the sampling method. Moreover, the nature of the window necessitates its analysis from its two sides. First, from inside to discover house inhabitant's experience and behavior. Second, from outside to interpret their modifications and treatments according to the surroundings. These data required special permissions from house residents to access their private homes. Thus, undoubtedly, there were various limitations related to the context and the period of the study, which are mentioned previously in the introduction chapter.

Accordingly, the survey phase of the research was structured into two parts, which were sampled in different techniques: Multistage cluster sampling approach was used in neighborhoods' survey, and purposive sampling was employed in the in-depth interviews participants' selection.

4.4.1 Neighborhoods' selection. Based on the historical timeline of the transformation of the Saudi home environment, inferred from the second chapter, the case study selected were divided into old and new contemporary residential neighborhoods (Figure 41).

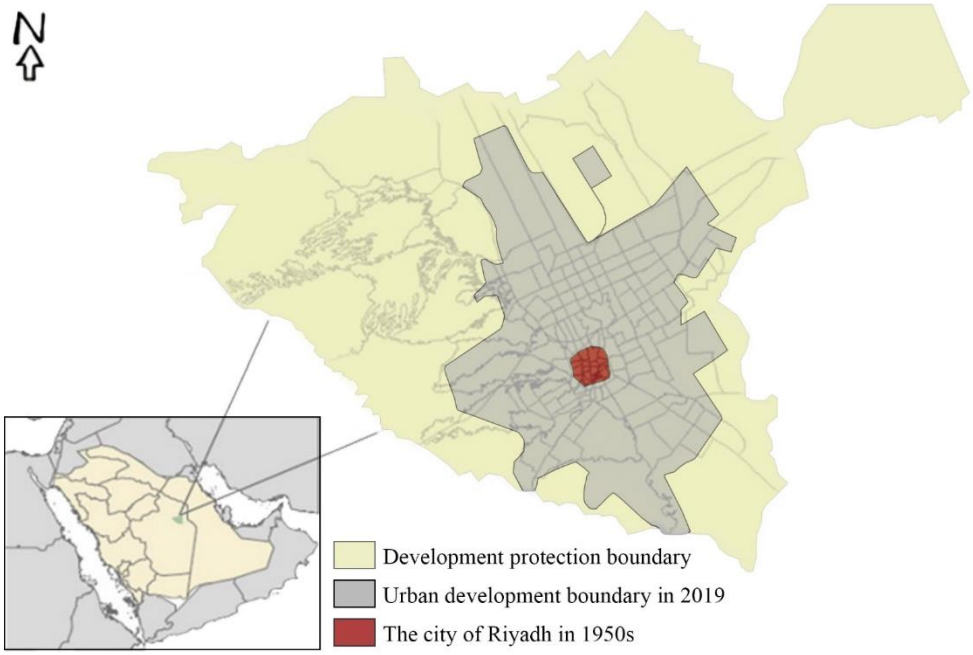

Figure 41. A map of contemporary Riyadh city boundaries (By the author).

This classification of the neighborhoods was regarding the date of its residential area construction, as illustrated in (Figure 42). The timeframe of each category is defined according to the physical and social changes in the Saudi home environment. The old category is assigned for those neighborhoods built between the 1960s until the 80s. It is considered to include houses constructed after the imposition of the building regulation, as it started to be mandatory in all construction since that time, creating a contradiction. However, the new category is for neighborhoods constructed after the 1980s as the transformation effects began to appear in the domestic environment through residents' modifications.

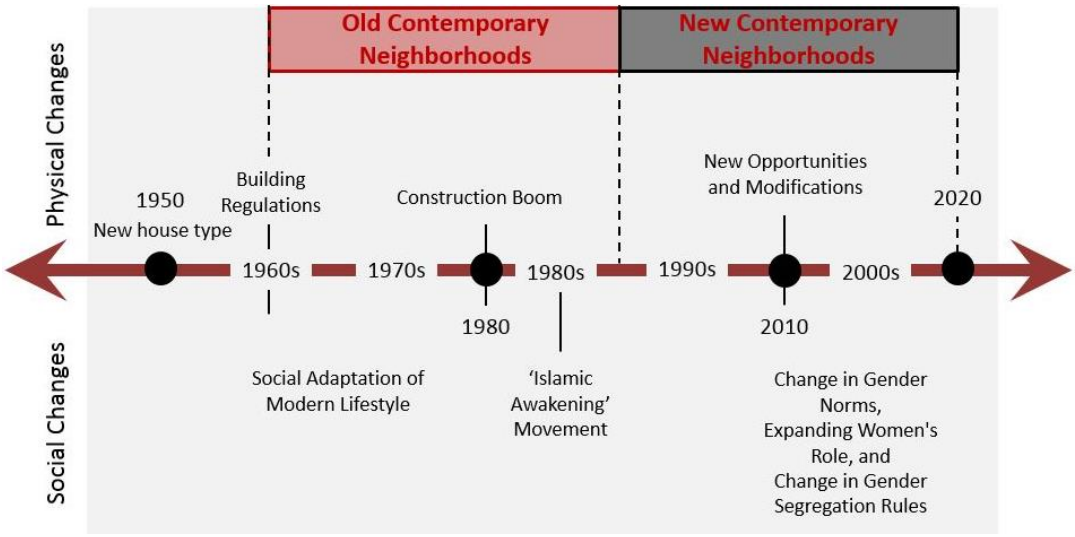

Figure 42. Neighborhoods categories according to the historical timeline of the transformation of the Saudi home environment.

The case study included 16 contemporary residential neighborhoods in Riyadh city that are characterized into two categories, as shown in (Table 2). Six out of selected neighborhoods were classified as old (from the 1960s), nine were new (constructed after the 80s), and one of the neighborhoods (Salahuddin) consisted of the two old and new areas, as its residential area was extended within the last ten years taking an area from the old airport (Figure 43). Also, the King Abdul Aziz neighborhood was considered new in this study because its residential area was part of the old Riyadh Airport before the 60s until its transformation to an Air Base in the 1980s and the change of its surrounding land use. Examples of the photos from the selected neighborhoods are illustrated in (Figure 44).

Table 2

The Selected Case Study Neighborhoods.

Categories	The Selected Case Study Neighborhoods		
Old Neighborhoods	N1	Jarir	1960s
	N2	Al-Olaya	1970s
	N3.1	Salahuddin	1980s
	N4	Al-Wurud	
	N5	King Fahad	
	N6	Ar-Rabwah	
	N7	Ar-Rawdah	
New Neighborhoods	N8	Ar-Raed	1990s
	N9	Al-Muruj	
	N10	Al-Rawabi	
	N11	Al-Jazirah	
	N12	Al-Nadwah	2000s
	N13	Al-Hamra	
	N14	Hitteen	
	N15	King Abdul Aziz	
	N16	Al-Arid	2010s
	N3.2	Salahuddin (new area)	

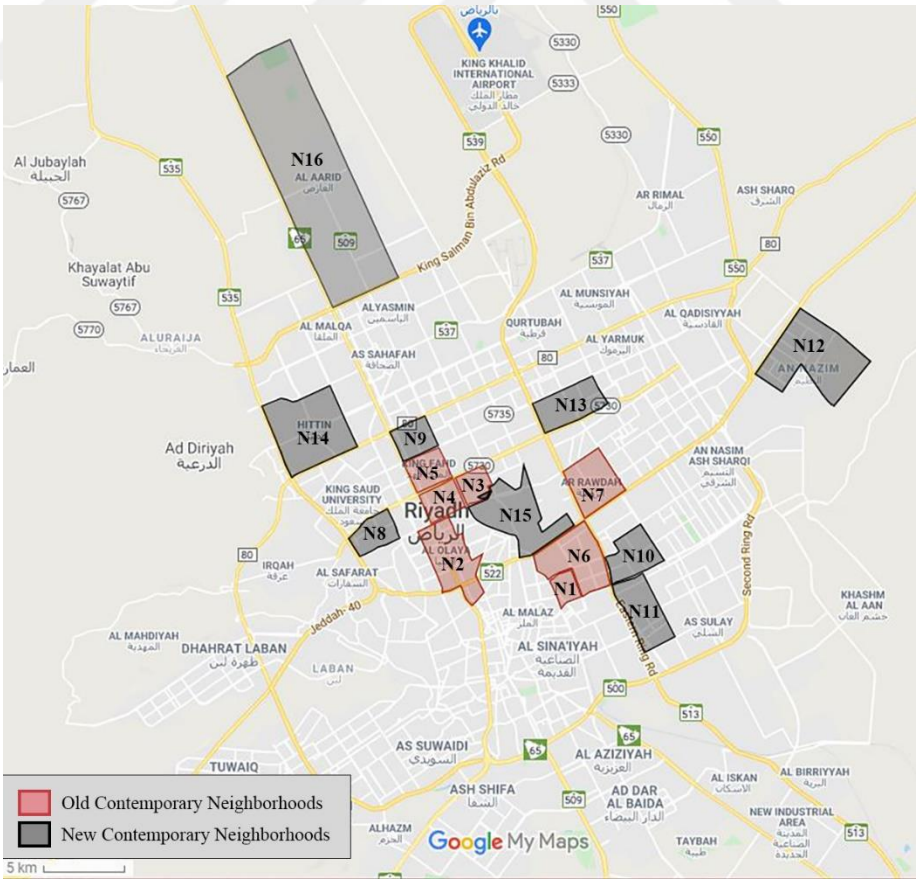

Figure 43. A map of Riyadh shows the selected neighborhoods (By the author).

Figure 44. Examples of houses from the selected neighborhoods (By the author: Visual survey).

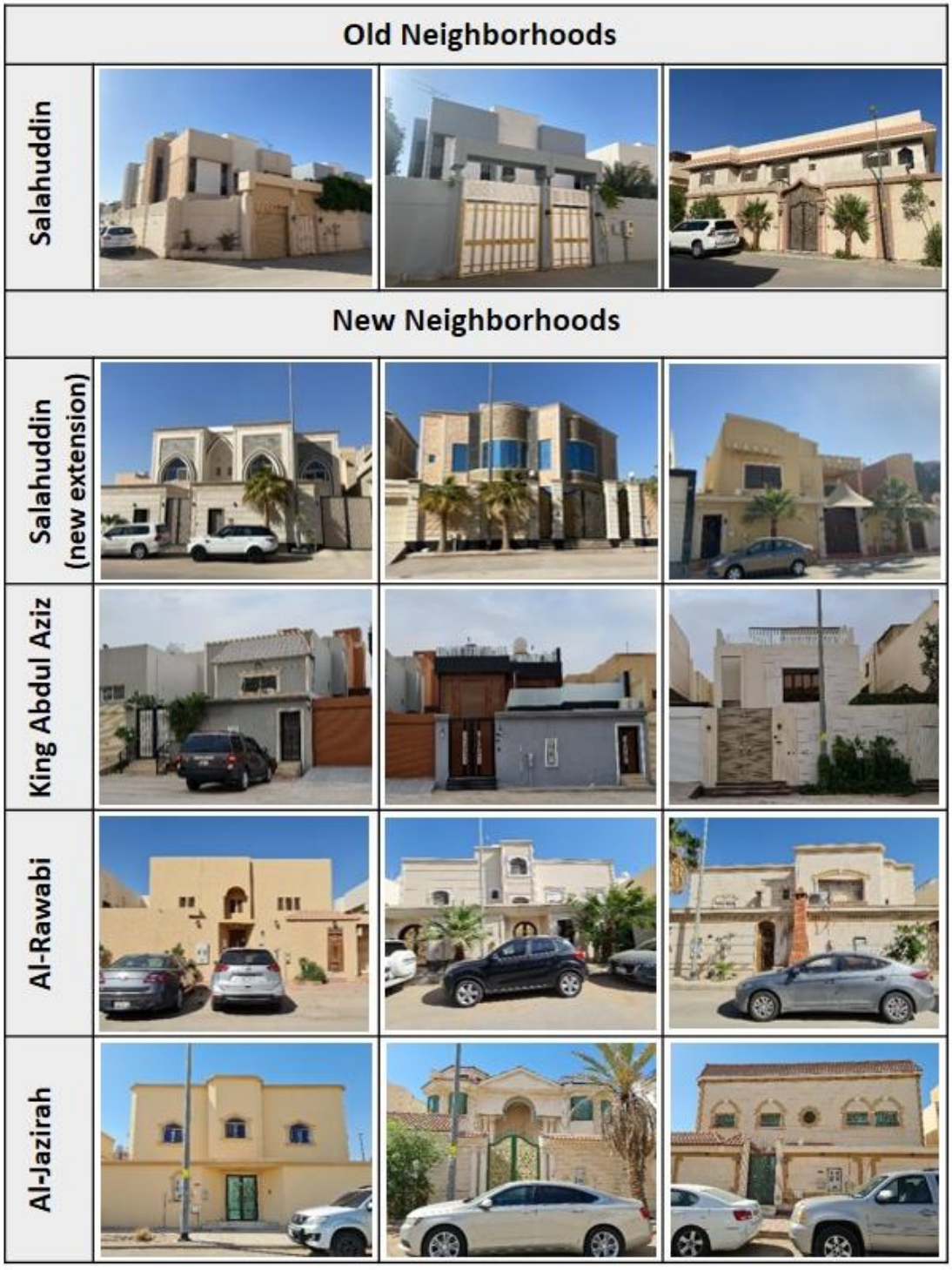

Figure 44. (cont.d).

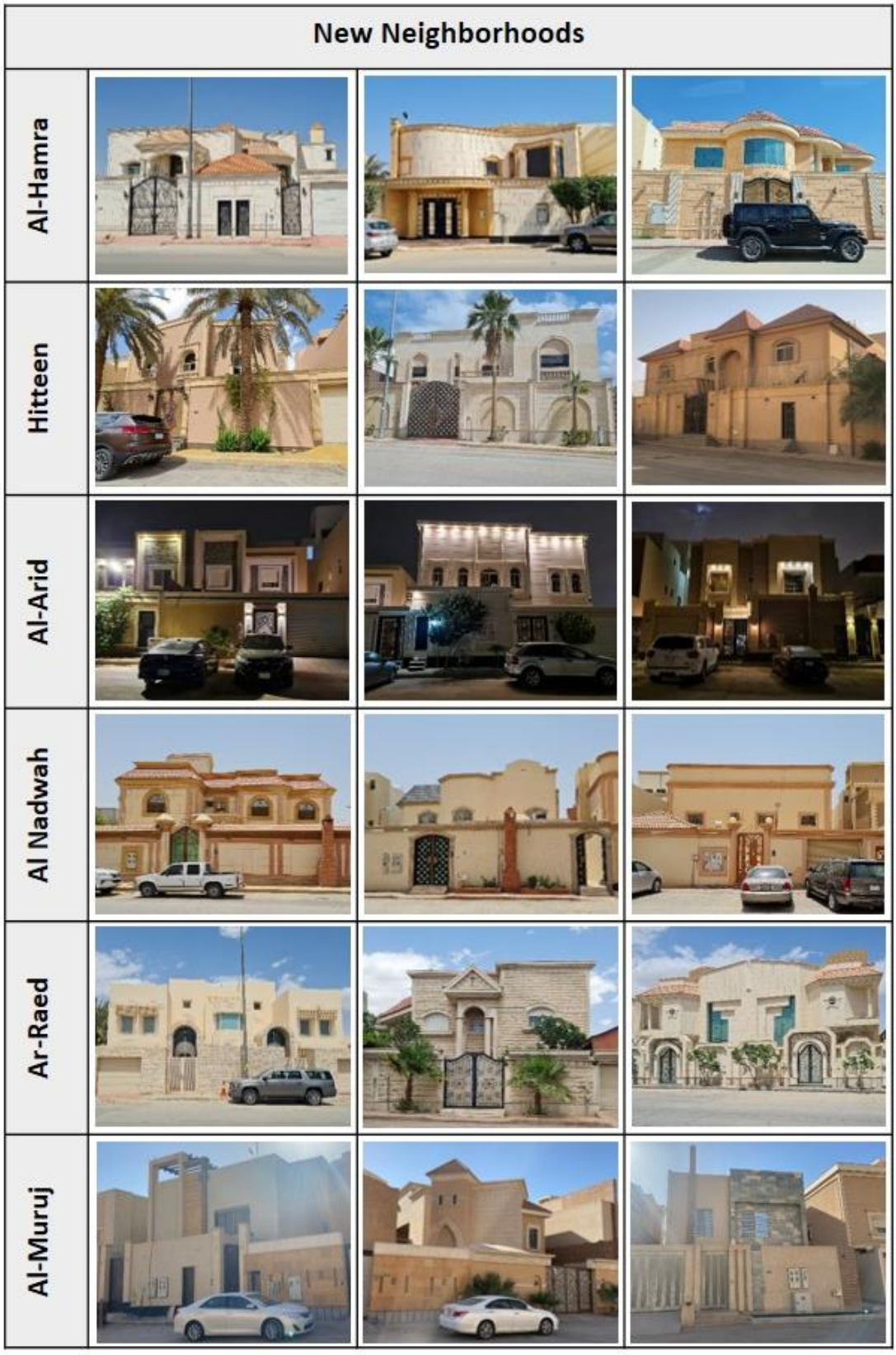

Figure 44.(cont.d).

4.4.2 In-depth interviewees. Purposive sampling was employed in this study's in-depth interview participants' selection. It is a non-probability sampling technique in which the sample is intentionally selected to understand the deliberate phenomenon from the sample itself, not to generalize the findings to the population (Uprichard, 2013). The primary purpose of the interviews is to understand the diversity of perception and use of houses' windows and the enlarged window phenomenon from the female residents inside their houses, then not to represent the whole population. Thus, a subset of the female individuals living in villa-type houses in Riyadh was interviewed.

One of the main concerns at the beginning of this study was the difficulty of collecting information from inside the houses. In the Saudi Arabian context, from the other experience and as mentioned in many previous studies, it is not acceptable by the locals to welcome strangers to houses and tell them about their lives and experiences. Even if they know that this information is to be used only in the study, it is uncomfortable for most local people. Besides, it is crucial to interview people who trust and feel comfortable with the interviewer to get the best results. Therefore, the researcher contacted her extended network, including relatives, friends, and family's friends living in a villa-type house in Riyadh, inquiring if it would be possible to meet in their homes. Applying the purposive sampling method, women who lived in villas for more than five years were selected. These criteria were enough to indicate that the participants have interacted with villas' windows to talk about their experiences as a part of their everyday lives.

"in 1967, William Michelson pointed out that while architects and planners are often guided in housing design by economic factors (such as people's income), real housing needs and desires are affected less by factors of income, and much more by different lifestyles, family structures, value orientations and even local customs." (Stefanovic, 1984, p.375).

The phenomenon of houses windows' enlargement in Saudi Arabia is expected to be restricted by visual privacy rule, which is considered a significant housing need to be required in compliance with the lifestyles, family structure, and local customs, rather than the family income. Therefore, the variation in house windows treatments is less likely related to the families' income differences. However, it is affected by sight from outside in general and surrounding circumstances in particular, such as the neighboring buildings' use, the neighbors' windows location, and the street's width.

Accordingly, the case studies of the in-depth interviews in this study were preferred to be from different districts in Riyadh city with various surrounding situations. For example, one of the cases was a villa in a development project of 122 similar villas designed for middle-income Saudi families, considering their cultural values and preferences. Therefore, neighbors' windows do not overlook others' windows.

Table 3

The Location of Participants' Houses

Categories	The Location of Participants' Houses		
Old Neighborhoods	N1	Jarir	H1 & H2
	N2	Al-Olaya	H3
	N3.1	Salahuddin	H6
	N4	Al-Wurud	H7
	N5	King Fahad	H8
	N6	Ar-Rabwah	
	N7	Ar-Rawdah	H4
New Neighborhoods	N8	Ar-Raed	H9
	N9	Al-Muruj	H10
	N10	Al-Rawabi	
	N11	Al-Jazirah	
	N12	Al-Nadwah	
	N13	Al-Hamra	
	N14	Hitteen	H14
	N15	King Abdul Aziz	H11, H12, & H13
	N16	Al-Arid	H15
	N3.2	Salahuddin (new area)	H5

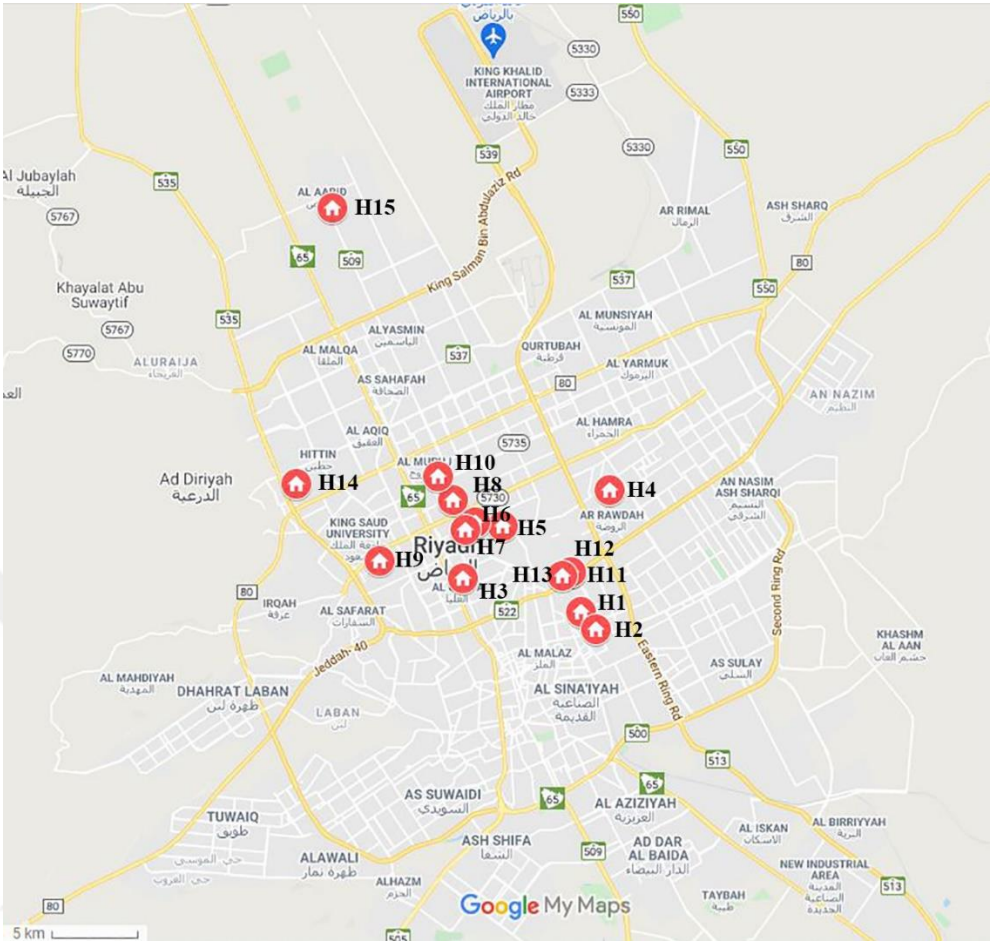

Figure 45. A map of Riyadh shows the location of the participants' houses.

General information about the interviewees and their houses

Twenty females living in Riyadh's contemporary villas were interviewed to reveal women's perceptions of home windows within their domestic context. The age groups were formulated to categorize the participants (Table 4). The first age group is 50 and more, which included 7 participants. The second group is from 26 to 49, which consisted of 9 participants. The third is from 18 to 25, which comprised 4 participants. The following (Table 5) categorizes the participants according to their ages, houses location, and date of construction.

Table 4

Age Groups

Age groups	Age	Number of participants
1st age group	50 +	7
2nd age group	26 - 49	9
3rd age group	18 - 25	4

Table 5

Participants and Houses Categories

Participants		Houses			
No.	Age group	Neighborhood		No.	Built-in
		Name	Period		
P1	1st	Jarir	1960s	H1	Pre 1991
P2	3rd				
P3	2nd			H2	Pre 1994
P4	3rd	AL-Olaya	1970s	H3	Pre 1990
P5	1st	Ar-Rawdah	1980s	H4	1987
P6	1st	Salahuddin		H5	2012-2015
P7	2nd			H6	Post 1980
P8	1st	Al-Wurud		H7	1980-1985
P9	2nd	King Fahd		H8	2009-2011
P10	2nd	Ar-Raed	1990s	H9	2004-2007
P11	2nd	Al-Murui		H10	2008-2010
P12	1st	King Abdul Aziz	2000s	H11	2003-2005
P13	2nd				
P14	2nd			H12	2003-2005
P15	3rd				
P16	1st			H13	2007-2009
P17	1st	Hitteen		H14	2010-2012
P18	2nd				
P19	2nd	Al-Arid	2010s	H15	2014-2016
P20	3rd				

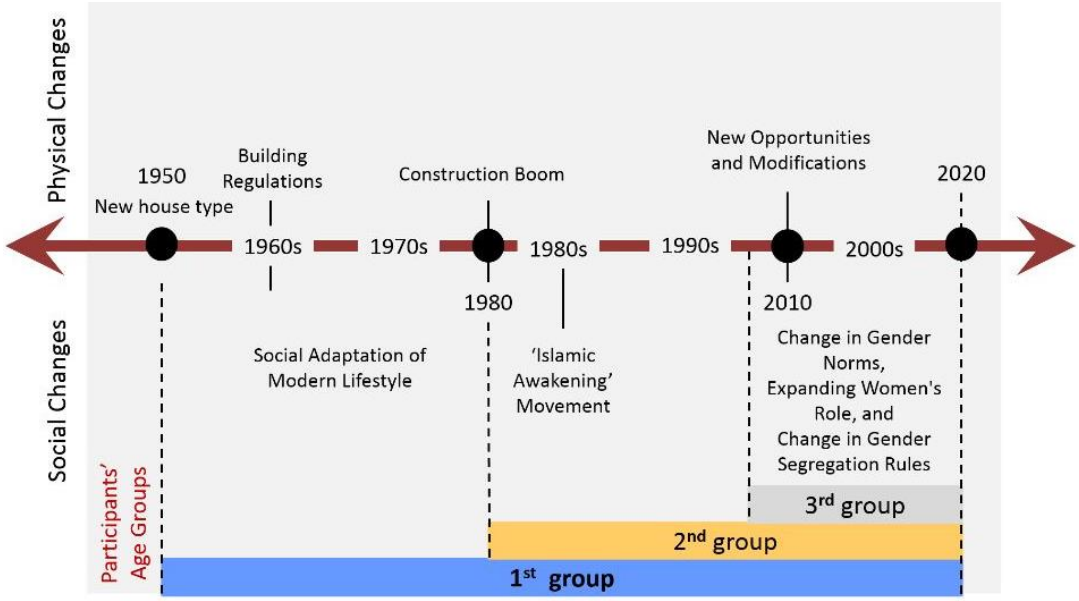

Figure 46. Participants' age groups based on the historical timeline of the transformation of the Saudi home environment.

4.5 Findings: the Meaning of Windows in the Home Environment of Riyadh

Various data collection methods were applied in the fieldwork of this study to investigate the tangible and intangible meaning of houses' windows in Riyadh's contemporary home environment. Firstly, in-depth interviews were conducted to understand the perception of different female participants, mainly from photos they capture of their windows and their descriptions of houses, particularly its windows, to inspect the intangible meaning. Secondly, the observations of houses' windows and surroundings were carried out to examine the tangible meaning from the physical traces and participants' behaviors.

The following four sections include an overview of the fieldwork findings through decoding the interviewees' answers, windows' photographs, and researcher observations. The audio records of the interviews were transcribed, then the main ideas and keywords from the answers that recur across the interviews were specified. After that, all the collected data contents were analyzed.

The findings are analyzed under five main topics: home environment around windows, use and preference of home windows, window treatment and layering of the sight, reflexive photography of windows, and physical traces in houses windows and the surrounding.

4.5.1 Section one: home environment around windows. This section contained seven questions; the first question was analyzed in the preceding part of this chapter[30], while the following provides the key findings from the questions (from Q2 to Q7).

Q2: Tell me about your living experience in your house.

When requested to tell about the living experience in the house, participants tended to mention positive aspects of their houses around various subjects such as (its location, number of rooms, interior design, security, neighborhood facilities, neighbors, etc.). Often they compared with their prior experiences in previous houses or before their modification on their current house. Predictably, they would describe their experience positively as they perceive their houses overall as home or at least a convenient place where they live. However, few participants noted some issues which they had already solved[31].

This question was an open question to begin the conversation on the main interview subject. It encouraged the interviewees to talk freely and express their viewpoints and experiences. Therefore, they had mentioned diverse information about their houses that does not directly relate to the scope of the study. The following questions gradually dig deeper into more detailed information.

Q3.1: How comfortable are you at your house? Q3.2: What makes you feel comfortable at your house?

The respondents attributed their comfort in houses to several physical and psychological aspects, such as daylight, quietness, spaciousness, location, having yards, privacy, and security, as shown in (Table 6). The first most frequent feature mentioned by the participants was that the house or its rooms are sufficiently large; 15 out of 20 interviewees mentioned that their houses are spacious. The second frequent aspect was privacy; 12 participants mentioned that the privacy inside their houses makes them comfortable. They connoted privacy inside the family for each member, not only from strangers and guests. For instance, Participant P19, who moved from an apartment house, stated that: "*Each member of the family has his/ her private bedroom*

[30] In the in-depth interviewees' selection section of sampling design.
[31] Will be clarified in details in the answers of Q4.

and all bedrooms are separated (in the first floor) from the guest area (in the ground floor).".

The third frequent attribute is the surrounding yards 11 participants declared that having an open space within the house makes it more convenient for their needs, providing an open space for having a green area, a walkthrough, family gatherings, and children to play outside. Participant P9 stated that: "*the hot climate of Riyadh is preventing us from spending a long time in the garden; however, we realized the importance of the garden during the lockdown of the Covid-19. It became our favorite place then, where we used to do activities that allowed us to entertain while staying at home. We have watched movies outdoor, barbecued, and planted new flowers and vegetation ….*".

Table 6

The Frequency Table of Participants' Answers to Q3

Interview Question	Keywords	Neigh. No.	N1		N2	N7	N3		N4	N5	N8	N9	N15					N14		N16	
		House No.	H1		H2	H3	H4	H5	H6	H7	H8	H9	H10	H11		H12		H13	H14		H15	
		Frequency	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20
Q3. House Comfort	Visual (daylight)	5																				
	Auditorial (quite)	7																				
	Spacious (large)	15																				
	House location	9																				
	Having yards	11																				
	Privacy	12																				
	Security	8																				
	Other	7																				

Neighborhoods Categories:

Old Contemporary Neighborhoods

New Contemporary Neighborhoods

Participants' Age Groups:

1st Age Group (50+)

2nd Age Group (26 – 49)

3rd Age Group (18 – 25)

Q4.1: Did you have any problems that drive you to change or do something for your comfort? Q4.2: What was the problem? Q4.3: What did you do?

Several participants talked about issues they had in the house through their living experiences[32]. Therefore, all the interviewees were asked if they had problems and how they handled them. The mentioned reasons for housing discomfort varied, as shown in (Table 7). The majority, 14 out of 20 participants, had problems with the air conditioning, which they used to fix regularly or have added additional cooling units.

[32] Responding the second question of the interview.

The second frequent issue was the dust; 12 participants complained about outdoor dust getting in houses. Hence, they had to close all windows tightly before dust storms.

The third frequent problem was the heat that radiates from the direct sunlight entering the house through the windows; nine participants indicated that they installed window treatments such as blackout curtains and shutters to reduce the heat. Fourth is the internal layout of the house; four of the participants had issues related to the internal spatial arrangement, so they have removed unnecessary partition walls inside the house, which they attributed to the change in lifestyle. Besides, three participants mentioned that they had added an external annex for casual family and friends gatherings.

Table 7

The Frequency Table of Participants' Answers to Q4

Interview Question	Keywords	Neigh. No.	N1		N2	N7	N3		N4	N5	N8	N9	N15				N14		N16	
		House No.	H1		H2	H3	H4	H5	H6	H7	H8	H9	H10	H11		H12		H13	H14		H15	
		Frequency	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20
Q4. Experienced House Comfort Problems	Insecurity	4																				
	Lack of Privacy	3																				
	Spatial issues	6																				
	Glare/ Heat	9																				
	Noise	2																				
	Dust	12																				
	Air Conditioning	14																				

Neighborhoods Categories:

Old Contemporary Neighborhoods

New Contemporary Neighborhoods

Participants' Age Groups:

1st Age Group (50+)

2nd Age Group (26 – 49)

3rd Age Group (18 – 25)

Q5.1: What do you think about your house and its connection to the outside? Q5.2: Are you happy with that? Why?

When we asked the participants about the connection of their houses to outside, their answers varied between the following keywords: integrated, isolated, convenient, and protected (Table 8). Most of the participants mentioned that their houses were either protected or convenient. While eight females indicated that their house is protected from undesirable outside environments, seven revealed that it is convenient to their needs and under their control. The minority mentioned that their houses are isolated or integrated. Three of the participants see their houses isolated, ascribed to the need to protect their privacy. Nevertheless, two interviewees pointed out that their houses are integrated as they are located in a vital area in the city.

The respondents were generally satisfied with the connection of their houses to the outside world. However, a participant from the third age group, living in a house with translucent windows glass type, P2 said: "*I do not like that when windows are closed, we only see the daylight kind. I prefer if the glass of the windows allows a view of the outside while closed."*

Table 8

The Keywords Mentioned by the Participants and the Frequency in the Answer of Q5

Interview Question	Keywords	Neigh. No.	N1		N2	N7	N3		N4	N5	N8	N9	N15				N14		N16	
		House No.	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14		H15		
		Frequency	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20
Q5. House connection to the outside	Integrated	2																				
	Isolated	3																				
	Convenient	7																				
	Protected	8																				

Neighborhoods Categories:
- Old Contemporary Neighborhoods
- New Contemporary Neighborhoods

Participants' Age Groups:
- 1st Age Group (50+)
- 2nd Age Group (26 – 49)
- 3rd Age Group (18 – 25)

Q6.1: Who can see inside your house from outside? Q6.2: Why?

Most of the participants answered this question indicating that they control what people see from outside, using either fixed or adjustable solutions. Therefore, they were asked to elaborate on the importance of the visual control solutions they have installed. The variations in responses were related to the physical surroundings and individual preferences.

Participant P11 lives in a house designed according to the family's needs. The house is located in front of the neighborhood mosque, so they had special considerations (Figure 47). She said: "*Windows' views were carefully considered in the design of our house so that no one sees the inside and we do not bother our neighbors. I have only one window facing the street, and it is in a sitting area. We have installed a high boundary covering screen on one of our neighbor's sides because we could not avoid having windows to that side. The other side is my brother's house.*"

Figure 47. A view of H10 street shows its window facing a mosque and its high boundary screen (By the author: Visual survey).

There was a general agreement among the participants that there is a respect and "*hurmah*" prohibition of causing harm to houses' privacy between people in the community. Thus, they see that it is less probable that anyone would stare through houses' windows. Although, they have mentioned that strangers, neighbors, and passers-by can see the inside of houses from outside if they do not block that view by using exterior or interior window treatments. For example, participant P9 lives in a corner house with several windows facing outside without fixed covering elements of the upper floor windows from the street sides, as shown in (Figure 48). She mentioned that their house "*could easily be seen from the street at night when the indoor house lights are on if we do not close the curtains*.".

Figure 48. Views from H8 streets (By the author: Visual survey).

The majority (9 out of 20) of the interviewees were concerned about being seen in their houses by passers-by. While 6 participants' revealed the possibility of being

viewed by strangers, 5 participants mentioned that the neighbors from opposite buildings could have visual access to their houses, as shown in (Table 9).

Table 9

The Frequency Table of Participants' Answers to Q6

Interview Question	Keywords	Neigh. No.	N1		N2	N7	N3		N4	N5	N8	N9	N15				N14		N16	
		House No.	H1		H2	H3	H4	H5	H6	H7	H8	H9	H10	H11		H12	H13	H14		H15	
		Frequency	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20
Q6. Sight from the outside	Strangers	6																				
	Neighbors	5																				
	Passers-by	9																				

Neighborhoods Categories:

- Old Contemporary Neighborhoods
- New Contemporary Neighborhoods

Participants' Age Groups:

- 1st Age Group (50+)
- 2nd Age Group (26 – 49)
- 3rd Age Group (18 – 25)

The frequency of the answers indicates that the female interviewees expected passers-by and strangers to see the houses from outside more than their neighbors, whom they trust in most cases. For instance, participant P19 indicated that "*the neighbors would not observe our houses; however, I could not trust all people who pass by the neighborhood, we have the responsibility to make sure to protect our houses' privacy.*". Another example is in the statement of Participant P8, living in a house facing a neighborhood park, mentioned that: "*We have to make sure to close the blackout curtains of the upper floor windows after the sunset as people sitting in the park may see our house.*".

Participant P7, her bedroom window faces the opposite side neighbor's driver room. She indicated: "*The problem is that neighbors' drivers used to gather in front of our house, so I have got to keep the curtain of the window facing the driver room closed all day long.*".

Q7.1: What are the views from your house's windows? Q7.2: Is there any issue with that?

The answers to this question were mainly based on the building sitting. Some houses' position is intermediate between two neighbors or at the street corner. The majority (13 out of 15) of the interviewees' houses were Intermediate houses, which means they have neighbors on three sides of the house while a single side is facing the street. Two houses out of fifteen of the study were corner houses facing two streets.

Most of the participants said they could see only the boundary walls from most of the windows of their house. Other participants indicated the variation in views according to the window location. They pointed out that they see the sky, sunrise, greenery, streets, open area, boundary walls, or light and dark from inside their houses. When the window is facing the neighbors, these windows are mostly treated to keep the neighbors' privacy and give the residents only the sense of light or dark. While windows facing the streets or the yards provided other views that they have mentioned. It was unexpected that they had mentioned the view of the greenery so often as the view they have from their windows or the best view. They had planting posts in front of the ground floor windows in most cases.

4.5.2 Section two: use and preference of home windows. This part displays the findings from the interview's second section (from Q8 to Q11), in which the participants have inquired to state the function, use, and preference for houses' windows. Besides, their experience around windows in everyday life.

Q8: What is the function of windows in the house in your opinion?

All the participants demonstrated the necessity of windows in houses. Participants' most frequent keywords used were ventilation, illumination, connection with the outside, and serenity. They either mentioned them all or at least two of them. The ventilation and light were the most frequent as expected. The first and second age groups were more aware of the importance of ventilation and daylight. While the third age group, who are the daughters of the household, focused on the view. For example, participant P1 stated, "*I could not imagine living in a house without windows, living spaces have to be ventilated, and we need to feel related to the outdoor world*.". On the other hand, her daughter, participant P2, said: "…to *view the outside, I used to watch the sunrise from my bedroom window*."

In general, the participants remarked that each window has its function according to its direction and surroundings. They emphasized its use for air exchange and lighting as essentials for all spaces. Even though they revealed their preference of having a good view from the window or having a large window that gives the sense of openness, that was of secondary importance or not necessary in all rooms. For instance, participant P10 " *I see that each house has to have at least one big window*

with a good view in the living room, creating a place to sit and meditate, while all rooms must have a window for ventilation and lighting."

Q9.1: How do you use your windows in your everyday life? Q9.2: When do you open and close the windows? Q9.3: Why?

Responses to this question were of remarkable similarity, as the participants related their use of windows to the weather condition of Riyadh. The following is the typical answer to this question, according to participant P17:

"Every day in the morning, we open the windows for ventilation and the blinds to let in the sun. In the summer, we are satisfied with a short period of ventilation, but in the winter we prefer to keep the windows open, unless there is a dust storm, and this is one of the biggest problems other than the heat in the summer."

Another example, participant P10 said: "*I open the windows most of the time, but my husband closes them to keep the cooling of the air conditioners, and to prevent the overload on the air conditions*."

Q10.1:Which window do you prefer the most in your house? Q10.2: Why? Q10.3: Can you express its characteristics?

Many of the participants answered that they prefer the biggest window in the house, which provides sunlight, ventilation, and spaciousness.

Participant P10 said: "*I like my living room window because it is big and sunny most of the day. I have a coffee corner next to it, which makes it a perfect place for me*."

Participant P8 said: "*My bedroom window is facing the neighborhood park. I like to see the sunset and the green view after a long working day*."

Q11: How do you spend time near windows in your everyday life?

Most of the participants answered this question during their description of the function and use of the windows. Mainly, the use of the window of each room was limited by its direction. The majority of the households indicated that they move from one room or another during the day according to the sunlight avoiding the glare in order not to close the curtains. The window most likely affects the activity in this

room. For example, participant P said that she likes to sit next to her bedroom window in the morning to watch her children going to school while having her morning coffee.

The answers to this question are varied. Some said it is the most relaxing time when they read or have their coffee near the window. At the same time, others did not indicate any interest in sitting next to a window.

4.5.3 Section three: window treatment and layering of the sight. The third section of the findings displays the last part of qualitative data collected through the interviews. This section contains seven questions (from Q12 to Q18) divided into two parts. The first part is about the used windows' glass type and the change on the windows. The second is concerning treatments around the windows, from inside and outside.

Q12: What type of glass is used for windows?

Eleven out of 15 houses of the interviewees had windows of tinted glass. While two houses had frosted glass, and the last two houses' windows were cased using reflective glass.

Participant P12 "*There are three types of windows in my house: normal sliding windows for bedrooms, sitting rooms, and kitchen, fixed frosted windows in the staircase, and small 'taqas' for ventilation in the bathrooms (hopper windows)*.".

Q13.1: Did you make any changes to your windows? Q13.2: If yes, what? and Why?

The answers to this question were various. The following points summarize the reasons for windows' changes and modifications.

- The evolution in the windows industry and glass technology encouraged the residents to use new solutions for their windows to get as much benefit as possible. One of the participants in the study changed her villa's windows because they were getting in a lot of heat and dust. They have changed the entire houses' windows.
- Another participant has enlarged the guest room window on the ground floor to take advantage of the garden view and create a sense of openness.
- One of the participants has applied a frosted film on the lower part of the window glass for privacy purposes.

Q14.1: Did you install anything on windows from outside or inside? Q14.2: Why?

Quite a number of the participants mentioned that they installed steel bars to the outer frame of the windows for security purposes. In contrast, some people installed shutters to minimize the amount of heat gain and security purposes.

Q15.1: Did you make any changes to your house on the exterior? Q.15.2: If yes, what? and why?

The answers to this question were not of essential relation to the scope of the study. Most of the participants did not make any changes. Some participants painted the exterior house walls to renovate it, while others installed decorative elements such as stone cladding.

Q16.1: Did you make any changes on and around the garden walls? Q16.2: If yes, what? and why?

The reason for extending the house's boundary walls of most of the participants was for privacy against neighboring buildings. However, an unexpected reason was for security. Participant P14 reason for extending the boundaries walls heights was "*due to an incident of a robbery in the neighborhood…".*

Q17.1: How do you organize the furniture near the windows? Q17.2: Why?

The answers to this question were diverse according to each participant's personal preferences. Most participants indicated that they preferred to benefit from the area near the windows in different ways, such as creating a comfortable sitting area next to the windows.

Participant P18 "*I prefer to have a sitting area near windows when possible*."

Participant P11 "*I have my office table facing the window*."

Participant P4 "*I used to keep a space between the wall of the window and the couch to keep it easily accessible and protect the couch fabric from the sun glare*."

Q18: Can you define your reasons for your selection of (curtains, blinds, etc.)?

Most of the participants answered this question during their earlier descriptions of windows uses and treatments. It was obviously clear that they selected the indoor window treatments according to the direction and view of each window. Also, there is a considerable contrast between the reason for choosing the curtains for the ground and the upper floor windows, even though they are of similar fabrics.

As evidence, participant P12 "*I have layers of curtains chiffon and velvet for most windows. I needed to have a heavy fabric to block the sun and the view in the bedrooms. However, on the ground floor, the guest room windows' curtain is mainly a décor the velvet curtain is always open*."

The majority used opaque curtain fabric, blackout, or blinds as an indoor window treatment to block the glare and reduce the heat gain. However, some participants have indicated that they have used only transparent fabrics such as chiffon for some windows. The residents took this decision when they guaranteed that the external treatments already block the view from outside and the window is located on the north or east sides as there is no need to block out.

Participant P6, said "*I have only a single transparent curtain in my ground floor living room. It gives spaciousness and openness to the room*."

4.5.4 Section four: Reflexive photography of windows. This section contains visual data generated by the participants. The participants were requested to take a photo of their window looking toward the outside. Most of the participants photographed a single window of their houses' "favorite window" or "best view out.", as they described the photographed window later. However, some others took two to three photos of different windows in their houses (see Appendix A).

Through the observations of the photos taken from inside the houses by female residents, most of the photos were focused on natural elements such as sky, trees, plants, or daylight. The second prominent aspect exhibited in the photos was the house surrounding yards in general, such as the sitting areas. The third feature was the surrounding boundary of houses.

The participant tended to capture the windows in three different ways. First, ten participants wanted to display their window size, so they drew the curtains apart and took a wide shot to show the entire window. Second, seven participants captured a closer shot of the window and zoomed in the view to the outside. Third, three participants have photographed the window as they see it inside, keeping closed curtains (Figure 49).

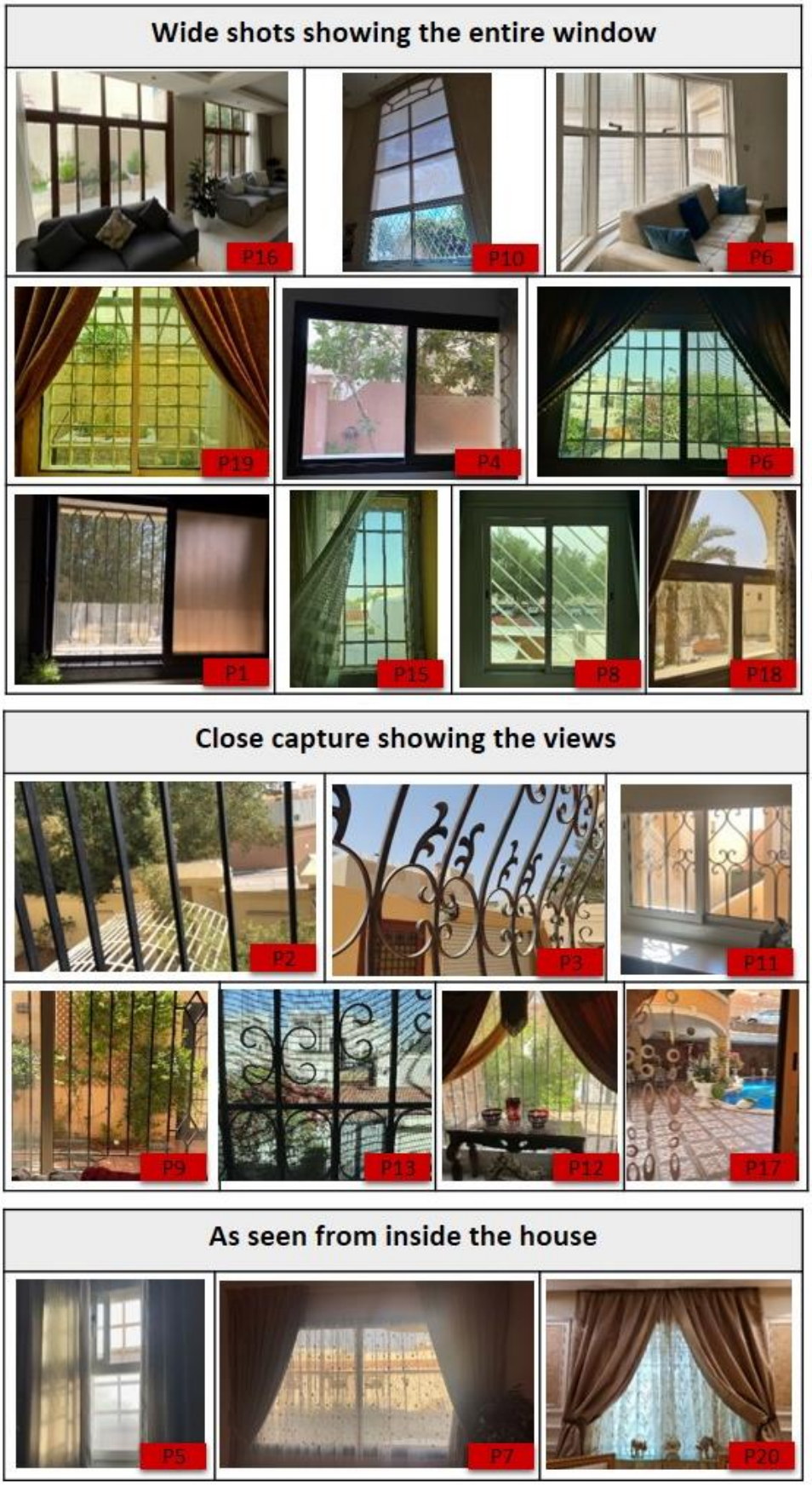

Figure 49. Photos taken by the female participants (By the interviewees: Visual survey).

4.5.5 Section five: Physical traces in houses windows and the surrounding.

This section includes the findings from the systematic observation of the sample of houses' windows and physical surroundings. The physical traces around windows from inside and outside have clarified the following factors influencing window treatments in the study context. A complete set of the reflexive photography of the participant corresponds to the author's site documentation can be found in (Appendix-A).

First, the surrounding buildings' use and streets' width influence houses' windows and treatments. For instance, In the majority of the cases, windows facing the neighboring houses are specially treated (shifted away from the neighbor's windows, sealed, or smaller than the usual) other than windows overlooking the streets (Figure 50).

Second, preserving houses' and neighbors' privacy significantly influences houses' windows. Most of the large windows visible from outside were oriented toward the streets rather than the neighboring houses (Figure 50). Besides, different treatments were used for windows facing outside, either from inside or outside. For example, as seen from the outside, reflective glass was used for large windows reflecting the surroundings preventing the visual intrusion from outside during the day.

Figure 50. Examples of houses' windows facing the streets and the neighbors (By the author: Visual survey).

Third, dwellers tend to have large windows that are not visible from the outside, as noticed in many case studies investigated from both inside and outside (Figure 51).

Figure 51. Example of houses' windows from inside versus outside (By the author: Visual survey).

Forth, external house appearance is of significant importance. Most houses' owners have tried to enhance the appearance of the boundaries, such as having climbing plants to cover the boundaries facing the streets (Figure 52). In contrast, other residents did not care about the appearance of their houses more than their comfort inside (Figure 53).

Figure 52. A photo shows the climbing plants covering the boundary wall of a house in Riyadh (By the author: Visual survey).

Figure 53. A photo shows the high boundaries screens covering the front facade of a house in Riyadh (By the author: Visual survey).

		H1	H2	H3
FROM OUTSIDE	FROM THE STREET			
	BEYOND THE BOUNDARIES			
FROM INSIDE	TOWARDS OUT			

Figure 54. A sample of photos shows how the reflexive photography of the participant corresponds to the author's site documentation (By the author).

Chapter 5
Discussion and Conclusion

Riyadh city was considered the role model for developing the residential environment of other Saudi cities. Local authorities perceived the capital's housing and urban development projects as the ideal residential prototype in the first urbanization stages. However, the new housing living experiences improved the cognition of different residents' needs. The awareness of the actual locals' needs manifests in the change of the building code and regulations in the country, which the development authorities inspired by the residents' modifications of the built environment. This study contributes to better understanding the present-day need for privacy control of female residents living in villa-type houses in Riyadh.

5.1 Discussion of the Research Findings

This study investigated the meaning of houses' windows within the contemporary Saudi domestic environment in correlation to the recent social change in gender norms, particularly the rule of gender segregation through the lens of women. After presenting the findings in the previous chapter, this section will evaluate and interpret the result of this study in order to answer the study questions[33].

Home window: A hybrid of the traditional and the contemporary

Through the theoretical research of the home environment and the houses' windows, synchronized with the in-depth case study analysis, the significant difference in the contemporary Saudi home environment of residents sharing the cultural background was the lived experience that the house and physical surroundings provide. The participants compared their experiences in their current house with their previous houses, even when it was of the same type but constructed earlier. For example, participant P17 indicated the difference in her home experience according to the size and treatment of houses' windows. She stated: "*my previous home windows*

[33] The study questions mentioned in the objectives section in the first chapter.

were smaller than this, and I did not have shutters; instead, I had steel bars for security. This house is much better as its windows give spaciousness even it is not too big...with the steel bars the house was like a prison".

Participant P14, who moved from an apartment to a villa, described her experience in her villa-type house. She said: "*I like that in this house we have windows from all sides so I can open the windows of opposite directions for ventilation, and sunlight moves from one room to another, which creates a different atmosphere for each room during the day.*".

Houses windows significantly impact the experience of the home environment, which changes through time and varies from one house to another. In other words, besides that the residents create their home environment experiences through their interaction with the physical element in the house; even the same resident may have different experiences or sentiments toward their home over time. They define the difference mainly after they make changes to their houses. The prominent feature of windows is that they are transitional between inside and outside, linking and differentiating between both. Through the interaction of residents with their windows, they create and recreate experiences within the home environment representing their spatiotemporal needs.

Accordingly, the difference in the experience of windows in the traditional and contemporary Saudi home environment is related to the surrounding physical environment. The change in the urban and architectural scheme caused the change in the home environment, even though there are principles that the residents recreate. Comparing traditional with contemporary houses windows was of essential importance in this study to identify the continuity and change within the meaning of window. The description of traditional windows in the literature was limited; however, researchers have often mentioned the association between windows and significant cultural values and norms such as privacy, hospitality, and community relationship. As the entire traditional house perfectly met its residents' needs, its windows were part of this perfection. The harmony between Riyadh's vernacular houses and locals' requirements manifested in Saudis' reaction toward the change of dwellings. They attempted to recreate and reproduce the home environment they experienced in the traditional houses.

Along with the rapid economic growth in Saudi Arabia, modern urban and architectural concepts were introduced from other cultures then institutionalized to manage the urban growth and develop the country. The sharp contrast between the new and the traditional physical environment has created a conflict in locals' idea of home, with consequences that appear in the contemporary home environment. These consequences appear in the continuous modification and alteration in the residential physical environment.

Windows treatment and layering of the sight

From the observations of houses' windows treatment and surrounding layers conducted in the fieldwork to examine the tangible meaning from the physical traces and residents' behaviors, it was evident in many cases that the residents used different treatments to control the visual intrusion from outside. Tinted and reflective window glass types were often used in houses of the selected neighborhoods. These types of glass avoid visual intrusion during the daytime, other than their benefit in reducing direct sun radiation into the houses. It was seen that they open the curtains during the day and close them overnight. Besides, the translucent frosted glass that prevents both sides' view was used in older houses' windows.

There is a significant concern about the views from outside; therefore, external layers of covering elements existed around windows. Basically, the ground floor windows in all villas are protected by the boundaries walls. However, many people had extended the boundary walls to cover the upper floor windows as well. In many cases, the boundaries extensions were only applied on neighbors' sides. Large trees were planted in front of the street facades blocking the view.

The symbolic meaning of the window in contemporary Saudi society

From observing how the participants selected windows to photograph, most have captured the house's largest, best, or their "favorite" window, as many described it. Their behavior implied that they preferred to show such a window with a unique symbolic meaning. Nowadays, large windows symbolize modernity. Therefore, there is an attempt to represent the social statute by enlarging the windows.

One participant, P20 from the third age group, stated: "*I do not know why there are people who make small windows in their new houses until now. The new houses with big windows look much better…*".

The enlarged houses' windows in Riyadh

The modification of houses' elements indicates a change in the surrounding environment or residents' preferences. According to environment-behavior studies, the alteration results from the interaction between the inhabitants and their houses. Based on the historical background of this study, the recent change in contemporary houses' windows, specifically their enlargement that has been done by the residents, resulted from various direct and indirect factors. While one of the indirect factors is the changes in the country and housing requirements, the direct influence is the change in resident personal preferences and the social change in general.

The manifested characteristics of the Saudi home environment on windows

The design of windows is like other architectural elements, influenced by various factors. The study of the transformation of the Saudi domestic culture indicated that the sharp shift in the physical environment significantly influenced the home environment in general. However, the residents have been recreating the sense of home they used to and need to have.

Based on observation of the physical traces around windows and the residents' way of dealing with houses' windows, the main factors that influence the design of contemporary houses' windows are economic development, social changes, spatial surroundings, privacy value, and climatic factors.

The systematic observation of the sample of houses' windows and physical surroundings from the selected neighborhoods. Observing the physical traces around windows (from inside and outside) and the residents' way of dealing with houses' windows has clarified factors that influenced their selection and treatments. Other than the factors mentioned by the female participants that influence their choices and preferences related to houses' windows.

Women's perception of the change from the windows to the overall Saudi domestic environment

- Women in the first age group (50+) who experienced living in the country before, during, and after the imposition of gender segregation rules and social regulations are more receptive to recent social reform than expected. They indicated that they expected the acceptance of the social changes long before. One of the participants said: "It is the responsibility of the family and the women to preserve their privacy and the needed balance in their home.". The significant change in the built environment that this age group observed in the country indicated an inevitable change in all life aspects. Therefore, they consider the changes of houses windows and the domestic lifestyle as normal development circumstances, and their acceptance depends on each family's personal preferences.
- The females in the second age group (26 – 49), most of whom experienced the conservative environment and limited chances in public since their early teens, are the most amazed by the new opportunities they have now. Their fascination with the recent changes in the domestic environment is due to their previous living experience. One of the participants said: "It is like I am getting younger…". Another participant stated: "We are experiencing a new way of living". The enlargement of houses' windows phenomenon is one of the causes that constitute the new living experience in the country.
- The third age group (18 – 25) who observed the change in the domestic environment in their early adulthood did not experience the extreme conservative environment in the country. This age group is the most exposed to diverse cultures of the world; thus, young Saudi females tend to normalize the changes in the public social life and living patterns inside houses. Other than, one of the interviewees, a daughter of a household who participated in the survey, indicated her surprise by new houses that are constructed with small windows. Accordingly, houses with large panoramic windows will most likely dominate Riyadh's future dwellings, especially with the glass technologies developments and smart windows, which are becoming more

customized, allowing the dwellers to control the solar heat gain and visible transmittance.

5.2 Conclusion

Architecture goes beyond being a mere representation of the visual image of a city to one that is a documentation of the changes that occur over time. It continuously remodels according to several aspects like social and economic changes. Thus, architecture narrates cities' and societies' stories by representing their identity. However, during this age, the acceleration in the ever continuous changes in cities became a significant circumstance all over the world due to its impact on the identities of cities. It is blurring the uniqueness of the domestic environment in different societies. Although, the residents produce and reproduce their identity within their home environment. Rapoport's research on housing through cross-cultural studies argues that the home environments are created through the interaction of the residents with their house upon the culture. Their interactions manifest in their designing, building, choices, or subsequent modification, which is the most common nowadays.

This research studied the meaning of windows and their modifications in contemporary houses of Riyadh. The main aim of this study was to analyze houses' windows modification phenomenon within its context through the lens of female dwellers according to their distinctive situation. The Saudi context is comprehended in the strict visual privacy condition and gender-based exclusion within the living environment as extensively conservative, in which women's lives are the most affected. Nevertheless, the recent windows enlargement phenomenon could represent liberation. In fact, through the literature review of the Saudi home environment change process, it is evident that this modification phenomenon resulted from the mismatch between the majority of the contemporary houses' design and their residents' needs. The experience of the change in Saudi Arabia inspired the author in this study. As a resident of Riyadh for over 17 years, the author has personally observed the transformation of the Saudi home environment.

This study has contributed to eliminating the ambiguity of the transformation of the Saudi society and built environment in general and the houses' windows enlargement phenomenon in particular. The study results indicated that the rule of enclosure and exposure have blurred in the contemporary Saudi home environment.

Due to the rapid continuous modernization effect, sealing and enlarging windows' modification phenomena appeared in the Saudi residential environment alongside. The built environment has drastically transformed while the majority of the Saudi society was conservative, preserving their culture, traditions, and norms. Consequently, the residents have reprinted their identities on the modern housing producing a distinctive modern Saudi home environment. However, contemporary Saudi residential architecture is vague in parallel with the universal modern architectural trends, as it was inspired from foreign spatial and architectural concepts while modified to meet locals' needs.

The investigation and observation of the domestic environment revealed the importance of considering resident needs in the design of each architectural element in the housing. The positive reaction of the dwellers through their modification of villa-type house windows manifests their needs. They have found adequate solutions to prevent the permeability of large windows, preserving their houses' and neighbors' privacy, as the notion of houses' privacy is one of their core cultural values. Although, they were aware of the negative impacts of blocking treatments on the external appearance of houses and the home environment. However, through time they started to pay more attention to enhancing the quality of life in houses, especially after the experience of the pandemic condition, people became more aware of the need for freedom inside the house.

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APPENDIXES