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Architectural Heritage Preservation as a Tool for Sustaining the Architectural Identity

(建築的アイデンティティを維持するための方策としての文化財保存)

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Abstract

The research examines the impact of the rapid urban and architectural development on each of the historic preservation methods and the existence of Islamic architectural identity in contemporary buildings. The importance of this research is to study the characteristics of the cultural heritage that shaped the architectural identity in Mecca and to evaluate the experience of architectural heritage preservation.

The research follows the following methodologies:
First, an analytical and theoretical review determines the factors affecting both the formation of the architectural identity of contemporary buildings and the preservation of architectural heritage. Second, a descriptive historical approach is undertaken in the narrative analysis of the collecting all the available data which describes the changes that were introduced to the building of the Kaaba during the Islamic era. Finally, the analytical method was used to evaluate the conservation procedures carried out in the restoration of the Kaaba, analytical method was used also to study field examples from the Makkah area and to analyze contemporary buildings identity, field visits and observation were conducted during the study of these examples.

The present study resulted that the level of preservation in Mecca, recorded a high degree of awareness in the restoration during a long period of time and it is clear from the study that the original form and materials have not been significantly changed. Full respect for the sanctity of the place and its monuments were noticed. On the other hand, the reflection of identity on contemporary buildings was not strong and the attention to the manifestations of the Islamic spiritual architecture was poor, according to the current study. Based on that, the study concludes, the architectural identity can be lost and changed in a society that preserves its historic buildings.

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1.1 Introduction:

For Muslims, Mecca is the best spot in the world and the dearest of all to Allah and His Messenger. It is the place of revelation where the hearts of Muslims are directed to from all places on Earth. It is a region of a distinct climatic and geographical nature, culminating in a cultural tradition in which unique and distinctive characteristics are created. Over time, as the number of pilgrims who comprise different races and customs increased, the total area of Mecca expanded. Large and rapid urban development followed, resulting from the economic changes that have taken place in the region in recent decades.

With the expansion of the city and preoccupation with modernism, and the emergence of a generation of architects who rejected the past in all its forms and called for modernity and liberality, entire areas were removed with all their heritage features in order to keep pace with urban development. The region then saw an architectural transformation that did not conform to the values and principles of Islamic architecture.

Recently, a number of Saudi architects began studying the negative impact of that architectural pattern, especially after both specialists and society began to feel the importance of adhering to their culture and heritage. This led to the emergence of initiatives in Saudi Arabia, calling for the revival and preservation of its heritage, as well as restoring its architectural identity.

The heritage revival not only includes imitating the past with explicit copies of its buildings components, but it is also influenced by its spirit and philosophy. Therefore, this research aims at clarifying the distinctive features of Islamic architecture by providing a case study and analyzing the shape of the building and its external image features. Functional, humanitarian and social building requirements, whose content represents the cultural values of society, are also examined.

Heritage is a reference point as it embodies existing physical evidence. It is also witness to the ingredients of modern civilization in terms of its relevance and belonging to the elements of the ancient heritage. Therefore, it is necessary to pay attention to it as an essential element for the revival of historical memory. Heritage is also an important component of the identity and personality of the society. It is necessary to deal with it as a resource that must be preserved.

From this point on, it was necessary to direct this thesis to study the heritage preservation methods, then analyze and evaluate some of the important experiences of the region in this context.

1.2 Background:

Heritage is a cultural resource representing the values, ideas, beliefs, customs, and traditions of the people. Since heritage represents the identity of the nation, it is necessary to stick to its authenticity and maintain it. It is the physical history and the mirror of the civilization. The relationship between man and his heritage is a physical relationship that represents his identity. It is linked to the awareness of the historical, religious, cultural, social and political dimensions. For Muslims, the heritage appreciation is an extension of the sense of God, universe, and life.

"One of the most remarkable things about the Islamic World is that there are still many urban societies functioning essentially as they were twelve hundred years ago. It would be hard to duplicate this phenomenon anywhere in Europe - nor in many other parts of the world" (Lewcock, Ronald ,1984)[1]

In most Arab countries, the problems of heritage and identity emerged with the beginning of the modern era and the beginning of the Renaissance. An age of

[1] Ronald, Lewcock, Conservation of Islamic Cairo, Symposium on the Challenges of Urban Expansion - Cairo Case - Ninth Symposium, 1984 Page 49.

decadence was followed by the clash of Islamic culture with foreign culture. As a result of occupation by the West of most of the Arab and Islamic lands, the sciences and techniques of Western knowledge was introduced to the Islamic countries. Arab countries began to move in an attempt to incorporate their identity with that of the West. Hence, the Arab countries witnessed the emergence of new ideas that separate man from his environment, customs, traditions and even his identity.

Arab countries are characterized by the existence of many buildings with cultural value. This abundance created the problem of preserving this wealth and highlighting the technical and historical aspects after it is subjected to much neglect and abuse. At the same time, repairing and restoring these buildings requires considerable financial resources, taking into account the restoration of the building and the stage of occupancy and maintenance. Heritage preservation in Saudi Arabia faces many problems, including economic, political, cultural and social realities as well as with the prevailing concepts of the conservation processes. There are those who deal with the buildings of value as mere facilities. They change its architectural and decorative formations. Others deal with the buildings as a space used to meet the new functional requirements, without regard to the heritage and historical importance. Several generations later, many of these buildings were in poor condition, its original or innovative performance hindered, thus creating a situation of disunity between them and the society.

1.3 Purpose of the Study:

Studying the characteristics of the architectural heritage that constitutes the architectural identity in Makkah and shedding light on the experience of rooting and evaluating the architectural heritage, this study aims to contribute to coming up with assessments and proposals that can be applied to maintain the valuable historic buildings that have been recently discovered in some regions of Saudi Arabia. It also aims to contribute to achieving one of the most important objectives of Saudi Vision 2030 represented in the revival of the national, Arab and Islamic heritage sites and their registration in the World Heritage List.

1.3.1 Broad Objective:

Evaluating each of architectural heritage preservation methods and its possible impacts on the sustainability of architectural identity.

1.3.2 Specific Objective:

-Define identity and identify the factors which formed the parameters of the identity of Islamic architecture.

-Studying the architectural identity of contemporary buildings in Saudi Arabia, analyzing a case study of contemporary buildings in the Makkah region to identify contemporary architecture.

-Study and analyze the architectural heritage preservation methods.

-Identify previous experiences of architectural heritage preservation, by studying and analyzing the experience of the restoration of the Kaaba during the Islamic era.

-Develop a method to assess the architectural heritage preservation methods, which include all the factors that affect conservation.

1.4 Research hypotheses:

The architectural identity of contemporary buildings is related to the level of preservation of buildings of value to a given area. The research assumes that the higher the degree of preservation of architectural heritage, the greater the association of contemporary buildings with the identity of the place and its formation, both of which are influenced by architectural development.

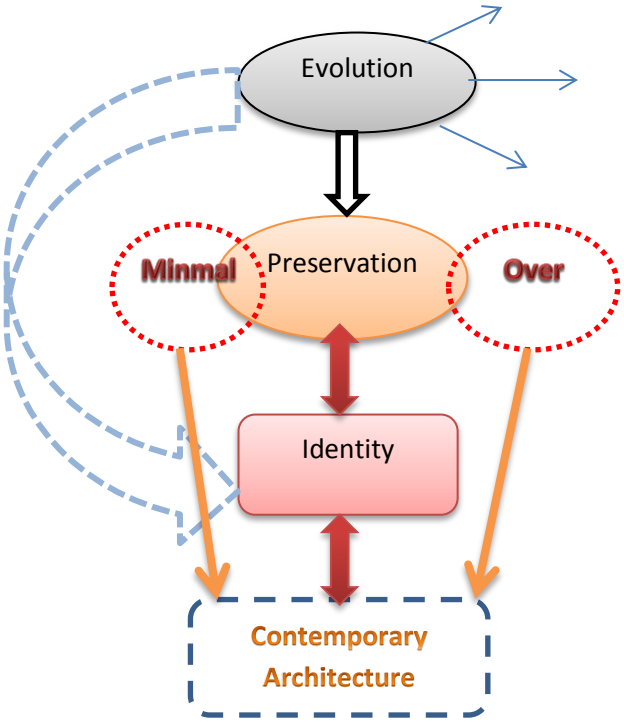

Figure 1.1 – Research hypotheses

1.5 Research Methodology:

First Theoretical Framework:

The factors that affected the formation of contemporary architecture identity and the preservation of architectural heritage were determined. The historical descriptive approach has been used to track the stages of architectural heritage preservation and analyze the factors that formed the identity of Islamic architecture.

Second: Information Framework:

The descriptive historical approach has been used in compiling the most important data of the international and national charters, recommendations and resolutions related to the architectural heritage preservation, by using the same method, the most important factors that formed the identity of Islamic architecture were identified, Finally, information and data related to the changes in the construction of the Kaaba during the Islamic era was collected.

Third analytical framework:

The approach of critical analysis has been used to analyze the preservation methods that were conducted in the Kaaba restoration during the study period, observation and field visits took place in Mecca to study contemporary buildings. Accordingly, these buildings characteristics were analyzed for characteristics where the architectural identity might be reflected.

1.6 Previous Studies:.

- The study of Lubna Abdel Aziz (2001), (Upgrading heritage sites of value, documenting and evaluating preservation experiences in historical Cairo), The study dealt with the issue of preserving heritage domains in order to highlight the importance of upgrading as a comprehensive development policy, The study was based on highlighting the role of the methods and policies affecting the dealing with heritage domains, The study found that there is no clear strategy and a fixed framework of action that does not change with the change of political administrations and the logical scientific pillar of dealing, In addition, there is a lack of legal frameworks, administrative structures and financial resources to bring programs and schemes into effect. The study recommended the creation of an Egyptian code to regulate dealing with heritage areas and buildings, including

issuing various legislations, setting conditions for re-employment, attracting private capital, and encouraging popular participation.

- Gamal Alian (2005) (Preservation of Cultural Heritage) The book addressed the importance of preserving cultural resources, which aims to clarify the idea of cultural heritage as a memory of the individual and society, which makes the preservation a human need, Addressing the members of the community and not only the specialists, because they have an important role in preserving their heritage, and recommended the establishment of foundations within the scientific research methodology, and building a school of science for this science in our Arab and Islamic culture.

- Reham Al-Khadrawi Study (2012) (Conservation of urban heritage to achieve sustainable tourism development through civil society institutions - Case Study of Siwa Oasis) , The study dealt with the role of civil society organizations in urban conservation plans and policies to achieve sustainable tourism development, both theoretically and practically. The research attempts to shed light on the role of civil society in the plans and policies of conservation of the urban heritage, where it aims to benefit from the different methods of preserving the urban heritage, which was studied in the international experiences, with a methodology to activate the role of civil society institutions in preserving urban heritage for development Sustainable tourism, The research concluded that the absence of awareness was one of the most important reasons for the urban heritage. The achievement of sustainable tourism development in the heritage areas is through popular participation and activating the role of civil society institutions in preserving, developing and upgrading heritage areas, whether in planning or implementing conservation projects. But on the condition that there is an integration of the roles of the three sectors of the State (the public sector, the private sector, civil society institutions).

- A Study by AFIFI AMIN (2013) (The Architectural Environmental Compatibility as an Approach to Conservation of the Heritage Buildings in Egypt), This research aims to study the effect of environmental compatibility on Conservation the buildings of heritage value in order to Reviewing the environmental directions and various approaches of dealing with architectural heritage and emphasizing the importance of improving the environmental effect in order to provide the total development, as well as Using the study as an effective tool for formulation of architects' thoughts and reference to evaluate their results. The research focuses on studying the used methods and strategies in the process of rehabilitation and reuse, taking into account the environmental influence of the buildings of heritage value.

- A Study by Abdulhay Nada (2015) (Towards a conservation method for urban and architectural heritage in greater Khartoum) the research discusses the subject of conservation the architectural and urban heritage in the greater Khartoum area.

The research objective is to provide an approach to conserve the architectural and urban heritage, featuring all the factors affecting the conservation of heritage, so that it contributing to support ways to conserve this heritage, and draw a work plans to act upon. The research included study and analysis of ways to maintain the architectural and urban heritage followed by the concerned conservation institutions, and to shed light on the performance of the various levels of conservation authorities in charge of the heritage, and analyzed the advantages and disadvantages measuring and evaluating them. The proposed approach has been applied to the Greater Khartoum area. The results of the research indicated the loss of the area to the comprehensive vision of factors negatively affecting the conservation of the architectural and urban heritage in Khartoum area. Also weakness of the work team at various levels of responsibilities of heritage extended a negative impact on architectural and urban heritage conservation in Greater Khartoum area.

1.7 Content of This Thesis:

The researcher addressed the subject of the study in six basic chapters:

The first chapter includes an overview of the study, the problems that need to be addressed, the importance of the study and its objectives. The Second chapter includes the theoretical part of the study related to the definition of heritage and identity. The Third chapter summarizes the impact of development on both the architectural identity of contemporary buildings and ways of preserving the architectural heritage in Saudi Arabia. It describes the strategic objectives adopted by 2030 vision of Saudi Arabia. The Forth chapter summarizes the factors that formed the architectural identity of the Islamic architecture and its characteristics. A case study from Mecca was used to determine the identity of contemporary architecture. These examples were based on the method of observation and field visits. The Fifth chapter discusses the definition of the architectural heritage preservation, preservation levels and evaluation of the Kaaba preservation procedures during the Islamic era. The sixth chapter is evaluation examples of historic preservation in Cairo. Finally, the seventh chapter is the thesis conclusion and recommendations.

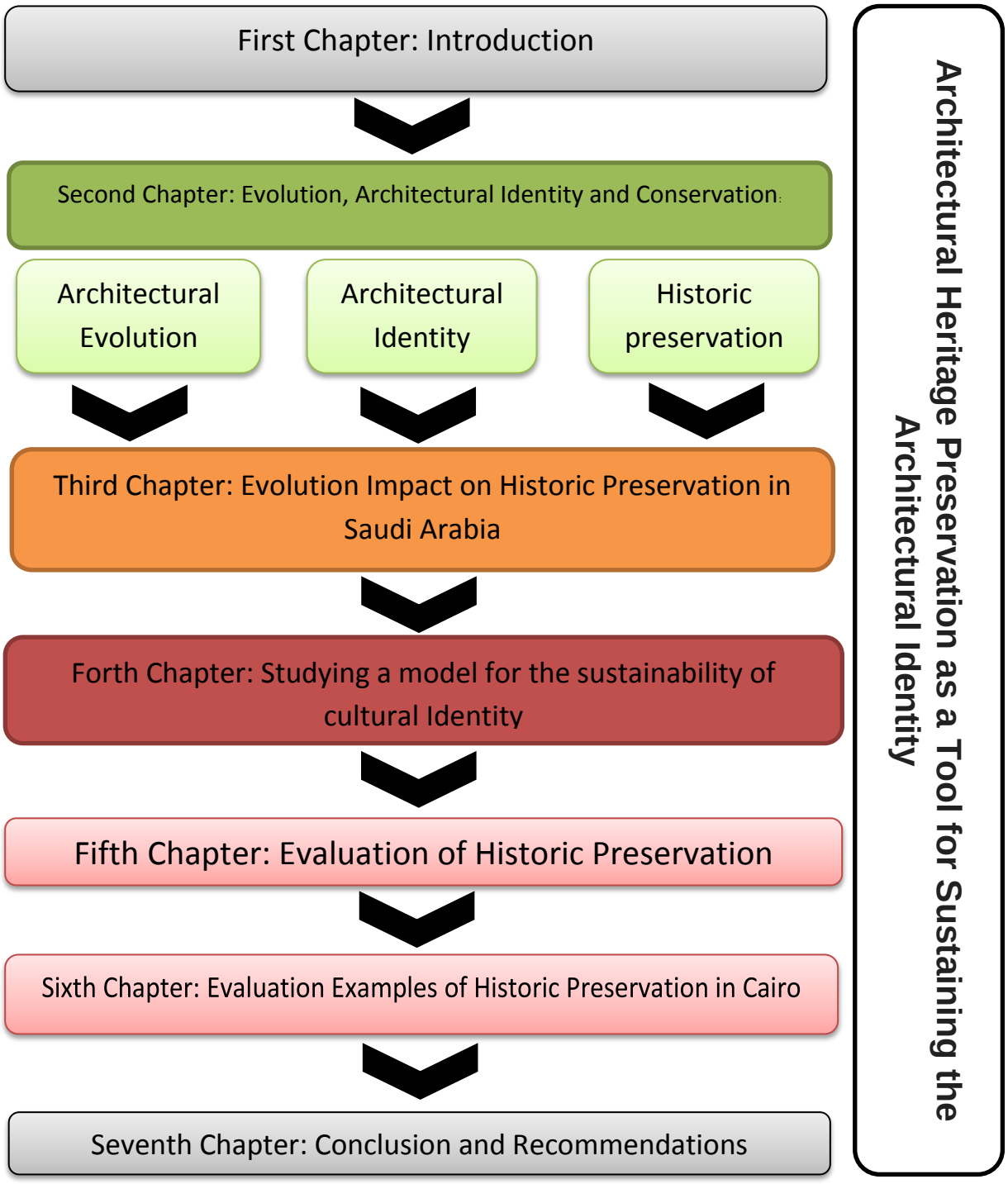

Figure 1.2 -Framework the Research and This Thesis

1.8 References:

-Afifi,Amin, The environmentally compatible architecture as an entry point to preserve the buildings of heritage value in Egypt, master thesis, Ain shams University, 2013.

-Ali, Alaa, Evaluation of alternatives related to data in the reuse of archaeological buildings, master thesis, Cairo University, 2013.

-Ronald, Lewcock, Conservation of Islamic Cairo, Symposium on the Challenges of Urban Expansion - Cairo Case - Ninth Symposium, 1984 Page

Second Chapter: Evolution, Architectural Identity and Conservation:

2.1 Introduction:

Though Islamic architecture have been widely researched by scholars, it still remains a puzzle especially what the principles it espouses. For quite a long time, Islamic architecture has been associated with famous Muslim monuments like palaces, mosques, and castles. Studies on Islamic architecture have highlighted different opinions on with most western scholars arguing that there is no true Islamic architecture since the building heritage from among Arab societies was borrowed from Christians, Persians, Indians and other group that they interacted with. Saoud argues that other scholars have elaborated the principles of Islamic architecture since the Sassanian and Byzantine architecture during the 4^{th} and 5^{th} centuries. In fact, the early signs of Islamic architecture can be found in the Quran when Prophet Adam built the Kaaba. The borrowing or imitation from other cultures was natural due to Islam's tolerance of other cultures. Therefore, overtime Islamic architecture evolved and expanded as Muslims migrated to other regions. Muslims architects adopted local styles they identified during migration, modified them to distinct elements, as well as introducing new designs and structure.

The evolution of Islamic culture began early as early Muslims interacted with non-Muslims. The imitation and adaptation to non-Islamic structural designs was both unintentional and sometimes deliberate as these buildings acted as community centres for the non-Muslims and pagans. Islamic architecture modified existing traditions by building on them to form new values and structure designs. The evolution of Islamic architecture began during the ignorant pagan times. Hitherto to then and for many years, the plan of building mosques was obtained from Semitic sanctuaries. Islamic architecture and the incorporation of new forms of architecture did not take place until the religion became established in a community or region. Islamic architecture evolved as new features and designs emerged with economic and cultural integration. Elements and features unique to

Christian, Japanese, Indian architecture among others became defining building styles of Islamic architecture.

2.2 Previous Studies:

Islamic architecture was hugely influenced by Sassanian architecture from the Sassanian Empire. Sassanian architecture involved traditions and elements that were even native to Persia. A study by Bacharach & Meri (2006)[2] expound that the remains of the palaces at Firouzabad and Bishapur in the present day Fars province, Iran provides the perfect embodiment of Sassanian architecture. These structures that were found in Ctesiphon, the empire's capital were magnificent and fascinated architects and are considered the most significant pieces of Persian architecture. But the most interesting piece of Sassanian architecture was the famous arch of Ctesiphon built after battles with Byzantine Empire during the 540 AD (Bacharach & Meri, 2006)[3]. The influence of the Sassanian Empire on Islamic architecture can be traced during 640 AD when Arabs invaded the Sassanian Empire and looted the arch. The Arabs used the arch as a mosque which influenced the construction of subsequent mosques and other buildings. Buildings in cities like Baghdad were based and copied earlier Persian buildings like Firouzbabd in ancient Sassanian Empire. Medieval Islamic domes like the Dome of Mihrab in Tunisia and the Dome of the Rock were both influenced by Sassanian and Byzantine Empires (Bacharach & Meri, 2006)[4]. The Sassanian influence was also evident in Iranian architecture as evident in the Buddha's of Bamyan in Iran. Therefore, the evolution of Islamic culture can be traced to early during the golden eras of Sassanian and Byzantine empires.

[1] Bacharach J. & Meri, J. (2006). Medieval Islamic Civilization: L-Z, Index. New York, NY: Taylor &Francis Group 698.

[2] (Bacharach & Meri, 2006) Previously mentioned 699.

[3](Bacharach & Meri, 2006) Previously mentioned 519.

In various parts of the world, architecture has been a manifestation of the cultural identity of a given community. A study by Castells (2004) [5] explains cultural identity as the process by which communities create their meaning according to their cultural values and attributes. Cultural identity is, therefore, manifested in various forms like social functions, way of clothing, mannerisms and etiquette, architecture and buildings among others. The similarity of the design and materials used to construct most historical buildings in the Arab nations tend to portend some form of cultural identity. Nonetheless, the thought or idea of a universal principles of Islamic architecture has been opposed by some history and Islam scholars. They argue that there are no set of universal designs from the Quran that constitute Islamic architecture. Architectural designs among various Arab societies were influenced by different traditions like Turkish, Persian, Egyptian, Iranian, and Mughal among other traditions. Although Muslims created architectural masterpieces like the Dome of the Rock in Jerusalem, the Pyramids of Egypt, Fatehpur-Sikri near Agra, and cities such as Damascus and Granada, these works were influenced and reshaped by other faiths and traditions. Due to the early influences of on perceived Islamic architecture, evolution as time elapsed had immense influence on Islamic architectural design.

Figure 2.1 - Fatehpur Sikri, Agra, India mosque an iconic embodiment of Islamic architecture

[4]Castells. M. (2004). The Relationship between Globalization and Cultural Identity in the early 21st Century, Barcelona, Forum.

The manifestation of cultural identity in architecture has become an important tool in creating local identity in an ever integrated and interconnected world. Both the industrialized and developing countries in have turned to architecture in a bid to develop their values and identity. Architecture has emerged as a vital discourse of expressing post-national identity beyond the nation or state (Delanty &Jones, 2002) [6] . Different scholars have conducted studies to investigate whether architecture should be used as an expression of cultural identity. In light of globalization and regional integration, place identity has emerged to be of importance rather than cultural identity (Gospodini, 2004)[7]. The changes brought by cultural globalization and regional integration has seen architects change their designs to reflect contemporary issues. In Singapore for instance, architects have adopted new models and designs to reflect the modern values, lifestyles, and evolving cultures. Most third world cities that witnessed tremendous growth during the last two decades have developed a co-existence architectural model. This model includes both the modernization and globalization trends while at the same time preserving the traditional elements (El-Sheshtawy et al., 2000) [8] . The suitability and viability of the co-existence model for other cities is still unknown but the loss of architectural identity is highly likely to occur due to the dominant forces of globalization. The change and evolution process has seen cities like Dubai absorb the changes rather than perceive them as sort of dystopia.

[5] Delanty, G. & Jones, P. (2002). European Identity and Architecture. European Journal of Social Theory, 5(4): 453-466.

[6] Gospodini, A. (2004). "Urban Morphology and Place Identity in European Cities: Built Heritage and Innovative Design". In Journal of Urban Design, Vol. 9/2, 225–248. Carfax Publishing, Taylor and Francis Group.

[7] El-Sheshtawy, Y. (2000). "Sustainable Urban Development in an Age of Globalization: Towards a co-existence model in Dubai, UAE". In IAPS Vol. 16, Paris.

Figure 2.2 -Image of the Dome of the Rock Mosque, Jerusalem one of the most iconic Islamic architecture structure.

There are several factors inherent to place identity that influence the architectural development of cities. Climatic, economic, social, and topographic factors have been integral in the design of cities. However, traditionalism and modernism are evolving factors that affect the place identity features. Saleh (1998)[9] assert that professionals incorporate both historical features and new images to enhance the recognition of new buildings. Nonetheless, the forces exerted by commercialism seems to dominate the architectural designs and images of contemporary cities in Arab nations. Political factors have also played a role in nations or societies asserting their local identity through architecture. For instance, the Iraq's claims of Kuwait and the Second Gulf War played an important role in enhancing Kuwait's

[8] Saleh, M. (1998). The integration of tradition and modernity: A search for an urban and architectural identity in Arriyadh, the capital of Saudi Arabia. Habitat International, 22/4: 571–589.

architecture (Khattab, 2001)[10]. Kuwait's architects constructed buildings that reflected traditional Kuwait architecture towards the end of the 20th century in the 1990s. However, architects were still facing the problem of adopting modern architecture suitable for their communities and heritage while at the same maintain their dormant, traditional architecture.

The physical attributes of a quintessential Islamic architecture is one that meets the specific attributes of a particular geographical location and facilitate spiritual harmony and social interaction that is in conformity to the Islamic principles and values. As a result, evolution or civilization of the Islamic culture was not universal but specific according to regional diversity. Architects in Islamic societies face the challenge of striking between modernism due to present civilization and preserving the traditional Islamic architectural heritage. Architects in Arab nations were facing the dilemma of adopting modernity and technological progress but at the same time expounding Islamic knowledge in the design process. The modernization process of the Arabian cities happened differently with societies like Syria, Egypt, and Lebanon experiencing modernism much earlier but slower than the Gulf countries that underwent modernism much later but rapidly. Asfour (2004)[11] describes the change process or architecture in early Egypt. According to Asfour, architecture industry was going through a 'cutting and pasting' phenomenon that was introduced as a form cultural mechanism. The process involved copying ideas from European culture and combining them with logic to form a new form of cultural heritage. Cities like Abu Dhabi and Kuwait developed much later in the mid-20th century by western architects and designers

[9] Khattab, O. (2001). Globalization versus Localization: Contemporary Architecture and the Arab City. CTBUH Review, 1/3: 56–68.

[10] Asfour, K. 2004. Identity in the Arab Region, Architecture and Identity Research Project Sponsored by VolkswagenStiftung and Berlin University of Technology. Retrieved from www.architecture–identity.de/

who applied western city planning theories. These plans did not respect the traditional socio-cultural rules of the Arab communities who dwelled in traditional settlements.

Al-Naim (2005)[12] elaborates that the rapid modernisation as the Arab societies adopted new technology led to speedy urbanization that consequently led to a new phenomenon called cultural resistance. The cultural resistance emanates from designing new buildings from two ideological viewpoints of traditional and futuristic (modern) ideologies. Whereas the futuristic or modern ideology rejects historical architectural heritage, the traditional ideology considers the past designs as useful in shaping present and future works. The modern architectural designs do not support traditional Islamic culture causing a new form of cultural resistance. Aspects like communal living, home privacy, and the balance between private and public places are integral to Islamic families. The construction of new and modern buildings may fail to take in consideration some of these aspects crucial to the traditional family set up. The need to ensure a balance between the new archectural methods and the traditional styles is necessary to alleviate adverse effects like cultural resistance. The need to ensure the preservation of what works regarding Islamic architecture that support the general accepted worldview of Islam has never been this essential. In light of the rapidly evolving architectural technology, establishing the most appropriate measures of conserving traditional architectural designs is mandatory.

[11] Al-Naim, M. (2005). Architecture and Culture: Critical Studies on Arab Architecture, Vol. 137, Al-Yamama Publishing Inc. Saudi Arabia, Al-Riyadh Book.

Mahgoub (2007)[13] in his paper argues that regional architecture, as a result of the evolution process, were entering an important stage known as the critical regionalism stage. Critical regionalism referred to the stage where Islamic architecture could not be described as modern or international or nor be associated with historical/folklore traits and designs. The critical regionalism stage was prevalent during the 1990s and dominated debates by both local and international architects. Critical regionalism was concerned with specific design elements from a region that acted as contact agents with the local community. It incorporated the specific elements strangely that made them appear strange rather than familiar and difficult to understand. Lefaivre et al (2009)[14] elaborate that this approach destroys the sentimental value that the public may have on buildings but instead pricks their conscience of the buildings. The critical regionalism approach reintroduces the meaning of buildings besides their feelings of the buildings. Frampton (1985)[15] defined the concept of critical regionalism differently as the sociological context of the relationship between a building and its site and location. According to Framptom, the aim of critical regionalism is to arbitrate the effects of civilization or modernism with specific elements obtained from a particular region.

The concept of regionalism received more attention as countries faced western cultural imperialism perpetuated by western media and globalization. The regionalism concept was more profound in developing countries where modernism disruption of past cultural heritage was compounded by a rapid rate of development. The regionalism concept was much worse in these countries due to a lack of political stability and developed communications and technology that allow

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[12] Mahgoub, Y. (2007). *Architecture and the Expression of Cultural Identity in Kuwait*. *The Journal of Architecture*, 12 (2), 165-182.

[13] Lefaivre, L., Tzonis, A. and Stagno, B. (2001). Tropical Architecture: Critical Regionalism in the Age of Globalization, Edited by: Lefaivre, L., Tzonis, A. and Stagno, B. Wiley-Academy.

[14] Frampton, K. (1985). "Towards a Critical Regionalism: Six Points for an Architecture of Resistance". In The Anti-Aesthetic, Edited by: Foster, H. Washington: Bay Press.

universality. However, other scholars have questioned the relevance of the critical regionalism concept for countries/states with advanced economies like the UAE. Lim (2004)[16] argues that the concept relies on the possibility of correlating cultural elements with geographical regions that may be impossible in modern societies. Lim (2004)[17] critics the critical regionalism concept arguing that neglects vital factors that underlie architectural development in these countries. Instead, the concept imposes a static and narrow way of analysing the evolution of architectural heritage as local or universal or traditional vis-à-vis modern concepts. The concept assumes the diverse nature of local architecture. Moreover, a new trend emerged where architects developed new buildings that resembled new architectural designs in other countries rather than depicting the local characteristics of the regions they have been developed.

Though there are no universally and accepted principles of Islamic architecture, there are certain traits that are common in Islamic buildings. Though Islamic evolution has evolved since ancient period, certain principles have largely remained in use. Islamic buildings have always built on the principle of moderation. Moderation principle mandated for proportionality in the use of space dimensions to ensure compatibility in the buildings and also their space areas. Moderation also applied in the use of decorations to minimize financial costs as well as in estimating the heights of buildings. Privacy is another important principle in Islamic architecture. The privacy principle is Islamic buildings is manifested in specifying specific conditions for the heights of buildings, a rotated organization of tracks in streets, the use of bent refracted corridors especially those leading to the main doors. Besides, Islamic buildings use the Mashrabia that do not enable

[15] Lim, W. (2004). "Architecture, Art, Identity: Is There Life in Singapore After Tabula Rasa?" In Identity Research/Research Papers: Architecture and Identity, Sponsored by Volkswagen Stiftung and Berlin University of Technology. .architecture-identity.de.

[16] Lim (2004) Previously mentioned

anyone in the street to see inner spaces of a building. Other privacy rules include diving residential houses to two parts, ‘haremlek’ for women and ‘salamlek’ for men. These privacy rules have largely remained intact despite the evolution process of Islamic architecture.

2.3 Cultural Identity in Architecture:

2.3.1 Heritage:

There are many definitions of heritage. Some of the world's thinkers define heritage as follows:

-Alan Colquhoun:

"In his "THREE KINDS OF HISTORICISM", he defines the relationship between the historical dimension and contemporary reality, as well as emphasizes the importance of heritage for understanding the present and the meaning of architecture. The concept of heritage is explained in three terms. Firstly, theoretically, heritage is considered as a connecting tool between the sociocultural phenomena and the history. Secondly, is in the attitudes, where heritage is viewed as a tradition of the past. Thirdly is the artistic practice, which deals with heritage as an expression of the use of historical forms in contemporary architecture". (Afifi, Aiman 2013)[18]

-Charles Jankes:

"In his "The Third Way Between Fundamentalism and Westernization", the concept of heritage presents the features of local society, traditions, customs, religion and culture based on spirituality. He believes that heritage holds many

[17] Afifi, Amin, Environmentally Compatible Architecture as an Approach to Preserving Buildings of Heritage Value in Egypt, Master Thesis, Ain Shams University, 2013.page 7.

positives that can be combined with the information and technology revolution, to guide architecture towards the better and the contemporary." (Mohammed, Ragad, 2000)[19].

Some local and Arab critics have tried to find a concept of heritage through Arab and Islamic experiences such as:

-Refa'ah Aljaderjy[20]:

"Heritage is a value that gained its status and importance through the Tangible and intangible stability and its continuity.

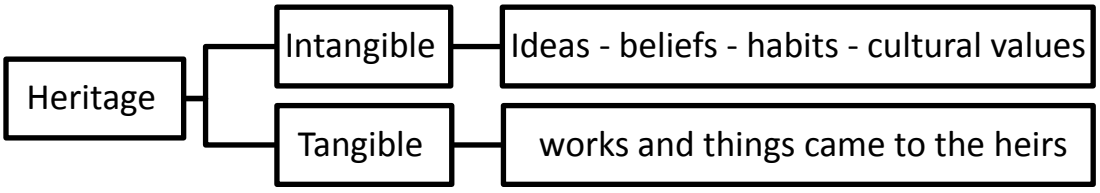

Figure 2.3 - definitions of heritage according to Refa'ah Aljaderjy

There are two ways to identify heritage. First, heritage as a physical presence may have strength or weakness, regardless of whether the building was able to continue to perform the original function or not. Second, heritage as part of an interaction between individuals and their environment, whether by an attitude which gives the physical assets special distinction and considers it as presence of them, or a more positive attitude in which heritage is incorporated with the contemporary architectural outputs". (Aljaredjy, Refa'ah1981)[21]

-Esmaeal Serajaldeen:

[18] Mohammed, Ragad, *Criticism and theory in architecture towards a framework for critique theories of architecture and measure the degree of restriction*, PhD Thesis, Cairo University,2000,page 42

[19] Aljaredjy, Refa'at, Heritage site in contemporary architecture in Iraq, Arabic Art, Issue 3, Wass Publishing, United Kingdom, 1981.

[20](Aljaredjy, Refa'ah1981) Previously mentioned, Page 9.

He connects the heritage concept with the word inheritance and defines it as what the ancients left behind, which means that the heritage is not only the buildings or structures built by our ancestors, but it also includes the intellectual framework and evolving social system with all of its traditions, customs, architectural features and civilization, which is based on faith. It is an evolving living heritage. Full awareness of it might preserve the local and self-identity.(Seraj Aldeen, Esmaeal, 1981)[22].

2.3.2 The Identity:

"There is not one specific definition of identity, but some believe that identity is the discovery of authentic content that determines who we are. Others believe that identity is a process of building and creating which depends on prevalent social and cultural conditions. Some thinkers make a connection between identity and tradition, where they see that traditions play a key role in creating a specific frame of identity. Traditions are considered one of the most important elements that define the identity of society. There are fundamental phenomena that express identity. The continuity and the resistance to environmental variables is one of them, as it is also expressed by the individuality that offers limits to something and enables us to distinguish it from other things.

Identity plays a key role in shaping the architectural features. It is the primary criterion for measuring the success of the architectural urbanism and its harmonization with the community. Therefore, it is possible to say that architectural identity arises as a result of the recruitment of specific elements, so the resulting environment is an effective means through which the community can

[20] Seraj aldean, Es,ael, Research from the symposium of the Arab city and its characteristics and Islamic cultural heritage, Madina El Monawara,1981Page 25.

confirm its identity and distinguish it among other societies. (Mohammed, Tariq. 2002)[23]

2.3.3 Factors affecting identity:

Factors that influenced the identity of contemporary architecture can be divided into cultural, social, economic and educational factors.

-The Cultural factors:

In the past, the culture of society was expressed and linked to the human understanding of religion and the ideas of faith which is directed to various behaviors. In Islamic architecture, the reflection of culture on architecture came in a way that was related to the principles and peculiarities of Islam but cultural changes soon led to the creation of a contemporary environment linked to Western thought and does not link to the Islamic approach. As a result, there have been significant and profound transformations in contemporary buildings as it became a continuation of the Western character despite the difference in environmental characteristics and the social formation.

As a result of the cultural changes, the community lived in a state of imbalance between local culture and imported culture. The media portrayed Western civilization in a very positive light. Its architecture was represented as a symbol of civilization and progress with its high buildings and wide streets. In contrast to this portrayal, the local Arab culture and its past came to be considered a symbol of backwardness and thus abandoned by many local architects. This led to the imitation of Western societies and the neglect of the cultural values and heritage of

[22] Tarek Abdel Salam Mohamed. Towards a Contemporary Identity of Desert Areas Architecture A comparative study of the architectural identity of the projects of Al Kindi Square in Riyadh and Intercontinental Hotel in Makkah. Symposium on Desert Symposium and Construction Problems, Saudi Arabia, 2002, Page 27.

society. New construction methods were introduced, new elements of architectural features and new urban fabric was conducted. Local architecture lost its inherited origins. Societies also lost their social and cultural origin, which led to the emergence of an architecture without identity. (Mohammed, Tariq2002)[24]

-The Social factors:

Social factors include the change in customs and traditions, change in composition of the family, the social mobility that has taken place and the social strata that have emerged in societies. For example, the shape and elements of housing units were influenced by the family's social circumstances. Residents tried to meet the growing needs by using some unconventional methods, such as annexing balconies, adding new rooms and removing windows. These methods have altered the facade and caused the loss of some architectural features that would normally represent a distinctive architectural style. Also, with the increasing emergence of the "sales under-construction" system, it allows each owner to customize the apartment finishes in a way that suits his material potential. This leads to a variation in the design of the units, with some differing in shape from the general framework of the building design and form and thus, gives the building a heterogeneous shape with contrasting colors.

[23] (Mohammed, Tariq. 2002) Previously mentioned, Page 5.

Figure 2.4 - Picture showing blocked windows and different finishes for apartments in the same building

-The Economic factors:

Economic conditions and the housing problem have also been reflected in architecture. The need for rapid building techniques to address the housing problem has led to the application of mostly Western building techniques, often without regard to its ability to meet the requirements of society and its cultural components.(Ateiah, Eeman, 1995)[25].

-The Educational factors:

Educational factors include the fact that many scholarships send the students for architectural education in the West, and upon their return, they bring back the Western style of architecture to their country. Universities have also been established along the lines of Western universities in terms of curriculum and methods.

[24] Iman Mohamed Attieh. The Problem of Architecture and Contemporary Urbanization in Egypt, Scientific and Applied Experiences of Urban Development in Upper Egypt, Second Architectural Conference, Assiut University, 1995, Page 11.

2.4 Architectural Evolution:

2.4.1 The impact of architectural development on architectural identity:

Architectural heritage has emerged as a reference point and runs parallel to the emergence of modernism and its dependencies. In contrast with modernism, there exists a framework of visual and structural constraints that preserves the character of the place, as a result of its continuity. When introducing the idea of modernism, the way it influenced and interacted with the method of dealing with heritage, it is worth mentioning the two categories that were summarized by the Iraqi architect "Rifaat al-Jaderji"[26] the trends in dealing with heritage:

- A trend that accepts heritage and tries to highlight it and use it functionally and visually.
- A trend that ignores the heritage consciously or unconsciously.

As mentioned by "Lubna Abdel Aziz",[27] there are three levels of the trend that accept the heritage:

-The naive and direct level of interaction:

It depends on the weak reproduction, indiscriminate use of heritage elements and the general appearance of heritage production. This approach is distinguished by the absence of the intellectual basis and the unawareness of history and the value of heritage.

-At the level of heritage features, (as a cover for the Modernism):

A trend that is common in many Arab countries, it relies on surface treatments for buildings designed according to the foundations of modern architecture, using the features of the ancient architecture. This trend is encouraged by the public, private and professionals.

[20] (Rifaat al-Jaderji)1981, Previously mentioned,

[26] Lubna Abdel Aziz, promoting Heritage sites, Master Thesis, Faculty of Engineering, Cairo University, 2001 Page 24.

-At the level of excellence in the formation (distinct trends):

Their levels and quality vary, as it is based on an in-depth understanding of the features of heritage and its value, awareness of its relationships with content and users and connects the external appearance with the internal structure by its ability to simplify, install and abstract.

Modernism is seen as a trend that ignores heritage, due to its nature to concentrate on the function. The principles of modern architecture include simplicity, purity and openness. Its expression of construction and abandonment of decorations are also characteristic of modern architecture. This trend ignores place, time, society, character, heritage and the elimination of all that is inherent. The rational and environmentally conscious trend also represents a trend that ignores heritage. Ignorance is the result of caution from falling into the trap of imitation and simulation and copying, as well as the desire to employ modern construction techniques.

2.4.2 The impact of architectural development on the preservation of historic buildings:

At the level of tangible heritage, preservation of the architectural heritage might be in one of two cases, either the archaeological building preserved without been used for its real use, in fact, the building will be considered as an archaeological tourist facility, Or that the building conservation plan includes reuse plan, to continue its role in society.

As mentioned earlier, there have been some trends that ignore the heritage, opposing the idea of heritage preservation is a result of various causes, Most notably the economic reasons, lack of sources and the issue of the funding for conservation projects, The inability of these building's owners to perform the

necessary maintenance, or seek financial gain may result from the sale or removal of these buildings, While ignoring the value of them as heritage buildings.

In addition to the emergence of modern architectural trends, the urban and architectural heritage has been negatively affected by a number of factors, such as natural factors, structural factors, and human factors.

Human factors represent a clear image of the impact of evolution on historic buildings and include:

-Human behavior:

Represented on the ignorance of these buildings value and the rawness of the way to deal with them, therefore not to maintain or destroy them, or the theft of valuable aesthetic items (such as marble, stained glass, etc.), neglecting, Wars, disasters and colonial waves and their impact on archaeological areas.

-Industrial Development:

Including a direct influence in the form of modern architectural patterns, contending ancient and affecting the visual environment, and may threaten construction, some are an indirect impact of vibrations resulting from modern technology, environmental pollution resulting from factories, workshops, transportation means and others, and its impact on building stones and materials. There is also an impact on the rise of the water table, due to the development of irrigation systems and the construction of dams, resulting in soil saturation, rising water levels which affect the foundations and walls of these buildings.

2.5 Historical Preservation:

There are many concepts and terms related to conservation, but what controls the preservation process of the archaeological buildings is what was stated in the international charters and recommendations, preserve the building with all its

values, and to keep it permanently protected, is the main objective agreed upon by all these conventions.

2.5.1 Preservation:

Giovanni Carbonara says about preservation: "It has several meanings in the technical language, sometimes giving meaning to maintenance, and in other cases, it means caring for the surroundings, such as the environment, problems of urban planning and laws related to the permanence of the archaeological building, The American Institute of Conservation determines conservation as follows: The profession that consecrates the preservation of heritage property for the future, includes the skills of preservation examination, documentation, treatments and preventive care that support research and education" (Alian, Jamal, 2005)[28].

Preservation of heritage is the work that aims to maintain and prevent damage or decay of part or all elements of the archaeological building, the concept includes all the methods that allow maintenance and prolonging the life of these buildings and their continuation. This concept is not new, but it has existed since ancient times, under this concept, there are levels and degrees constitute an integrated system of the treatment methods of the archeological buildings, contains thirty-two procedures such as repair and restoration, to re-employment and rehabilitation, and ends with reconstruction. Preservation of the heritage is an interlocking and integrated operation, it is a result of the interdependence of the responsible authorities, the architects, and the community, and works under the national

[27] Alian, Jamal, Conservation of Cultural Heritage, Knowledge World, Kuwait, 2005.Page 64.

legislation and international conventions for the preservation of heritage.(Almsri, majd,)[29]

2.5.2 Preservation Charters of the World Heritage:

-United Nations Educational, Scientific and Cultural Organization (UNESCO)

UNESCO was established on 16 November 1945, the organization set a goal for itself, it is a large and ambitious one, which is: building the bastions of peace in the minds of men through education, science, culture, and communication, by creating the conditions for the dialogue among civilizations, cultures and people, as well as work towards achieving an integrated vision for development .

-International Council on Monuments and Sites (ICOMOS)

It is an intergovernmental organization based in Paris, France. The Council was established in 1965. Its role is to promote the application of the theory of preservation of architectural and archaeological heritage, its methodologies and scientific techniques. Its activities are based on the principles of the International Charter for the Conservation and Restoration of Sites and Monuments (Venice Charter 1964).

-International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM)

It is An intergovernmental organization based in Rome, Italy, Created by UNESCO in 1956, Its legal functions are the implementation of research, documentation, technical assistance, training and public awareness programs to promote the safeguarding of movable and immovable cultural heritage.

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[28] Masri, Majd, Assessment of Methods and Techniques of Restoration in Palestine Nablus Case Study, Master Thesis, An-Najah International University.Page 21.

-World Heritage Centre (WHC)

A UNESCO-based committee, the Convention established the World Heritage Committee and the World Heritage Fund. The Committee and the Fund have been established since 1976, The purpose of the Convention is to identify, protect, preserve, rehabilitate and transmit the cultural and natural heritage to the future generations.

-Cultural Heritage without Borders (CHwB)

An international relief organization founded in 1995, it Works to preserve the endangered cultural heritage, believing that the destruction of an array's cultural heritage of is a destruction of everyone's cultural heritage, Where all people have their contribution to the world cultural heritage.

-Aga Khan Trust for Culture

It was officially established in 1988 in Geneva, as a private charity to integrate and coordinate the various initiatives of His Highness the Aga Khan in improving cultural life, In particular the built environment, which is the expression of cultural development in societies where Muslims have a presence.

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Third Chapter: Evolution Impact on Historic Preservation in Saudi Arabia

3.1 Introduction:

As a result of the rapid development witnessed by Saudi Arabia in recent decades, there has been rapid growth in Saudi cities, and an admiration for Western culture, among other factors, has led to the neglect of everything that is old. Some negative reactions to heritage buildings included the removal and destruction of a large number of them by their owners. After many of these buildings were damaged, establishing a governmental body for historic preservation has become a necessity to support a number of local charters and initiatives that regulate the methodology for dealing with historic buildings. Since the establishment of this governmental body, a large number of conferences and scientific meetings have taken place, producing several vital projects in the region. The body is keen to ensure the existence of sociocultural events accompanying these meetings, where craft activities are carried out in open group workshops to encourage the heritage appreciation and connect the people of the region with their heritage.

3.2 The Challenge of Preserving Architectural Heritage in Saudi Arabia:

Saudi Arabia has many historical and heritage sites. It was constructed by ancient civilizations that left their effects scattered in vast areas, at the planning and organizational levels. It is in the process of developing advanced plans and strategies but still needs legislative and executive regulations that will help preserve and develop historical and tourist sites. Most of these sites lack adequate infrastructure, as in the traditional town of Ala, badr, the migration route, and other religious and cultural tourist areas (Figure 3-1). The regions of Saudi Arabia require maps at the level of the municipality, to identify and categorize heritage and archeological sites. The manner of dealing with the buildings, facades, blocks and areas thereof shall be specified in detail. (Ahmed, Abolhyja, page 156)

Figure 3.1 –The Old Aalaa in the Northern Side of Saudi Arabia
https://scth.gov.sa/

The following is a review of the preservation and development experience of the historic Jeddah region:

Jeddah occupies a special importance for the Kingdom of Saudi Arabia as it represents the starting point of the development of architectural heritage preservation, especially with the deterioration of old Jeddah caused by the passage of time and individual encroachments (Figure 3-2). The Municipality of Jeddah has prepared a project to develop the old city of Jeddah and includes the restoration of buildings of value as well as the rehabilitation of the general environment within the city.

Figure 3.2 – A Building From Old Jeddah.
https://scth.gov.sa/

The city of Jeddah is a rich model for dealing with heritage buildings. This city is one of the cities that have experienced major transformation in its population. The main challenge in the preservation of this distinctive fabric was reviving and

raising the value of this old area and encouraging the users to deal with it as buildings of value as well as to find uses that ensure the continuity of dealing.

The preservation of old Jeddah is one of the modern conservation projects that Saudi Arabia has recently established. The Center for Planning and Architectural Studies suggested resurrecting traditional activities within the old city. Conservation, protection and development are integrated to include both architectural aspects and social and economic activities.

The rehabilitation for Jeddah is mono-financing projects. Since the financing process is the responsibility of the municipality of Jeddah (Figure 3-3) , the municipality has played a major role in preserving the city by providing the necessary financial and technical support to encourage people to rebuild their homes and provide the necessary expertise and techniques to maintain it. This is in addition to improving the urban aspects, by integrating it with urban life and providing life requirements to reduce the migration of its population.

Figure 3.3 – The Restoration of Old Jeddah
https://scth.gov.sa/

To facilitate implementation, follow-up and evaluation, the Old City was divided into three zones. Each zone has a method of conservation and appropriate development, so that the first zone contains most of the historical heritage buildings, the requirements, and the construction codes are specific to preserve

their old characteristics. Meanwhile, the second zone contains the commercial and administrative services in a framework compatible with the old city. In the third zone, the building requirements and future development of the existing residential uses were determined.

The project has been implemented in two main stages:

The first phase:

Specialized in urban fabric, where the basic services were introduced with paving roads, lighting and fountains (Figure 3-4).

The second phase:

Dedicated to repairing the old houses. After establishing a database for each building, the owners of the old houses were encouraged and assisted to repair their property. The owners have played a prominent role in achieving the goals of this stage.

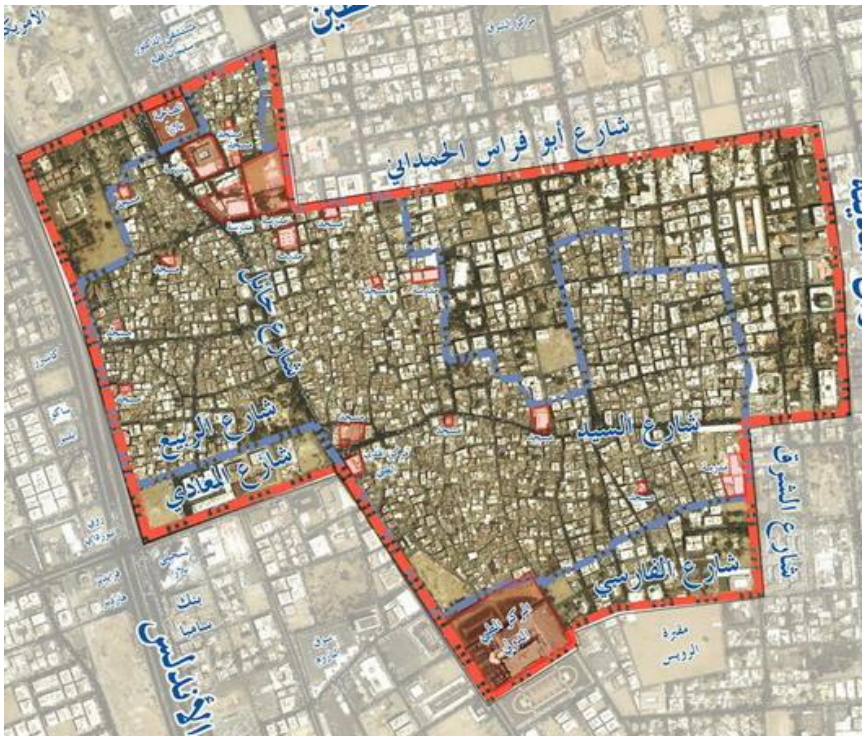

Figure 3.4 – The First Phase of Old Jeddah Rehabilitation

http://www.mbc.net

3.3 National Heritage in Saudi Vision 2030:

The establishment of a governmental body, concerned with the conservation and development of architectural and urban heritage in the mid-1990s, became a necessity as a result of the economic situation at that time. When oil prices fell, tourism was one of the tributaries that were developed to support the national economy. This led to the establishment of the Tourism and Heritage Authority which was established twenty years ago, dealing with tourism and heritage as a supplier of the economy and the national income. This economic situation is very similar to the economic situation in the region today. The decline in oil prices is significantly similar to that which happened 20 years earlier.

The decline in oil prices today resulted in the modern vision adopted by the Government of Saudi Arabia under the name of The National Transformation. The vision included major divisions: a thriving economy, a vibrant society, and an ambitious homeland, including broad plans. Through economic, social and development programs, the aim was to rehabilitate the region in the post-oil phase. This vision singled out the tourism and heritage sectors, establishing some objectives to work towards. These objectives were developed according to the urgent needs, the social situation of the time and organizational maturity and structural establishment. This governmental body contributes to the completion of the process initiated earlier, which resulted in a breakthrough in concepts and a positive change in the perception of tourism as well as heritage. This gave tourism and heritage a social demand and an economic value.

The strategic objectives formulated by the National Vision 2030 to develop tourism and heritage include four objectives, each of which involves several axes. One of these objectives is related to the preservation of architectural heritage and the development of urban heritage. The goal is to protect, rehabilitate, develop and

raise awareness of national heritage sites. An important focus of this goal is to preserve the cultural and historical heritage of Saudi Arabia, Arab and Islamic states. Additionally, promoting further awareness of the importance of preserving and highlighting the national identity, its definition and carrying it on to the next generation, is another very important aspect of the strategic

3.4 Conclusion:

The preservation of Saudi Arabia's architectural and urban heritage has become an important issue for both stakeholders and authorities. This is evident in the steps taken by the concerned authorities in order to preserve and develop archaeological areas and because awareness plays an important role in controlling the behavior of individuals towards heritage buildings, especially in a society that includes many different nationalities and cultures, the development and promotion programs have included accompanying social activities, which help to encourage individuals to contribute to heritage preservation and to enhance its positive impact on society..

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Forth Chapter: Studying a model for the sustainability of cultural heritage

4.1 Introduction:

The Islamic civilization gave focus on the morality and faith of the individual. At the same time, it is interested in the individual's physical state. That is why Muslims paid enough attention to health care and built hospitals (Bimaristan) which were provided with multiple services to meet the needs of patients whether they are male or female, rich or poor, or crippled or non-crippled. This is based on the fact that the Islamic civilization focused on the individual being interactive entity with others; therefore it included all religious, physical and social aspects. The development of therapeutic buildings increased until it reached its greatest stage in the Abbasid period (from the century – to the century), and this development in that time became manifestation of challenge and beauty.

At the level of the development of medicine and science and the extent of keeping in line with other peoples and nations, another aspect of the therapeutic buildings has developed them. They were developed aesthetically and spiritually and this development contributed to the creation of therapeutic healthy environments that affect the body, spirit and mind of man to elevate him and help him to respond to healing. They were interested in simulating the Gardens of Paradise and the application of aesthetic sense inside the buildings for the purpose of having the sensory and moral pleasures.

With the passage of time and the evolution of technology, the emphasis on the importance of the aesthetic meanings decreased. This reduced the focus on the therapeutic aspects inside the buildings. It negatively reduced the means which cause enjoyment for patients inside the building. There was a new approach that concentrated on the physical treatment and neglected the treatment of spirit and mind. This resulted in the therapeutic buildings lacking the spiritual aspects which embody the spiritual values derived from Islam.

4.2 The Islamic Architecture:

The term “Islamic architecture” is not limited to things that are related to buildings or houses with Islamic decorations. It in fact, it refers to a construction method that considers the Islamic teachings and legislation in their design to fit the lives of Muslims in particular and the society in general. It also refers to the architectural system of meanings and aesthetic values which are steady and balanced in terms of form and content, and integrated with the environment. Engineer Shaukat Al Qadi[30] defined this in his thesis "Islamic architecture in Egypt" as "architecture that is committed to the teachings of Islam in building".

According to the history of Islamic Law, the first building to be mentioned in it is the Holy Mosque in Mecca. The existence of any decoration in this place at that time was unimaginable. It was a simple place whose building was based on worshipping Allah, Exalted is He. Therefore, we conclude that the Muslim architecture observed the function of the building and then aesthetic values in a manner that enhances the functional performance of the place and does not contradict with its function. The Islamic conquests had a significant impact on the development of all spheres of life in general. This effect was extended to include the evolution of architectural field in particular where it introduced new architectural styles that suit the Islamic legislation, a matter which helped to produce a great replete with vivid examples of Islamic architectural innovations that still exist up to the present day.

Islamic architecture has taken into account human life by applying a suitable approach based on Islamic legislation. It focuses on fixed Islamic rules inclusive of all walks of life with enough attention graded from the general to the specific, the

[31] Al-Qadi, Shawkat Muhammad Lutfi Abdul Rahman (1998 AD). Islamic Architecture in Egypt, a Thesis for PhD degree, University of Asyut, Egypt.

outside to the inside, and the form to the content within the frame of unity of Islamic architecture based on Tawhid (monotheism).

These rules which are quoted from the Quran and followed by the Muslim architect in the construction and planning of residential buildings method are summarized, as mentioned by researcher Fagr Ali Abdul Mohsen Altawayha, in the Islamic rule based on the Hadith" There should be neither harming (darar) nor reciprocating harm (dirar).," This is a rule which applies broadly to all aspects of urban and daily life. This rule is interpreted as follows: No person is allowed to infringe on the rights of others. The Islamic architecture observed the Islamic rule which involves "Lowering the gaze" in the design of the broken entrances and the other architectural elements that maintain the sanctity of the people. "Privacy:" The rule of Privacy came to withhold and prevent a lot of problems. The Islamic architecture respected the privacy rights of the individual and society and thus it applied the design of the houses which are open to the inside in the majority of buildings and whose model became a general principle in the Islamic architecture. In light of this principle, Islamic architecture provided the inner courtyard to maintain the privacy for the inhabitants of the building and to ensure the heavenly contact and other requirements. The Islamic architect paid enough attention to the most accurate details at the level of the dwelling, the urban level and the city plan. "Solidarity: Solidarity is also observed in this respect. This is based on the fact that community is well established as long as there is cooperation and solidarity between its individuals in bringing benefits and fighting harm. The right to individual property is guaranteed to all so that the individual property does not prevail over the public right and that the public right does not prevail over the rights of the individuals to property. Islam called for the maintenance of the public property and the buildings of others. It criminalized any infringement on such rights. Moderateness: Moderateness is the balance between matter and spirit,

wealth and poverty, and function, form and content." Even the right of the neighbor is observed in Islamic architecture. For example, no person is entitled to block the light, wind and other necessities housing from others; furthermore, no one is allowed to raise a building in a manner that might violates the sanctity of neighbor; "the right of precedence:" This is also taken into account in the Islamic architecture. It is used to settle the neighbor's disputes pertaining the rights of ownership or doors and windows openings so as not to conflict with the principle of " There should be neither harming (darar) nor reciprocating harm (dirar).,". For example, no one is allowed to build his house in a manner that might cause infringement on the privacy of others. The right to priority: This is the right to buy the neighboring land if offered for sale. One of the impact of the application of this rule is that there are full residential neighborhoods owned by the same family where no one from other families is permitted to own a house amongst them without their consent.

4.2.1 History of therapeutic Buildings:

Muslims became interested in the therapeutic buildings, known as (Bimaristan), in the Islamic era. Muslims developed Bimaristans and provided them with the necessary services in addition to the aesthetic meanings that were considered as a characteristic of Islamic architecture which made them as manifestation of challenge and beauty.

The word "Bimaristan" in dictionaries and history books was defined as a "Persian compound noun consisting of two words (Pemmar) and "stan" where the former means " patient" and the latter means" place." The Muslims used this term to refer to all therapeutic buildings, then it became shortened in use as (Marstan) as

mentioned by Al-Jawhari on Al Sahah "(Isa, Ahmed, history of the Bimaristan in Islam)[31]

The Bimaristans were considered one of the architectural structures such as mosques, Hospices, domes and schools built and developed by the Muslims and a lot of money were consecrated as endowments to them. They gave rise to more development of Islamic science and medicine which became more accurate. Taqi al-Din Maqrizi said: "The first Bimaristan in Islam was established by Al-Walid bin Abdul Malik , the Umayyad caliph, in the year 88 AH / 706 AD. Doctors were made to work there in consideration of remunerations and the leprosy patients were made to live there and not to leave the Bimaristan until they receive full treatment. The leprosy patient and the blind were provided with livelihood. Al Walid bin Abdul Malik was one of the best Kaliphs of the Umayyad period. He built mosques and provided the leprosy patients with livelihoods. He dedicated a servant for each crippled and a guide for each blind, lest they should ask citizens for help. "(Isa, Ahmed, history of the Bimaristan in Islam)

4.2.2 Selection of the place of Bimaristan:

The selection of a place for the building of a Bimaristan was based on a special method where the best location was that which had the purest air. In order to specify the appropriate location of a bimaristan, a goat was slaughtered and cut into four parts. Each part was put in a certain place in the city. The place where the meat was less spoiled was the most suitable place for the building of a Bimaristan.

Al- Razi has suggested this method when Adod Al-dawla decided to build the famous Bimaristan in Baghdad, where some doctors suggested building Bimaristan over the hills to get fresh air and as Nasr Al-dawla did when building his huge

[32] Eissa, Ahmad (1401 AH). History of Bimaristans in Islam, Al-Raed Al-Arabi Press, Beirut.

Bimaristan. An example is the Bimaristan in Homs, which is next to the Great Mosque where it was near the patients residence.

4.2.3 Types of Bimaristans:

Fixed Bimaristans : They were built within the city in a place dedicated for them. They were divided into two divisions, one for men and the other for women. All the various treatment facilities, medical equipment were available. There were special divisions for leprosy patients, prisoners and foreigners. There were also mobile Bimaristans: These Bimaristans appeared in the Abbasid Period. They were established in order to provide medical services to remote areas. Example of these are ambulance and al sabil Bimaristans.

4.2.4 Examples of Bimaristans:

- al-Sultan Qalawun Bimaristan Egypt:

An example is Bimaristan al-Sultan Qalawun which is "the most prominent Bimaristan established in Islamic era. It was built in 682 AH by Ibn Tulun who consecrated endowments to it, and stipulated that soldiers and Mamluk*s* would not benefit from it, since soldiers and Mamluks belonged to him, that is to say He dedicated it for civil people. This Bimaristan had two bathrooms, one for men and one for women. Ibn Tulun set rules for the use of this Bimaristan. Before entering the Bimeristan, the patient removed his/her clothes to be kept together with his money by the Bimaristan trustee. The patient got the medicine, clothes and food for free while he was under treatment. After treatment he ate chicken and bread. Then the patient took his/her money and clothes to leave the Bimaristan. "(Kaadan, Dr. Abdel Nasser, Bimaristan Al- Mansouri.

The researcher Yousef bin Nayef al-Sharif in his research entitled "Evaluation of architectural design standards for hospitals in light of Islamic values" divided Bimaristan al-Sultan Qalawun to 6 main divisions. (Figure 4.1)

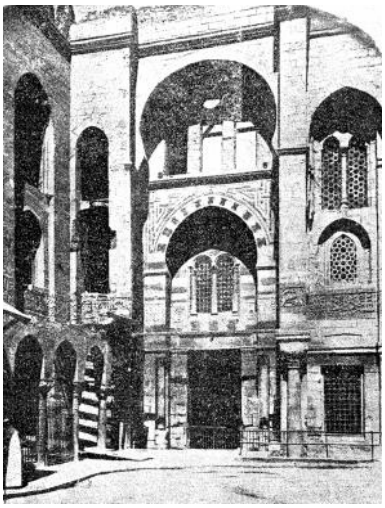


Figure 4.1 - al-Sultan Qalawun Bimarestan's Door.(Eissa, Ahmad,72)

-Nur al-Din Bimaristan in Damascus:

The Nur al-Din Bimaristan in Syria was built in 1154 AD. At the present time it is a museum of Medicine and Science and it is considered as a distinctive archaeological landmark in Damascus. It consists of two divisions, a men's division and a women's division. Each division had its men and women supervisors and servants. Each division was divided into rooms for: mental medicine, internal medicine, surgery, ophthalmology, osteopathy and leprosy. This Bimaristan was famous for its internal spacious yards and constantly running water (Figure 4-2).[32]

[32] (For more information refer to the Appendix).

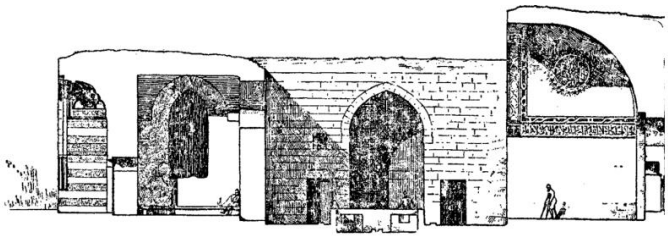


Figure 4.2 – Al-qaimari Bimaristan in Syria .(Eissa, Ahmad,151)

4.2.5 The Paradise Principle:

The spiritual and aesthetic vision of the typical environment was represented in the description of the Gardens of Paradise in the Quran; accordingly, the Paradise principle is based on the simulation of paradise as described in the Quran. This principle is based on the interaction of the Muslim architect with the environment to fulfill the human life values in a manner that suits the lifestyle of a Muslim and follows the Islamic legislation.

This principle is also called the principle of environmental contrast, where the architect focuses on the role of parks and gardens in a desert environment with a harsh climate.

Garden design in the early Islamic eras was simple, but with the development of environmental and social life Muslims grew increasingly interested in gardens. They surrounded gardens with high walls and palm trees to provide privacy. The Islamic design was dominated by geometric shapes in terms of squares and rectangular units or geometric patterns. The Muslim architect also cared for the presence of water in all parts of the park.

Trees and plants are among the elements of the Islamic Garden which were inspired by the Quranic description of the Gardens of Delight: " Allah, Exalted is

He, says " And the shades of the (Garden) will come low over them, and the bunches (of fruit), there, will hang low in humility. " Al-Insan / Man, 10[33]. So trees were used to complete the visual enjoyment in Islamic gardens, get the benefit by the completion of the image of the Garden to achieve privacy and have a multiple variety of fruits, shade the open spaces, prevent sunlight reflection on the facades of buildings and reduce the glare.

The various uses of water:

Allah, Exalted is He, says " Do not the Unbelievers see that the heavens and the earth were joined together (as one unit of creation), before we clove them asunder? We made from water every living thing. Will they not then believe? " (Al-Anbiya 30)[34]. Therefore, water is the origin of life. Water in the Islamic Garden was in various forms such as water pools surrounded by shade trees, fountains, pipes from which water falls to make the effect of the murmuring water or Sebils. Architects increased the beauty of some water elements such as the fountains and sebils by covering them with colorful mosaics to increase their visual aesthetic value. Due to the fact that most Islamic countries are located in hot environments the architect has tended to enclose these gardens with walls or to build them in the interior courtyards to protect them from dust and to improve the climate. He also surrounded these water elements with trees to reduce water evaporation rate. He also observed reusing water in irrigation and agriculture. The shaded and exposed places are also taken into account in the Islamic Architecture. Allah, Exalted is He, says " Truly the Righteous will be in Bliss. On Thrones (of Dignity) will they command a sight (of all things).(Al Mutaffifin, 22,23)[35].

[33]The Holy Quran, Page 579.
[34]The Holy Quran, Page 324.
[35]The Holy Quran, Page 588.

The Muslim architect inspired the design of sofas and seats next to plants and water areas to strengthen the visual and audio pleasure. These were made of wood or ceramic tiles. The shaded wooden stalls were used for protection from the sun and hot climate. They had small openings so that the users can enjoy the pure fragrances and beautiful sounds of the surroundings. Allah, Exalted is He, says And if the deceased was of those brought near to Allah , Then [for him is] rest and bounty and a garden of pleasure. "

Surat Al-Wāqi`ah (The Inevitable) - 0.87 to 88)[36]. The previous verse indicates that pure fragrances cause' joy and happiness to the human being through the sense of smell, so the Muslim architect takes into account the architectural use of plants, flowers and fruits of pure fragrance. As for the sounds, Allah, Exalted is He, says, " In a Garden on high, Where they shall hear no (word) of vanity " (Surah Al-Ghashiya 10 to 11)[37]. Examples of the beautiful sounds are rustling trees and singing birds to bring sensual pleasures for the human being. The Muslim architecture takes this, together with removing the noise disturbances of others, into account while designing.

The Functioning of Art of Arabic Calligraphy:

Allah, Exalted is He, says " And wherefore did you not say when you entered your garden: It is as Allah has pleased, there is no power save in Allah? If you consider me to be inferior to you in wealth and children, " Al-Kahf 18: 39[38]. The Muslim architect inspired from the description of Paradise in the Quran all the elements of gardens to increase the aesthetic value and bring recreation for the human kind. This is also to remind the user of the building of the gifts of Allah, Exalted is He. This means that the Islamic architecture has improved the efficiency of buildings

[37] The Holy Quran, Page 537.

[36] The Holy Quran, Page 303.

[35] The Holy Quran, Page 298

by adding elements of nature, and that the Islamic architecture has both aesthetic and functional objectives because it is based on the Islamic legislation which is taken from the Quran and the Sunnah.

In the Bimaristan, gardens gave a sense of comfort. They were a source of sensual and spiritual pleasure. The aesthetical needs relate to the spiritual and practical life of a Muslim. This is reflected in tawhid the belief of Tawhid; it is impossible to separate the aesthetical and spiritual values from the function of the building because this can lead to a clear uncontrollable functional disorder.

4.3 Field Studies:

To reach the findings, the researcher has relied on two types of field studies. First, a field study was conducted to monitor the current state of the existing therapeutic buildings in the study area. A random sample of four therapeutic buildings in different areas within the study spatial boundaries was selected. The extent to which the paradise principle was applied to the design and construction of the buildings was examined. In the second part of the study, questionnaires were distributed to a random sample of the 125 therapeutic building users with the purpose of measuring the psychological effect of the building in its current state on the users whether they are patients or staff members.

4.3.1 An Analytical Study of Existing Buildings:

Four buildings, A, B, C and D, were selected from Makkah in the Kingdom of Saudi Arabia. One of these buildings is still under construction and it is about to be completed. To conduct the study, the researcher relied on the approved maps and drawings of the building and the design of the façade and view. The other three buildings were evaluated through field visits and through reviewing the available maps.

Building A is a 6-story modern integrated hospital combining the traditional and contemporary style and uses the modern technologies.

Building B is under construction and it comprises three main divisions, namely a residential hotel, commercial shops and an integrated hospital which is the subject matter of this research. The external entrances of each division are separate; however, all the divisions have been connected interiorly. Due to the topography of the location, the eastern and southern façade of the hospital in the first and second floors are submerged.

Building C is a 3-story independent building including the outer clinics which are detached from the main building of the hospital and attached to the existing building which has been studied. The foyer is triple-height and it is naturally lit.

Building D, a single-story building, is used for kinetic rehabilitation and it houses the oldest specialist kinetic treatment centre in Saudi Arabia (For more information refer to the Appendix).

-Approach:

The collected information was analyzed and divided into three different parts. Each element existed in each part inside the building.

The first part relates to the extent of the reflection of Islamic heritage and architecture on the building.

This was verified by analyzing the use of natural materials such as wood and ceramics and the other elements. In addition, the use of the earth colors, Islamic inscription, huge dome and stalactites, all which have good effects on the patients according to the method used in old Islamic therapeutic buildings[39].

The second part relates to the role of the building in the treatment process:

[1] Refer to 4.2 History of Therapeutic Buildings

This was verified through the study of the extent of the provision of adequate quantity of natural lighting, the use of modern building technologies, and the availability of natural ventilation in the Interior Spaces.

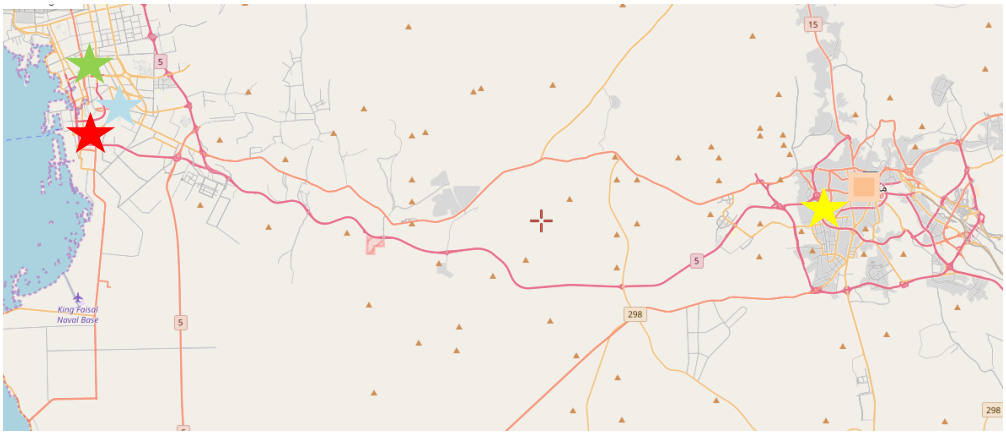


Figure 4.3 -Map of Mecca
https://www.arabtravelers.com

Figure	Refers
★	Building Number A
★	Building Number B
★	Building Number D
★	Building Number C
▮	The Holy Kaaba

The third and final part is on the study of the responsiveness to the principles of the Bimaristan:

This was verified by means of studying the following: whether the special educational sessions were held and attended by patients, like the science sessions in the Bimaristan; the mosque's location from the building; the provision of internal gardens; the provision of interior and exterior water areas; the extent of the provision of external gardens; the provision of a pharmacy and a market for the

therapeutic building; and the observance of privacy, and ensuring the availability of a pharmacy in the therapeutic building.

- Discussion:

First: the reflection of the heritage of Islamic architecture and art on the building: With regard to building (A) Dr. Walid Fetehi, in his book entitled " Healing by Design", said "in spite of the availability of the latest high-tech medical equipment and in spite of taking into account the availability of better standards of health care at the center, the building itself tells about the heritage of Islamic architecture where the designers avoided the use of any kind of gleaming glass fiber, so that the building reflects the prestige of science and advancement of medicine; therefore these materials were replaced with other natural materials such as wood, marble and other elements which have a positive impact on the patients". Also, the center reflects the history of the region by using Islamic inscriptions and the quiet colors. The Quranic verses were also inscribed on the walls of each of the corridors and the patients rooms; in addition, arches and geometric shapes were inscribed on the corridors walls to reflect the Islamic identity. Through the design of the center there has been a focus on Islamic spirituality and its role in the healing process through the use of the huge dome and stalactites, And as an application of the standards of Islamic architecture the building has been divided in the upper floors into two towers where the south tower was made two floors higher than the north tower to create shadows and prevent hot airflow from access to the garden that connects the two towers on the roof of the ground floor (Figure 4.4).

Figure 4.4 - the Islamic Identity Influence. (Fitaihi, Walid, 32)

As for Building (B), the designer tried to express his influence of the Islamic design through using the wooden oriels in the window openings. However, these oriels serve an aesthetic, not functional, purpose. (Figure 4.5).

Figure 4.5 - Building B Window coverage
http://www.mrda.gov.sa

With respect to Building No. (C), it does not reflect the Islamic architecture in its design (Figure 4.6).

Figure 4 .6 - Building C Facade

As for Building No. (D), it also does not reflect the Islamic architecture in its design (Figure 4.7).

Figure 4.7 - The building D

Second: The extent to which the Building enhances the Curative Process:

The design of Building No. (A) helps expose the patients to an abundance of light through the openings overlooking the internal gardens to support their feeling of serenity, thus promoting the recovery process (Figure 4.8). The double height of the ceiling in the foyer is used to make the patients and visitors feel a warm welcome and hospitality and to diminish the fear and tension that patients often feel during a visit to the hospital.

Figure 4.8 - The Inner Court in A Bulding. (Fitaihi, Walid, 37)

In Building No. (B), as previously mentioned, the ground, 1st and 2nd floors are submerged from the eastern and southern frontages as a result of the site topography (Figure 4.9). The location of patients' examination rooms in the eastern wing on the 2nd floor, means that they are not exposed to any natural light or ventilation. Also, there is number of staff offices located on the eastern side of the first floor, which also means that they are not exposed to any amount of natural ventilation and light. On the other hand, the radiology rooms are located on the west side of the same building. As a result of the openings in the south frontage, the radiology rooms are isolated away from natural light, by a corridor separating them from the frontage glass.

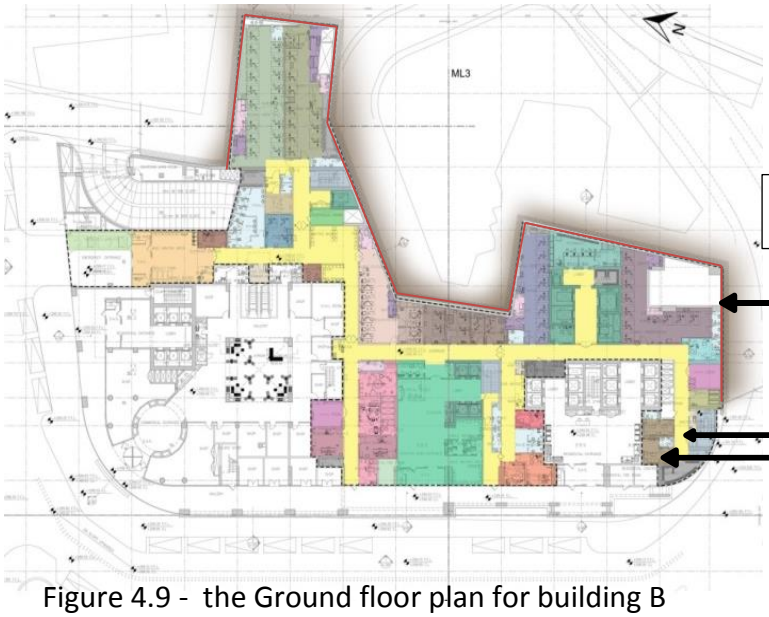


Figure 4.9 - the Ground floor plan for building B
http://www.mrda.gov.sa

In Building No. (C), it is designed in a manner so that the foyer is built three floors high, providing a skylight and glass facade to allow as much natural light into the building as possible (Fihure 4.10). These skylight openings are made to provide depth to the building with the natural light. The places that are not exposed to the natural light are used to serve the functions of non-patient facilities such as stores and staff's lounges and offices.

Figure 4.10 - The Entrance Celling Height

As for Building No. (D), it is divided into three sections connected by the corridors that are designed with large windows to allow the natural light into all rooms overlooking the natural landscape (Figure 4.11). As stated earlier, the building consists only of the ground floor. The gym facility is in the heart of this building, so its ceiling has been raised up to the level of the surrounding corridors and the openings are made to allow the indirect natural light into the gym hall. The skylight is used in the foyer to provide as much natural light as possible. In the physical and occupational therapy rooms, the large glass windows are used to provide a view overlooking the gardens and allow the sunlight in.

Figure 4 . 11 - The Natural lighting in building D

Third: being affected by the Principles of Bimaristan Building:

In Building (A), the considerable influence of the Bimaristan building principles followed in the past is apparent, so the designer planned the mosque in the heart of the building and made it accessible. He also established a center for patient's teaching and education in the heart of the building. The education center provides the patients with the opportunity to identify the various diseases and treatment methods, therefore, allowing the patients to select the most appropriate treatment

method (Figure 4.12). A number of gardens around the building are designed. One of the internal gardens is a roof garden located on the second floor above the mosque and contains two octagonal shaped fountains. They are surrounded by green plants, as well as encircled by a path for patients to walk in the open air. Moreover, a garden nearby the building is established. In order to maintain the privacy, the hospitalization rooms include only one bed and there are not any common hospitalization rooms.

Figure 4.12 - Hospitalization Room in Building A (Fitaihi, Walid, 65)

As for Building (B), it is focused on the privacy through separating some areas for women and men. For example, the waiting areas, radiology rooms, examination rooms and similar spaces that entail the privacy for patients are all separated for use by women and men. On the other hand, the building does not contain any internal or external water bodies. There is a roof garden, but it does not provide the appearance to the users of the hospital building, due to its location on the roof of the eighth floor of the hospital. However, it provides the appearance to the visitors of the residential hotel affiliated to the same building. Moreover, it may help the patients to get the treatment through walking in the open-air.

In Building No. (C), it is concluded that the privacy has been achieved only through separating the lounges and waiting rooms.

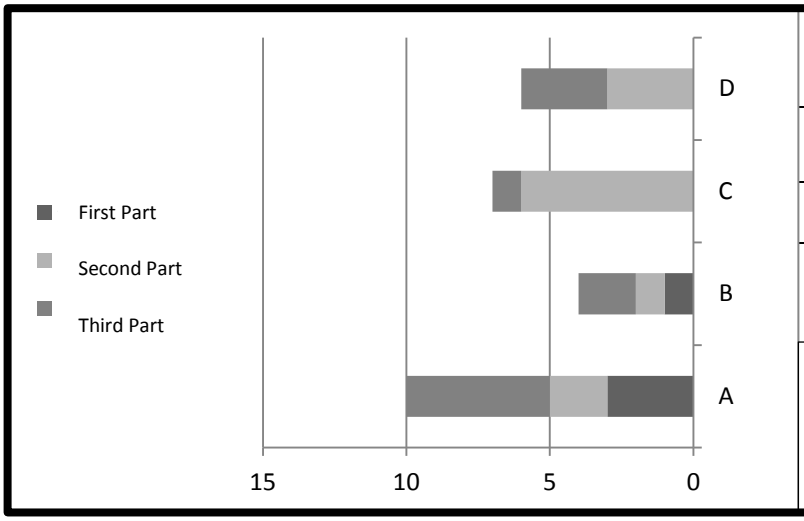
In Building No. (D), the interior gardens are used, as each hospitalization section contains a garden in the heart of the building, where the physical and occupational therapy rooms overlook this garden (Figure 4.13). The privacy is maintained by

separating the hospitalization sections into a part for women and another part for men. It is not allowed to hospitalize more than one patient in the same room in order to preserve the privacy. The fountains are installed in the building foyer.

Figure 4.13 -The inner court and fountains in building D.

Parts	Building (A)	Building (B)	Building (C)	Building (D)
1. Islamic heritage and architecture	1. Natural materials 2. Using Islamic inscriptions and the quiet colors. 3. Huge dome and stalactites	1. Use oriels in the window openings as an aesthetic for.	No reflect	No reflect
2. Role of the building in the treatment process	1. Expose the patients to an abundance of light 2. Double Height of the ceiling	1.Some users are not exposed to any natural light	1. Foyer is built at height of full three floors along. 2. Providing a skylight 3. Glass facade to allow natural light. 4. Skylight openings in the depth of the building 5. Places that are not exposed to the natural light are used to serve the functions of non-patient	1. Large windows to allow introducing the natural light. 2. Allow introducing the indirect natural light to gymnasium 3. The skylight is used in the foyer.
3. Responsive ness to the principles of the Bimaristan	1. The mosque in the heart of the building 2. Center for patient teaching and education 3. Number of gardens around the building are designed 4. Use the fountains 5.A garden nearby the building is established	1. Provide privacy. 2. Establish a public garden within the building	1. Provide privacy	1.. Number of gardens within the building 2. Provide privacy 3. Provide fountains

Table 4.1 -The achieved parts for each building



Element	A	B	C	D
Islamic Architecture	3	1	0	0
Promoting healing	2	1	6	3
Principles of Bimaristan	5	2	1	3

Fig 4.14 -Achieved parts for each building.

-The Findings:

1. As shown in (Table 4-1) and (Figure 4.14), the influence of the Islamic architecture is reflected in Building (A).
2. In three out of four buildings, it reflects the awareness of natural light in the treatment areas.
3. Buildings (A), (C) and (D) reflects the focus on the main foyer and gives it a special importance in the designing aspect along with providing an abundance of natural light.
4. In three out of four buildings, internal or external gardens or both are provided as an awareness of its influence on the patients and curative environment.
5. Most of Bimaristan building principles are not represented in the buildings, except for the privacy element which is the only element achieved in the four buildings.
6. Building No. (A), it achieved the most Bimaristan building principles.

4.3.2 Staff and Patients' Questionnaires:

-Approach:

The questionnaire is distributed to a sample of 125 people who use the remedial building.

The sample is selected randomly from three remedial buildings in Mecca, KSA. Two buildings are subject to the field study, as already explained in Clause (4.3.1) of this Research, viz. Buildings (C) and (D).

The selected sample is varied among the patients, caregivers, physicians and nurses.

The questionnaire is closed and the answers are specified (Yes and No).

The questionnaire includes 4 paragraphs where each paragraph includes a set of questions. The first paragraph measures the achievement and inclusiveness of services provided in the healthcare building and consists of 4 questions. The second paragraph measures the extent of the reflection of the Islamic architecture heritage and art on the building and consists of 3 questions. The third paragraph measures the promotion of the curative process through direct contact with nature and consists of 4 questions. Finally, the fourth paragraph measures overall rating of the building from the viewpoint of the participants in the study and consists of 6 questions.

All participants are polled through written questions delivered to them by the administrators of the study. There is no specific time limit to answer questionnaires. The questionnaires are collected immediately after completion.

The results were achieved by calculating the percentage for each of the answers along with studying the relationship of these percentages with each other.

- Discussion:

With respect to the first paragraph outlined in the Chart (Figure 4-15) and (Table 4-2), it illustrates the system of patient service during the daily hours and its

inclusiveness during the morning and evening hours. 75.4% of the participants state that services are provided only during the morning hours not the evening hours. This suggests that despite the building development there is a malfunction in the continuation of visitors. Moreover, 50.4% of the participants in the study indicate that the building is not suitable for the handicapped. Since the building provides a medical healthcare service that must be made available to all members of the community of the disabled and healthy people, it is necessary to make services more accessible for the handicapped through increasing the height of distance of some supplies or surfaces or to provide the water closet assigned thereto and other facilities. 60 % of the participants in the study confirms the lack of places to isolate the patients with infectious diseases from the healthy people. Therefore, the hospitalization buildings in the ancient Islamic eras include some advantages are not included in the current hospitalization buildings. For example, in ancient times, a number of full-time physicians were assigned during the daytime hours and then another number of physicians assigned during the evening hours shift. In addition, regarding the inclusiveness of the handicapped and healthy people, some servants were assigned to provide the services to the handicapped. This service also includes psychiatric patients.

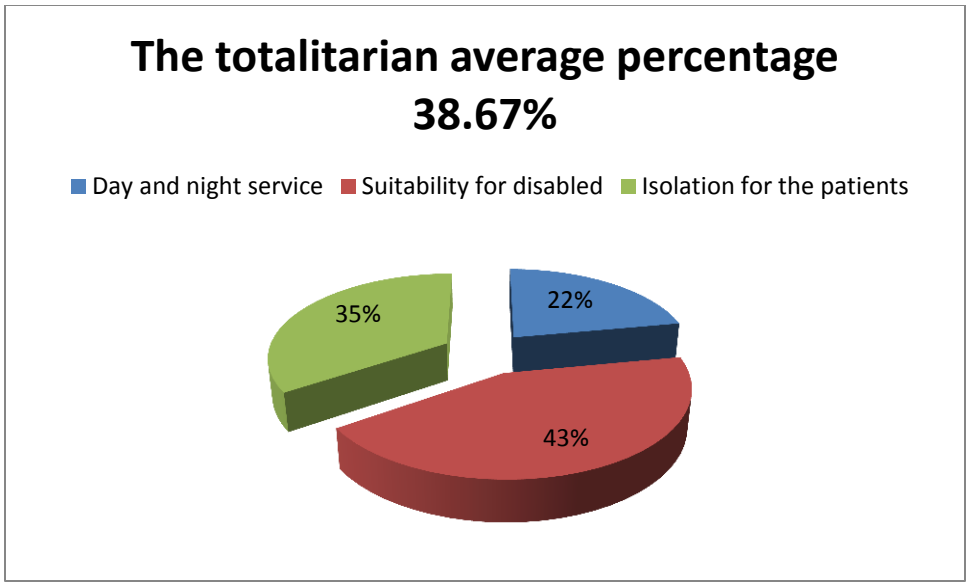


Figure 4.15 -The totalitarian average percentage

Phrase	'Yes' percentage
1.Day and night service	25.6%
2.Suitability for disabled	50.4%
3.Isolation for the patients	40%

Table 4.2 -The totalitarian percentage

With today's development and prosperity of technology, it would be better to provide the medical services throughout the day in shifts for increasing the productivity and satisfying the visitors to the hospital building, as well as for comforting the caregivers. There is also a need to consider the needs of the people with disabilities. The building design requirements for the handicapped must be applied, including the provision of supplies for them in all facilities of the building to allow them ease of movement inside the building without embarrassment or dependency on the others. Also, it would be better to provide special places for isolating patients with infectious diseases which reduces the outbreak of diseases and assisting in the fight against the viruses.

The second paragraph shown in the chart (Figure 4-16) and (Table 4-3) illustrates that the building does not reflect the Islamic identity, as it is opted for the closed design and opens up to the outside world instead of opening up inside. This leads to the absence of the building's inner courtyard as confirmed by 68 % of the participants, resulting in the necessity to resort to the industrial solutions in lighting and ventilation in the spaces. Naturally, these measures will create an atmosphere of weariness, monotony and tension of the users of the building as well as the feeling of inadequate areas.

The above-mentioned is supported by negation of 68% of the participants, denying the presence of some elements and water bodies inside or surrounding the building, thus avoiding one of the most important elements of the spiritual and aesthetic values and moving away from the characteristics of the paradise principle, to which the Islamic architecture calls for in its buildings. The presence of water and green zones is deemed the most important of aesthetic elements of the building in order to reach the desired development. Fulfilling both sides of aesthetic and spiritual delectation and functional purpose is important. However, while the building decoration is confirmed by 80% of participants, the building lacks the landscape as confirmed by 48% of those who support the idea stating that the building attends to the functional element and neglects the spiritual and aesthetic values inside the building.

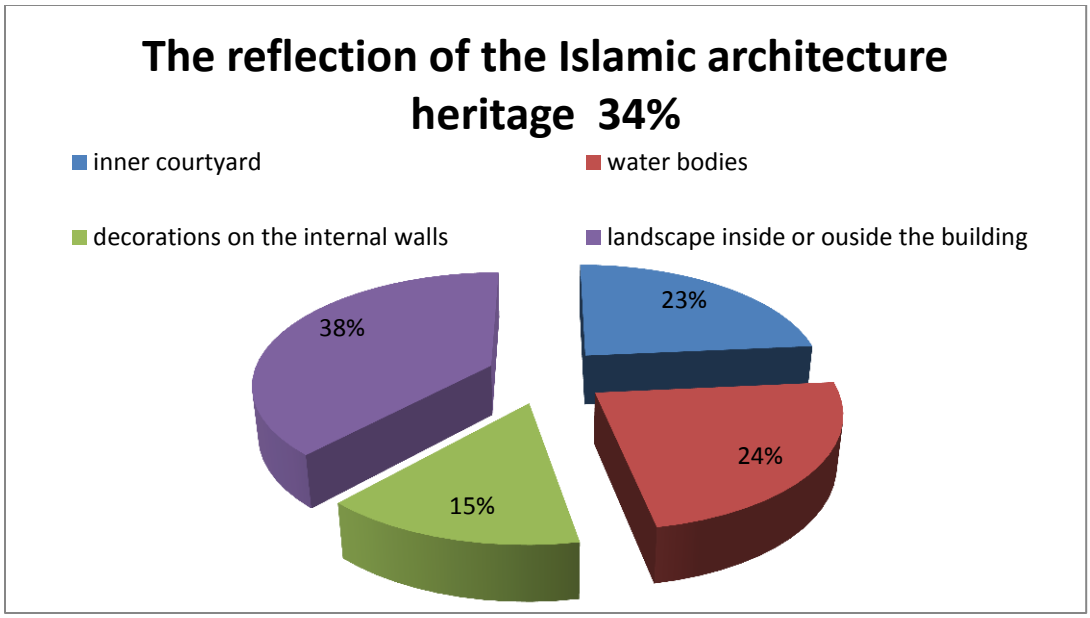


Figure 4.16 - The reflection of the Islamic architecture heritage

Phrase	yes percentage
Inner courtyard	32%
Water bodies	32%
Decorations on the internal walls	20%
Landscape inside or outside the building	52%

Table 4.3 -The "yes" answers for Islamic architecture heritage

In the third paragraph shown in the diagram (Fig. 4-17) and (Table 4.3) , 46.4% of the participating sample selected "yes" concerning the building allowance of adequate natural light inside it. This was due to the different functions of the spaces that the participants occupied during their stay at the hospital and while participating in the study. For example, in one of the buildings where questionnaires were distributed, examination rooms included windows while waiting rooms did not. 78.4% of the participants agreed that there were many

spaces that depend on artificial lighting which gives a sense of isolation and closure.

In general, when asking whether healthcare buildings in the city need to increase the area of their windows93.6% of the participants answered "yes" which indicates the stereotype that most of the participants have in their minds concerning isolating the external environment from the internal environment in healthcare buildings in the kingdom and this in turn may hamper or delay healing process.

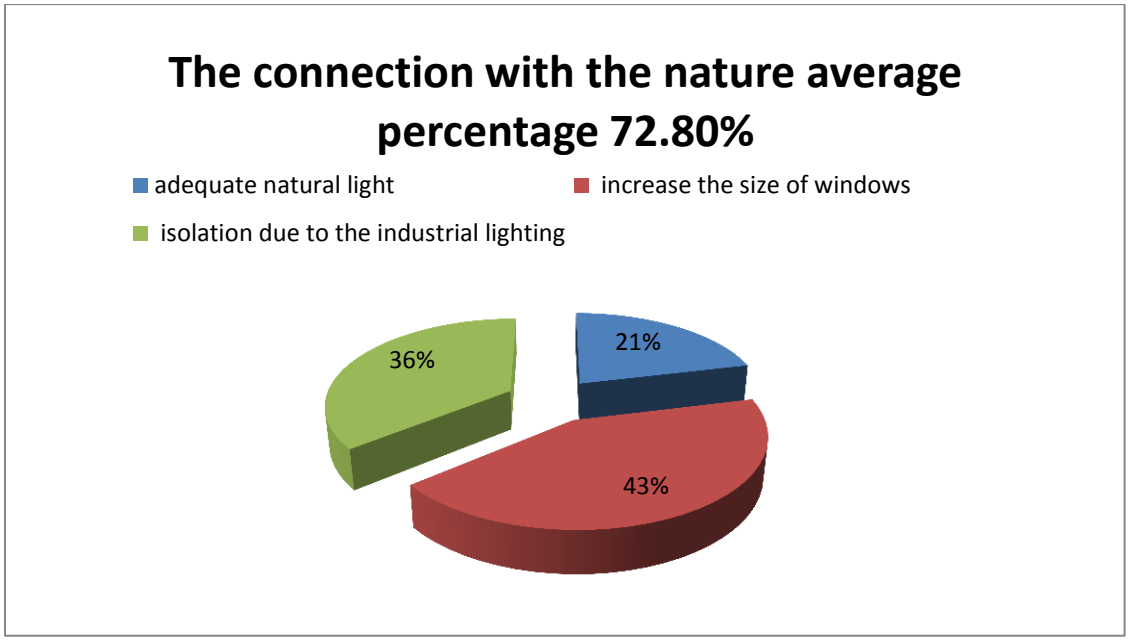


Figure 4.17 – The connection with the nature average percentage

Phrase	'Yes' percentage
Adequate natural light	46.4%
Increase the size of windows	93.6%
Isolation due to the industrial lighting	78.4%

Table 4.4 -The "yes" answers for connection with nature

Finally, the fourth paragraph is concerned with studying the participants' overall evaluation of the building. In the first question, the area of the building was good enough as 92% of the participants in the study selected the answer "good". The overall shape of the building was also considered good for 70.4% of the participants but when limiting the question to the external facades, 91.4% of the participants selected the answer "bad". As for the interior design of the hospital, 69.6% of the participants answered "bad" while 74.5 % of the participants selected the answer "bad" for the quality of internal ventilation.

95.2% of the participants answered that the overall environment in the healthcare building was good. However, when asking the participants about their opinion concerning furniture, 66.4% of the participants chose the answer "bad". When comparing this percentage with the percentages in the answers concerning the interior design quality, the accordance between the two percentages largely illustrates that the interior of healthcare buildings in the study area in general does not provide adequate comfort for users.

As for the question about lighting in general, 62.4% of the participants recognized it as having good quality and 88% of the participants recognized the quality of artificial lighting while89.6% of the participants answered "bad" concerning the quality of natural lighting.

In the second question of the same paragraph, 67.2% of participants replied that the building is generally good. When calculating the average percentage of the "good" answers in the first question of the same paragraph, the result was 51.4%. There is naturally a difference between the two percentages as the first question considers building details while the second question considers the general look of the users. The proximity between the two percentages and average level of both somewhat

shows the building quality level and its fulfillment of users' services. These results are similar to those of the first question in the same paragraph. (Fig. 4-18)

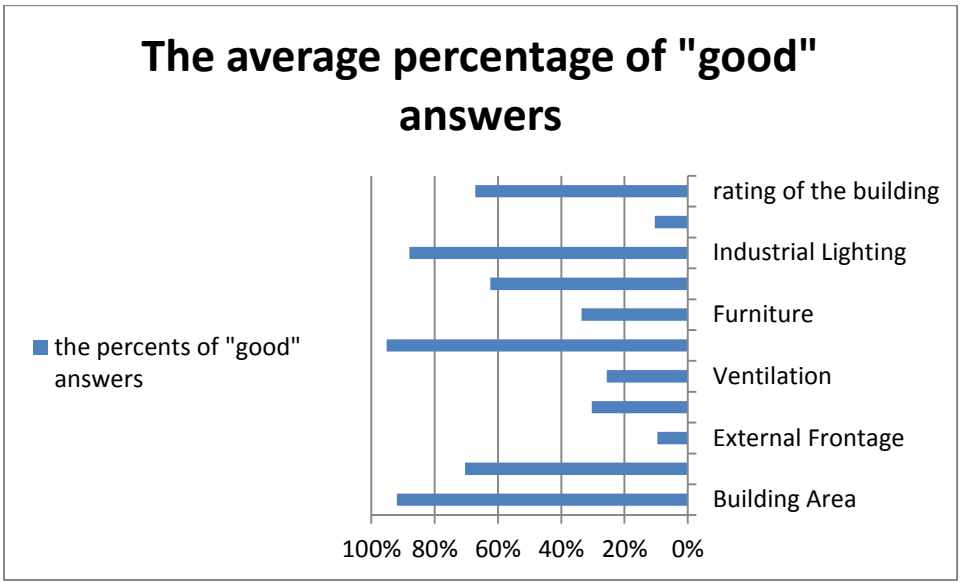


Figure 4.18 - The average percentage of "good" answers

The third question, included several of the important spaces in therapeutic buildings and which are of their core facilities. When calculating the average of the percentage of users satisfaction in each of the spaces as illustrated in (Table 4-5), including the six spaces that have been selected for the study and the percentages of "yes" and "no" answers concerning all satisfaction measures that were added to the study including (comfort, area, site in relation to the building and capacity) - The diagram in (Fig. 4-18) shows the level of satisfaction in each of the six spaces and the degree of satisfaction of participants in the study concerning each space – and according to the results of the study, examination room and doctor room were the most comfortable among the six spaces included in the study. The average of satisfaction percentage concerning each of the four measures in the six spaces was calculated and they were compared in (Fig. 4-19).

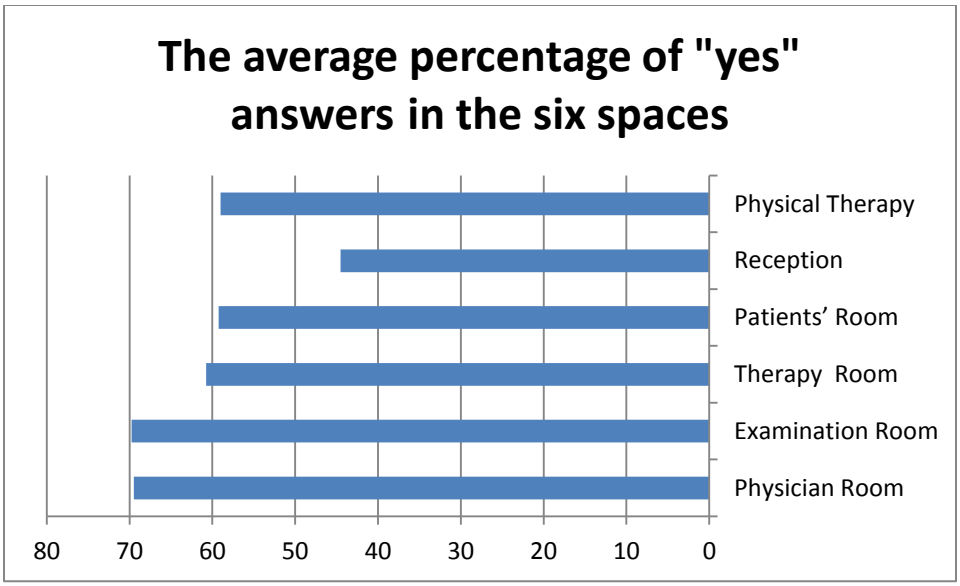


Figure 4.18 – The average percentage of "yes" answers in the six spaces

In the fourth question, 67.2% of the participants answered that all building areas provide function well. When calculating the average of the total percentages of all "yes" answers in the previous question that studies the extent of users' satisfaction for some spaces, the percentage was 60.41%, which is close to the percentage of the answer to the fourth question that tracks overall satisfaction directly.

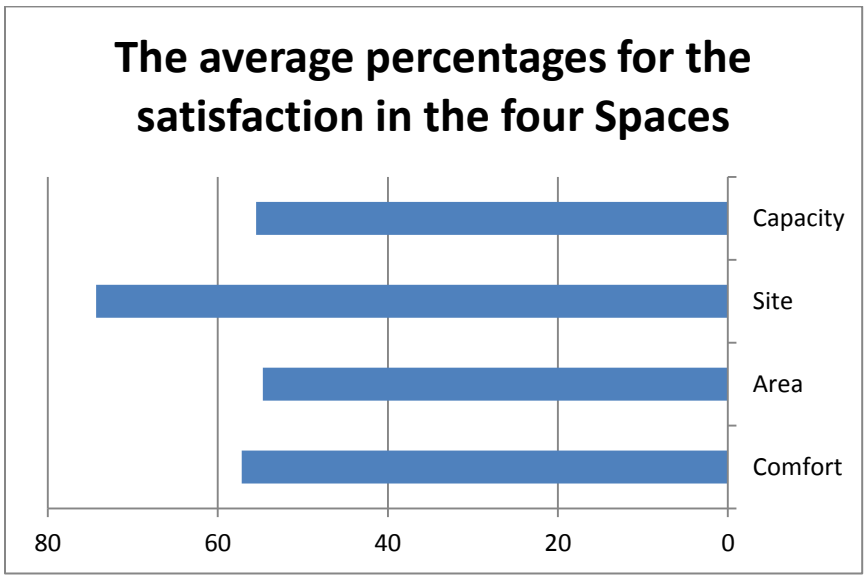


Figure 4.19 - The average percentages for the satisfaction in the four Spaces

-Findings:

Universality was realized in its same sense that was applied in Bimaristans by 38.3% in the current therapeutic buildings in the study area according to the results of the current study.

The heritage of Islamic architecture is reflected and its impact manifests on the buildings in the study by 34% according to the current study.

The Buildings are directly adjacent to nature by 72% according to the current study.

Healthcare buildings in the study area realize quality by 61.5% according to the current study.

By comparing the average of total percentages of reflection of Islamic architecture on contemporary buildings in the second paragraph which is equal to 34% with the average of total satisfaction percentages for each of the shape of the building, its external facades, its interior design and its furniture, which is equal to 35.5%, we find that the two percentages are almost equal and this most likely indicates the presence of a relationship between therapeutic buildings users satisfaction with therapeutic buildings and reflection of Islamic heritage and architecture on the buildings.

4.3.3 Results:

According to the current study, 25% of the participants contained in the first study i.e. one building, reflected the impact of Islamic architecture. On the other hand, the second study showed that from the point of view of 34% of study participants believe there is a reflection of Islamic heritage on contemporary therapeutic buildings; which supports the first part of the thesis that is based on the fact that contemporary buildings in the study area are free from aesthetic and spiritual senses.

The designs of 75% of the buildings that underwent the first field study, specifically 3 building, reflected full awareness of the importance of adjacency with nature in therapeutic spaces. According to the second study, the buildings are adjacent to nature by 72%. Yet, it is evident that it is possible to realize an environment that enhances healing process without realizing any of the principles of building Bimaristans or getting influenced by Islamic architecture and heritage. Extreme impact of Bimaristans building manifested only in one building of the four buildings that underwent the first study by 25%. In the second study, one of the principles of building Bimaristans which is the principle of universality was realized by 38.3%. When comparing the two percentages with comfort percentage – 57% - in all spaces that underwent the study and the percentage of users' satisfaction with the spaces -60.40% - in general, we note that satisfaction and comfort percentage is medium with weakness of realization of the principle. From that, it was concluded that therapeutic environment must contain aesthetic and spiritual elements that are to raise the rate of healing environment (the environment that helps the patient be self-treated). This is supported by what was revealed by the study that neglecting the aesthetic and spiritual aspects within the therapeutic buildings negatively affects the satisfaction and comfort of their users.

By comparing the three previous points with the percentage of satisfaction with the quality of therapeutic buildings, which is equal to 61.5%, as previously mentioned and explained in the second study, we conclude that it is possible that decrease of satisfaction percentage resulted from getting away from Islamic architectural heritage and the principles of building Bimaristans.

4.4 Conclusion:

As stated in the thesis, lack of attention to the aesthetic side in the current therapeutic buildings had a negative impact on the environment functional efficiency and consequently had negative impact on the satisfaction and comfort of building users.

Contemporary therapeutic buildings in the study area reflect Islamic heritage in a simple rate that ranges between 25-34%.

There is a considerable awareness of the importance of adjacency with nature in therapeutic environments in the study area.

Contemporary therapeutic buildings within the study area are far in their design and characteristics from Bimaristans.

It is possible to have an appropriate environment that enhances healing process without taking fulfillment of the principles of building Bimaristans or Paradise Gardens in therapeutic buildings into account, but it is possible to link between lack of such principles and the weakness of the percentage of the building quality.

The aesthetic and spiritual sense within the therapeutic buildings has a significant impact on users comfort and satisfaction, but it does not affect the efficiency of the functional aspect significantly for the absence of a lot of spiritual and aesthetic senses as recognized by the majority of the participants involved in the study, that did not adversely affect the quality of the therapeutic buildings, the services and functions established in them significantly according to the current study.

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Fifth Chapter: Evaluation of Historic Preservation

5.1 Introduction:

The Holy Kaaba represents a special importance to all Muslims everywhere. It is the Qibla to which the Muslims direct themselves five times a day to perform their prayers from all parts of the world. It has enjoyed a special place among the Arabs since Islam, and has undergone numerous maintenance and renovation operations in order to preserve the religious and archaeological value given by the Arabian Peninsula citizens before and during the Islamic era.

According to the approach followed in the classification of valuable buildings, it is possible to classify the archaeological value of the Holy Kaaba within the first class because the date of its construction goes back to the pre-modern times. As the Qibla of the Muslims, the Kaaba is an expression of power in addition to its artistic value represented in the Islamic motifs covering parts of the interior walls, doors and mezzanine. It is also linked to many important historical events; most notably, its construction by the Prophet Abraham with the help of his son Ishmael thousands of years ago.

The research is directed towards studying and analyzing the relationship between the causes of deterioration and intervention that occurred to the Holy Kaaba during the Islamic era and the extent of the changes brought about by these operations in the building's form and characteristics. The research also illustrates the impact of the approach, which is evident in the maintenance of the building, in affecting its form and original components, along with assessing the restoration operations in accordance with the modern approach evident in maintaining the archeological buildings.

The research provides a clarification on the concept and importance of maintenance to the historic buildings, and the need for their completion without compromising the original components and form of the building as much as possible. Furthermore, this research provides an explanation about the causes of

the historic buildings' deterioration and the restoration levels consistent with the type and level of damage to the historic building.

In general, the current research exposes the extent of the statistically significant relationship between the exaggeration in the Kaaba restoration operations and the changes that have occurred to the Kaaba's form and components during the Islamic era.

Furthermore, the research aims to study the impact of the approach taken in the restoration operations that were conducted to preserve the Kaaba. In addition to studying the extent of its impact on the original components and form of the building, it also contributes to developing assessments and proposals that can be applied to maintain the valuable historic buildings that have been recently discovered in some regions of Saudi Arabia. This also serves to achieve one of the most important objectives of Saudi Vision 2030 represented in the revival of the national, Arab, and Islamic heritage sites and their registration in the World Heritage List.

5.2 Gordon Cullen Classification of the Buildings of Value:

Valuable buildings are classified into 6 categories: a building with a technical value, a building linked to an important character, a building that expresses power, a visually and culturally distinguished building, a building linked to important events, and a fully historical and archaeological building (Abdlaziz, Lubna 2001)[40]. (Figure 5. 1)

[40] Abdulaziz, Lubna promoting Heritage sites, , 2001,Page 15.

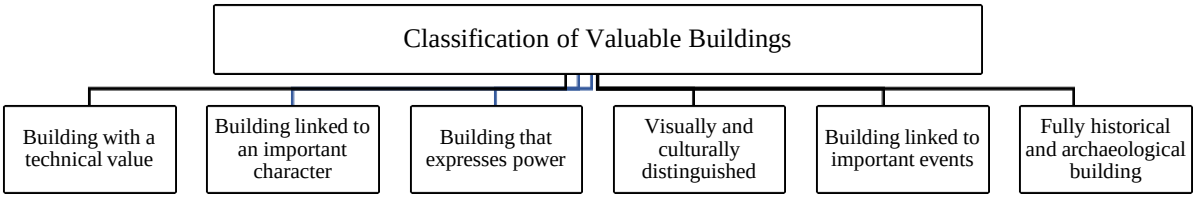


Figure 5.1 - The Classification of the Archaeological Buildings

5.3 The preservation levels: *(* Al-laham, Nisrean *1996)*[41]*:*

"The preservation work levels concerning the valuable archaeological building (Figure 5.2) is divided into four levels:

-First Level: It refers to the building materials and here, there are five categories. Maintenance aims to prolong the lifespan of the building materials and is divided into two parts: the expected preventive or corrective maintenance and the sudden maintenance. Preservation aims to provide maintenance to what is intended to be preserved, so that it remains in its same original condition by reducing the restorations made to the building as much as possible and protecting the building materials from decay. Deterioration Prevention helps in controlling the internal building's environment and preventing arson and vandalism. Restoration includes removing the additions and restoring the building to its natural state. Consolidation ensures the safety of the structure from decay or damage.

-Second Level: Reconstruction restores the original form of the building by assembling parts or rebuilding or moving the building to another location. Remodeling restores the original characteristics of the building by recreating the building from the extraneous elements that have been added to the it after a long

[31] Nesreen, Allaham, Preservation and Employment of Heritage Buildings, MSc, Faculty of Engineering, Ain Shams University, 1996, Page 6.

time from its establishment. Completion is the integration of the missing parts of the building to complete the visual image. Saving involves disassembling the building as a whole or divided into several parts and then transport them to a more suitable new location. Finally, Replacement for the building occurs in the event of a building's collapse or the invalidity of the materials for the new functions of the building.

-Third Level: It includes the operations that relate to the building's functions. Adaptive Reuse, refers to converting the functionality of a particular building into another function, while making the necessary modifications. Development, i.e. operations not related to the building's condition, aims to improve the building to meet the functional needs and the rise in the activity levels. Rehabilitation relates to the deteriorated buildings as a result of natural and abnormal factors that hindered the building's functional performance. Renovation includes the organic and spiritual renovation of the building and the surrounding area, as well as the re-embodiment of the internal and external spaces and the strengthening of the structure. Lastly, Improvement aims to make an extension for the building, while maintaining the roads and construction materials, or establish a modern building in the same area to fit with the increased functional requirements.

-Fourth Level: It includes the development and radical change work, while keeping the external facades, establishing a modern building annexed to the building or a yard around the building using the new building materials".

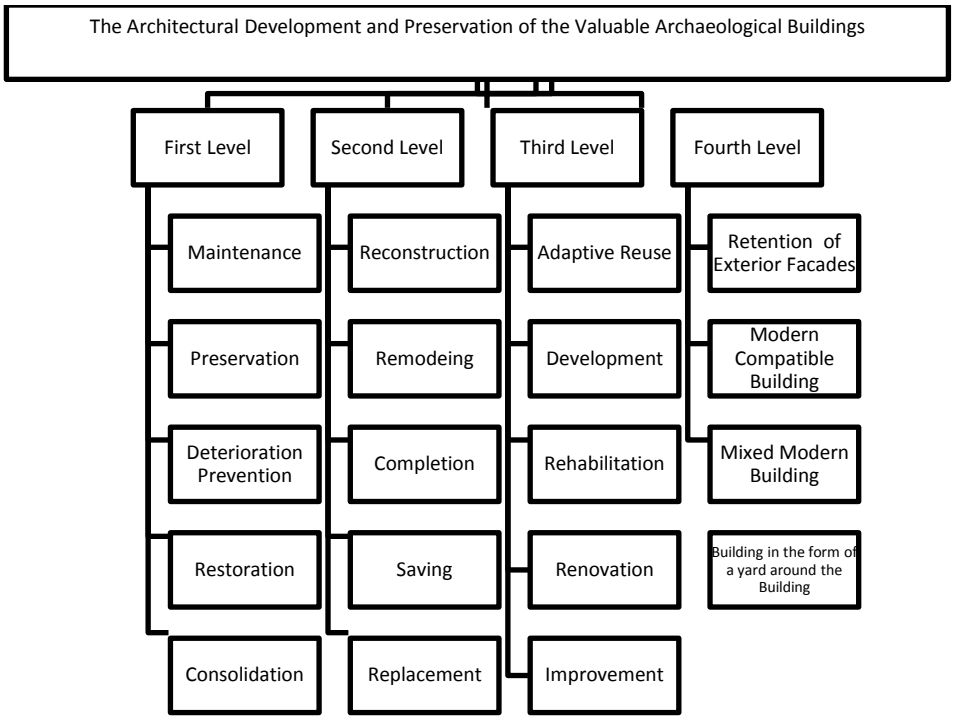


Figure5.2 - Intervention and preservation Levels

5.4 Challenges facing architectural heritage:

The reasons behind the deterioration of the valuable buildings[42] are; its lifespan, which usually causes the physical deterioration for building's materials and structure (First and Second Levels). In addition, the natural factors of erosion; climate and groundwater, geological factors; and human factors from accidents, fires, lack of knowledge in preservation and development, negligence and vandalism contribute to deterioration. Both natural and human factors usually cause a physical deterioration in the building's materials and structure, and a functional deterioration (First, Second and Third Levels), along with the emergence of stressors on the building as a result of change in the type and intensity of the users, which is considered a functional deterioration (Third Level) (Figure 5.3).

[42] Afifi, Amin, Environmentally Compatible Architecture as an Approach to Preserving Buildings of Heritage Value in Egypt, Master Thesis, Ain Shams University, 2013.page 20.

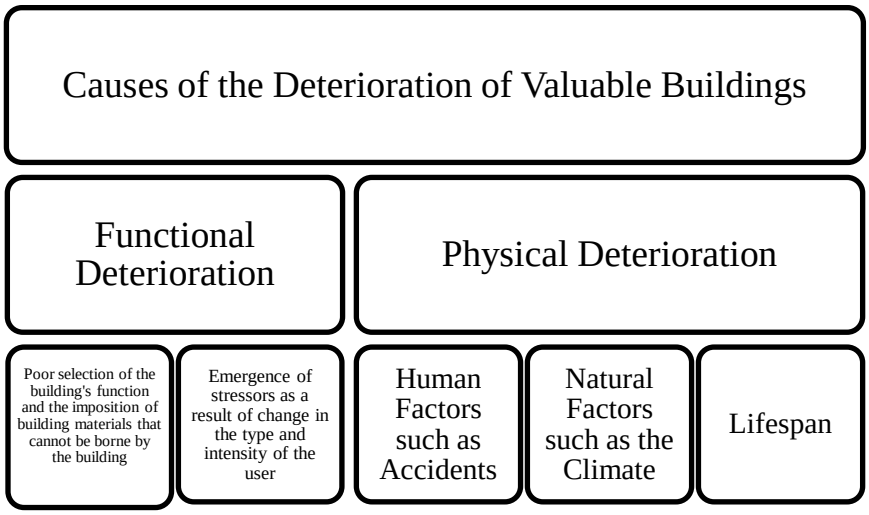


Figure 5. 3 - Causes of the Deterioration of the Valuable Buildings

The building's physical state affects the intervention level. The building may be wholly or partly dilapidated thus requiring the intervention and restoration of the building by one of the operations described in (the Second Level) or using the addition and change method under (the Third Level) of the intervention levels as needed. However, if the building is subject to negative effects, this calls for intervention on (the First Level) or the use of the development method under (the Third Level). If the building was in good condition both internally and externally, it is possible to use some of the methods of (the Third Level), and if the building only remains in good condition externally, it is likely to use the repair methods on the (Third and Fourth) as needed.

The intervention objectives are limited to five objectives that influence the determination of (the preservation work) level, and it may aim to protect the landmark and maintain its original features. This requires preservation work on the (first level), while in case of the restoration of the building’s original features, the preservation work will be restricted to the (second level). If the objective is to rehabilitate the building, the preservation work will be performed on the (third

level). If the objective is to protect and maintain the exterior facades, then the preservation work performed on the (fourth level) will be used, and the preservation operations on the (fourth level) will be used in case of desiring horizontal expansion and extending the building.

The preservation work that can be done are diversified, and the most important of which is the replacement of the deteriorated parts with similar ones. This action is taken to make changes using the preservation methods on (the first level). Among the preservation works is the re-establishment of the entire building to become an image of what it used to be, and so one of the preservation methods on (the second level) will be used. Other preservation work that can be done is finding the spaces for additional activities and re-formulating these spaces, and so one of the preservation methods on (the third level) will be used.

The reasons behind the deterioration , The building's physical state , the intervention objectives and The preservation work that can be done are the factors that Determine the Intervention Levels in the Valuable Buildings (Figure 5. 4)

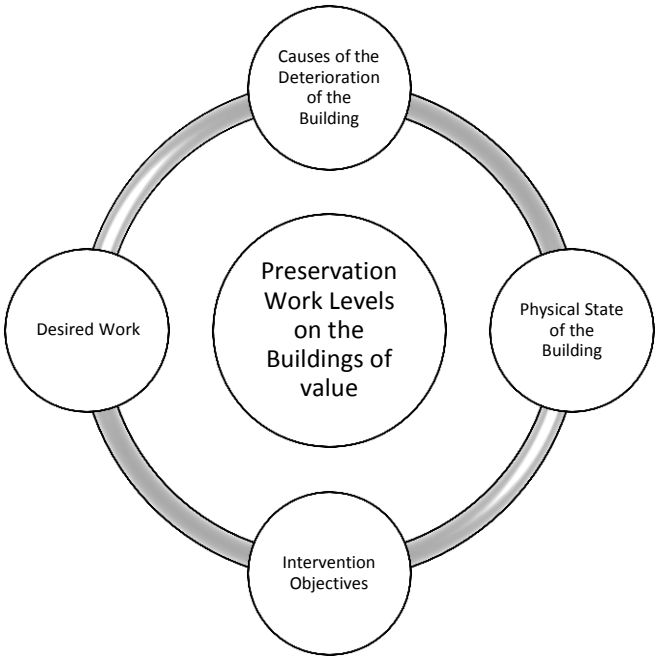


Figure 5.4 - Determinants of the Intervention Levels in the Buildings of value

5.5 Historical Development of the Holy Kaaba during the Islamic Era:

The Holy Kaaba is the first mosque to be set up for people according to the Islamic belief, as stated in the Quran: "The first mosque that God assigned to men was in Bakka. It is a blessed one and a guide for all people", (The Qur'an, Ali 'Imran 3.25)[43]. It is a building that is almost located in the center of the Grand Mosque, in the shape of a cube, where the length of each side with a door and its opposite side is 12 meters, while the length of each side with the gutter and its opposite side is 10 meters. Each of the four corners has different names, namely the black corner, the Al-Shami corner, the Yemeni corner, and the Iraqi corner. There is pure gold gutter located at the top of the northern wall and the gutter pours into Hijr Ismael(Hatim). The Kaaba has one door with a length of 318 cm, width of 171 cm, and height of 222 cm (Figure 5-5). The ceiling is based on three wooden gold-plated pillars. In the corner of the Kaaba from the inside, there is a narrow staircase that gives access to the roof and surrounds the bottom of the Kaaba's wall from the outside on three sides except the one of the Hijr, and a socle built of marble called Al-Shazrawan to strengthen the wall of the Kaaba, Al-Shazrawan is not part of the mosque, but it is made as a pillar for the mosque (Figure 5-6).

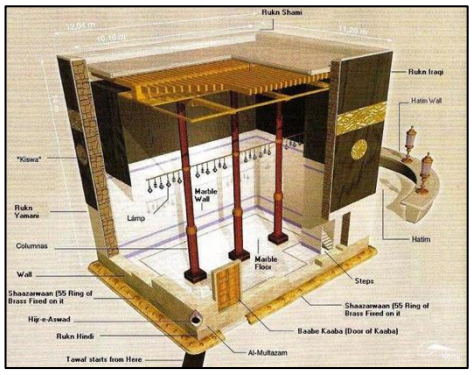


Figure 5.5 -The Architecture of The Kaaba https://www.slideshare.net/KiranMusharraf/kaaba-49233119

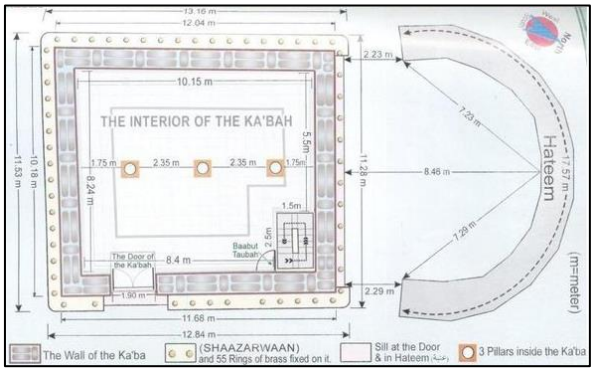


Figure 5.6 -The Dimension of The Kaaba

[40] The holy Quran Page53.

Before the Islamic era, the Mosque, since its inception by the Prophet Ibrahim (peace be upon him), includes the current area of the Kaaba in addition to the Hijr area (Figure 5-7). Afterwards, when the Mosque was burned and its construction weakened, it was hit by a torrent causing further structural weakness. This prompted people to seize what was inside the Grand Mosque, which in turn, prompted Quraish to rebuild it again. When it was rebuilt, six cubits of the Hijr were left untouched and the length was cut down by seven cubits so it became 30 cubits, due to the lack of sufficient funds to complete the construction. The height was increased by nine cubits so it reached 18 cubits, and the door raised by 4 cubits and one span. Then, the construction level was changed from the inside to fit the height of the door and a ceiling supported by 4 pillars was added. A ladder was placed from inside to enable them to climb to the roof when the need arises, and a gutter was added on its roof to drain rainwater (Figure 5-8).

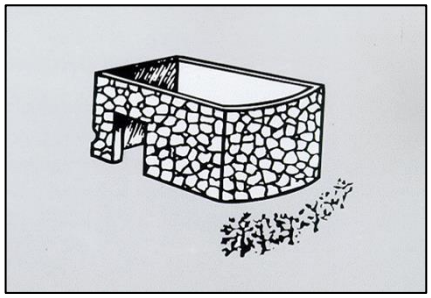
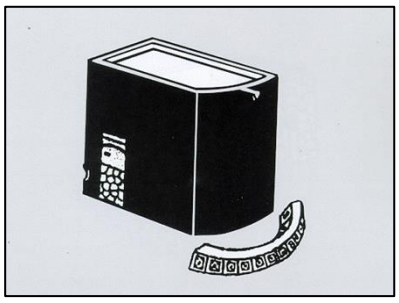


Figure 5.7 -Inception By The Prophet Ibrahim
(Islamic monuments in Mecca , Alharthi, Nasir 2009)



5.8-Figure 9. Kaaba After
(Islamic monuments in Mecca , Alharthi, Nasir 2009)

After the beginning of the Islamic era in the year 64 AH, on Saturday, the third of Rabea Al-Awwal, the Kaaba was burned after being shelled by a catapult. The walls were cracked and the black stone was burned, forcing Abdullah bin Al-Zubair to demolish and rebuild it in the form that has been described by the Prophet (peace be upon him) to his wife Aisha: "The Messenger of Allah peace be upon him said: "Your people rebuilt the House smaller. Had it not been for the fact that your people are not far from the time of Shirk, I would add what was left outside of it. If your people think about rebuilding it afterwards, let me show you what they left out of it" and he showed her around seven cubits. He tied the black stone with a silver belt after it had been cracked by the fire and he built the Al-Shazrawan based on the Foundation of our Prophet Abraham (peace be upon him) to strengthen it and tied the ropes of its Kiswah with rings, adding the portholes to provide natural lighting. He also made its door with 2 shutters after it was with a single one. He added another door and made the direction of the gutter to the Hijr after it was towards Hittin (Figure 5-9).

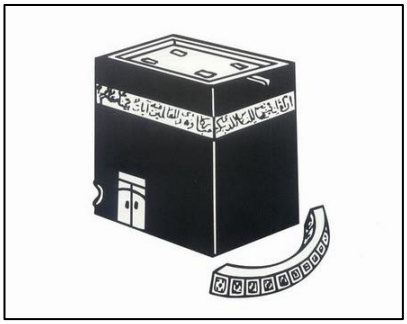


Figure 5.9 -Rebuilding By Bin Al-Zubair
(Islamic monuments in Mecca , Alharthi, Nasir 2009)

In 73 AH Abdullah Bin Al-Zubair was killed, and Al-Hajjaj bin Yusuf Al-Thaqafi entered Mecca and notified the Caliph Abd al- Malik bin Marwan that Ibn al-Zubair had added to the Mosque and he added another door. He asked him to

return the Mosque back to what it was in the Jahiliyyah days, and the Caliph agreed to it (Figure 5-10).

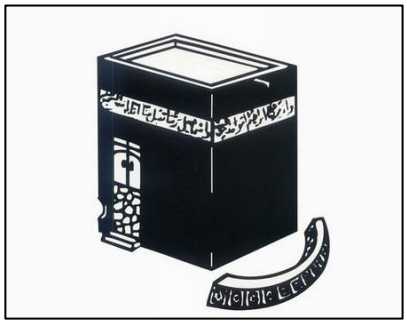


Figure 5.10 -Rebuilding By Al-Hajjaj
(Islamic monuments in Mecca , Alharthi, Nasir 2009)

Then, after the year 200 AH, the Kaaba Gatekeepers removed the mosaics on the Kaaba's roof surface because it was leaking rainwater to the inside so they sealed the roof with plaster and marble and returned the mosaic as it was.

In 240 AH, based on the letters sent from the Kaaba Gatekeepers, Al-Mutawakkil Ala Allah decided to maintain the Kaaba's marble floor and walls, replacing the silver on both corners of the Kaaba with gold and replacing the lower threshold wood with new teak wood.

Then, in 542 AH, the roof of the Kaaba was damaged, so Al-Muqtafî li-Amr Allah reconstructed the Kaaba's ceiling, the Al-Shazrawan and the internal staircase.

Then in 816 AH, Al-Mu'ayyad Abi Al-Nasr maintained the marble roof of the Kaaba and replaced the portholes wood and the internal staircase of the Kaaba and changed one of the damaged portholes.

In 825 AH, Sayf Al-Din Brisbay changed the wood in the Kaaba's roof, which was used to install the rings that were attached to the Kaaba Kiswah. In 826 AH, he changed the marble of the Kaaba's walls and returned the pillar located opposite to the door to its main position after it was removed from its place, and supported it with iron and plaster plates.

Then in 931 AH Ibrahim Pasha repaired the roof after a board was broken, and in 959 AH Sultan Suleiman Khan repaired the roof again.

Then in 1040 AH, during the reign of Sultan Murad Khan, a great flood hit the Kaaba, flooding the interior space and weakened its structure (Figure 5-11). This prompted the Sultan to demolish it and then rebuild its walls and ceiling, the internal stairs, and the second roof. The columns were returned to their position after their maintenance and the black stone was re-tightened with a silver belt. Furthermore, in 1073 AH and 1109 AH, the Kaaba's ceiling was rebuilt after the breakage of the wooden boards and the internal staircase restored in 1109 AH.

Figure 5.11 -Kaaba Deterioration After A Great Flood During The Reign Of Sultan Murad Khan
(Islamic monuments in Mecca , Alharthi, Nasir 2009)

In 1316 AH during the reign of Al- Sharif Aoun Al-Rafiq, a foul smell emerged inside the Kaaba because of a swamp from the washing water and rain gathered on the roof, the swamp was removed and the roof was restored.

In 1332 AH during the reign of Al-Sharif Hussein bin Aoun, cracks occurred in the pillars because of the Kaaba's washing water and the floods and the pillars were restored.

In 1375 AH, cracks and protrusions occurred in the Kaaba walls. King Abdul Aziz reinforced the upper roof of the Kaaba with a reinforced mantle underneath to

attach the four walls to each other, repairing the lower roof and interior walls and replacing the wooden staircase with a circular aluminum ladder.

In 1401 AH, during the reign of King Fahd, there was a cracking in the marble floor of the Kaaba, and so it was maintained, and the insulation material was added, and the slope ratio was adjusted. As was the case in 1416 AH, there was damage in the ceiling wood, columns and walls, weakness of the stones cohesion (figure 5-12), and the foundations under the Kaaba's level were exposed to fungi and termites. The maintenance was conducted on the Kaaba's walls ; in addition to changing its marble and the Al-Shazrawan marble and reinforcing the columns' bases. The most important restoration operations carried out during the Islamic era were summarized in the following (table 5.1).

Figure 5.12- Kaaba's Walls Before And After The Maintenance
(Islamic monuments in Mecca , Alharthi, Nasir 2009)

Number	Date	Causes	Deterioration	Repair
1.	64 AH Abdullah bin Al-Zubair	Fire	The wooden pillars in the walls were burnt, the black stone was burnt and cracked, the walls were broken and their stones fell.	Demolition of Kaaba to zero level. The foundations of Kaaba were detected and evaluated to be incursive into the Hijr area about six cubits and a span. The extra area of Hijr was added and the foundation was laid on it (an increase in Kaaba). The gypsum was brought from Sana'a and the stones for the construction were taken off the same place from which the stones were taken off in the previous restoration. The two jambs of the Kaaba's door were put on the pillar, which on the Al-Shazrawan, thus increasing the length of the door from the original height of the threshold to the level of the Al-Shazrawan level, making it with two shutters instead of only one shutter. Another door with the same dimensions was added in the wall opposite the wall in which the old door was located. The Black Stone was tied with a silver belt, a staircase was built inside from the Al-Shami corner to the roof. The direction of the gutter was changed towards the Stone, and its height was increased by nine cubits, whereas the number of pillars inside was reduced to 3 instead of 6. Four portholes made of marble were used for the ceiling to provide natural lighting.
2.	74 AH Al-Hajjaj bin Yusuf Al-Thaqafi through an order issued by Abdul Malik bin Marwan	Reconstruction to what it was, after the additions made by Ibn Al-Zubair	The addition that was introduced into the Kaaba from the Hijr's side includes the addition of a new door on the west side opposite the old door and the change in the height of the original door opening.	Demolition of the additions that were added inside the Kaaba from the Hijr side: blocking the western door that was added; blocking the door opening from the bottom of four cubits and a span; changing the step inside the Kaaba leading to the roof and changing the Kaaba's door.
3.	200 AH Kaaba Gatekeepers	End of its lifespan	Mosaics on the floor of the roof leaks water upon rainfall	Mosaics were taken off. The ceiling was sealed with cooked plaster and marble, and then the mosaics were returned.

4.	240 AH Al-Mutawakkil Ala Allah	Stressors due to intensity of use	Marble on the Kaaba's floor was broken and some marble on the walls came loose. The threshold of the lower door which consists of two pieces of teak were shabby and worn out.	The silver on the corners of the Kaaba was removed and replaced with gold. The gold on the other corners was removed and reshaped to match the new shape and then it was installed again. The wobbling marble was taken off and re-installed with a synthetic plaster. The dyes on the ceiling were removed and the engraved marble in the ceiling was covered with a thin layer of gold. The wood of the door's bottom threshold was taken off and replaced with new teak wood and covered with the silver that was on the ceiling.
5.	542 AH Al-Muqtafî li-Amr Allah	End of its lifespan	The roof of the Kaaba was worn out.	The ceiling, the staircase inside it and part of the Al-Shazrawan were reconstructed.
6.	816 AH Al-Mu'ayyad Abi Al-Nasr	End of its lifespan	The existence of some parts in the Kaaba's roof from which the rain accumulates and drips down to the bottom. Some of them are near the portholes made for light. The wood applied above the porthole that holds the high construction on the roof of the Grand Mosque was damaged. The porthole, of the northern corner, was broken. Some of the wooden stairs of the Kaaba were broken.	The positions were fixed by plaster after taking off their marble and returning it back to its place and replacing parts of it with new ones. The wood of the portholes was changed and then the reconstruction took place upon it except for the porthole that follows the Kaaba's door, whose wood was not changed. The broken porthole of the northern corner was changed and the broken wood of the stairs were repaired.
7.	825 AH Brisbay	End of Lifespan	Wood in the Kaaba's roof, prepared for tying its Kiswah, has been destroyed and taken off.	They were replaced with new wood, in which new iron rings that hold the Kaaba's Kiswah, were installed.

8.	826 AH Brisbay	End of Lifespan	The marble between the western wall of the Kaaba and the cylinders and some marble in the Kaaba walls were taken off. The wooden cylinder in front of the door inside the Kaaba was removed from its position as much as a cubit and a span, When exposing the cylinder above it, it was found under the joist and the joist was not leaning against it	The floor marble was reinstalled to its original state with plaster. The wall marble was repaired and returned to its place. Three sheets of iron, connected to the joist above them, were fixed to the column and were placed below it. The plaster was dissolved and put under the column. They were tightened with extreme perfection.
9.	931 AH Ibrahim Pasha	End of Lifespan	There was a break in a piece of wood in the ceiling	They put an iron collar on the broken part, and filled the place that was broken with sand and plaster.
10.	959 AH Sultan Suleiman Khan		There was a defect in the Kaaba's ceiling caused by the breakage of some wood	The broken wood was replaced by ceiling and roof tiles as they were with extreme perfection.
11.	1020 AH Sultan Ahmed Khan		The Kaaba walls were cracked	A belt was made for it and it has been tightened by it.

12.	1040 AH Murad Khan	A great flood that entered the Kaaba from its door and reached half of its wall	The Al-Shami wall of the Grand Mosque, parts of the Eastern and Western walls and the roof step fell	They proceeded to transfer the stones that fell from the Kaaba; as they cut stones from Jabal Al-Shibikah and demolished the rest of the Kaaba's walls. They took out two of the three pillars that have the ceiling wood tubs on them and they found them intact except for the head of one of them following the floor, which was eroded. They kept the intact tubs and threw away the ones they found worn out with the worn-out mosque's wood. They brought the tubs of the first ceiling from Jeddah; which is the mast of a ship. They took off the door threshold and the Al-Shazrawan stones and the stone in the Yemeni corner, and broke the ceiling of Kaaba and threw the foundation of the Shami wall and parts of the western wall and put the threshold of the lower door adjacent to the Al-Shazrawan. They repaired the intact wood taken from the Mosque and returned the three pillars and the bases made of Shibiki stones as a replacement of the parts that were cut off from the bottom of the pillars and they poured lead into them. They re-pasted the black stone and tightened it with a silver belt. They brought the second ceiling wood and installed it, mounted the staircase of the roof, and installed the gutter of Kaaba. They covered the surface of Kaaba with its marble and installed the Al-Shazrawan. They replaced ten broken marbles with new ones. They repaired the Kaaba stairs and changed one of its steps.
13.	1073 AH Murad Khan	Erosion	A piece of wood in the ceiling of Kaaba was broken	The roof was exposed, the broken wood was removed and the ceiling was reconstructed.
14.	1109 AH Murad Khan	Erosion	A piece of wood in the ceiling was broken	They took out the broken ceiling and changed the staircase to the roof, making seven marble stairs in it and the rest were made of teak wood.
15.	1316 AH Al-Sharif Aoun Al-Rafiq	Rain water that fell and reached inside of Kaaba and remained in it	A bad foul smell emerged inside Kaaba, due to the destruction of the Kaaba's roof and the destruction of marble tiles on the roof of Kaaba	They removed the stagnant water and the dirt and made a paste of lime mortar, egg and cement to fill the cracks and fix the ceiling.

16.	1332 AH Al-Sharif bin Ali bin Mohammed bin Aoun	The Kaaba washing water and the floods that reached inside the Kaaba	The bottom of the three wooden pillars had chunks and cracks.	Wood was placed along the bottom of each pillar and fixed to it with nails with extreme perfection.
17.	1375 AH King Abdul Aziz	Aging	Erosion of most of the Kaaba's wood. The presence of cracks, chunks and protrusions in the northern and western walls	Removing the upper roof of the Kaaba and building a reinforced roof instead. A reinforced mantle was built to surround the four walls under the upper roof. The lower ceiling remained on its structural status while changing the damaged wood and replacing them with new ones. The marble cover surrounding the inner wall was restored and reinstalled. The wooden staircase inside the Kaaba was replaced with a metal circular staircase consisting of 50 steps.
18.	1401 AH King Fahd	The presence of moisture and dew around the Black Stone after the leakage of the washing water into the Kaaba from the marble floor of the highest point above the Black Stone	The corrosion of the nails holding the Black Stone, the crumbling of the material fixing it, and the cracking of the marble inside it.	The Kaaba’s marble was replaced while considering the placement of the lead insulation, filling the broken marbles with the melted lead, and adjusting the slope ratio of the water flow.

19.	1416 AH King Fahd	The wood in the inner wall of Kaaba was affected by the termites, fungi and moisture. The fillings between the stones and the internal separators lining the wall of Kaaba were affected. The foundation was checked to identify the need to let the repair reach the depth of the foundation.	Damage in the wood of the ceiling and the columns bearing it. Weakness of the stone cohesion. Damage and weak cohesion of the mixture. Great damage in the wooden beams in the wall. Walls under the land level of Kaaba and the foundations were greatly affected by the negative effects that appeared on the walls	The Kaaba's ceiling, bearing columns and all its tiles were removed. The walls composing the inner body of the Kaaba were dismantled after being numbered. The outer wall of Kaaba was exposed and there were no structural defects as the removed stones were cleaned. The filling stones were removed, cleaned, dried and returned with a high-cohesive material by automatic injection. Afterwards the stones of the inner facade were returned from the bottom to the top so that each stone is placed in its place according to its numbering after cleaning it and filling the joints with a highly powerful mixture. The floor of Kaaba was drilled to the depth of the Tawaaf level (2.2). Restoration and cleaning of the stones between half a meter and three quarters of a meter below the level of the Kaaba. Wooden pieces of the roof and columns were replaced with new ones, and stainless steel heads were placed on the sides of the beams and the columns that form points of bearing. The old rock bases of the columns were replaced with reinforced concrete bases, isolated by a moisture-proof insulating layer. A layer of insulation material was placed above the wooden roof and a layer of light concrete was placed above it to protect it. The marble of the old Al-Shazrawan marble has been changed with a new one like the shape and type of the old one.

Table 5.1 -Restoration operations carried out during the Islamic era

5.6 The Narrative Analytical Study:

5.6.1 Methodology:

This research deals with the Narrative analysis of the elements of the approach used in all the restoration operations under this study including assessing the amount of change in the building's formal properties and its original components through the preservation matrix that was derived from similar studies, and after reviewing the various documents such as books, newspapers and certified magazines, and extracting the historical data required for the restoration operations under the study; in addition to collecting and analyzing them to find out the impact of the restoration approach according to the building's original components and form. For example in the first case the descriptive Historical approach, the narrative in the books and references was as follows:

"After the beginning of the Islamic era in the year 64 AH, on Saturday, the third of Rabea Al-Awwal, the Kaaba was burned after being shelled by a catapult. The walls were cracked and the black stone was burned, forcing Abdullah bin Al-Zubair to demolish and rebuild it in the form that has been described by the Prophet (peace be upon him) to his wife Aisha: "The Messenger of Allah peace be upon him said: "Your people rebuilt the House smaller. Had it not been for the fact that your people are not far from the time of Shirk, I would add what was left outside of it. If your people think about rebuilding it afterwards, let me show you what they left out of it" and he showed her around seven cubits. He tied the black stone with a silver belt after it had been cracked by the fire and he built the Al-Shazrawan based on the Foundation of our Prophet Abraham (peace be upon him) to strengthen it and tied the ropes of its Kiswah with rings, adding the portholes to provide natural lighting. He also made its door with 2 shutters after it was with a

single one. He added another door and made the direction of the gutter to the Hijr after it was towards Hittin .

In 73 AH Abdullah Bin Al-Zubair was killed, and Al-Hajjaj bin Yusuf Al-Thaqafi entered Mecca and notified the Caliph Abd al- Malik bin Marwan that Ibn al-Zubair had added to the Mosque and he added another door. He asked him to return the Mosque back to what it was in the Jahiliyyah days, and the Caliph agreed to it ".

Then after reading this reference and similar references, the most important points regarding the architectural form and the remedial procedures was summarized, the summary is mentioned in table (5-1) , First row case number (1).

The restoration operations under the study are 19 restoration operations, all of which were performed for the Holy Kaaba during the Islamic era. They have been selected according to the following:

1. A physical or functional deterioration must have occurred to the building prior to the restoration operation under the study, which means excluding the restoration operations that occurred for reasons other than those mentioned above.
2. The causes for the deterioration and the restoration method must have been mentioned in the reliable historical references.
3.Both the deterioration which occurred and the restoration that followed must be within the temporal boundaries of the research (during the Islamic era).

The study follows the descriptive analytical method. As the data was analyzed using the Preservation Matrix (Table 5-2), which was inspired by a number of studies concerning the preservation of the architectural heritage and the design of a practical methodology for assessing the restoration operations, its objectives and the relationship between the extent and the causes of deterioration with the restoration operation that followed.

The designed strategy works on assessing the restoration operation performed to the buildings of a historical nature according to one of four different levels, and then comparing them with the extent of deterioration incurred by the building. After assessing the type and size of deterioration at the three different levels, the result can be achieved by comparing the deterioration level with the intervention level through the following equation:

Intervention Level – Deterioration Level (Figure 5-13)

Intervention Level - Deterioration Level = Zero ⇒ indicates the suitability of the work performed for the building and its incurred deterioration at the time.

Intervention Level - Deterioration Level ≠ Zero ⇒ indicates the unsuitability of the work performed for the building and its incurred deterioration at the time.

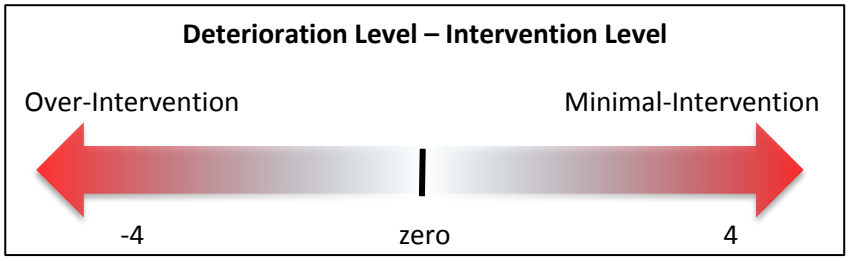


Figure 5.13 -Equation Measuring the Suitability of Restoration for the Deterioration Level

The researcher performed the previous calculation on all the restoration operation under the study to find a course showing the relationship between the deterioration level and the intervention level within the temporal boundaries of the research. Also, a calculation of the average of the intervention level and the deterioration level for the operations under the study have been done and performed the same calculation to reach a general conclusion for the research.

	First Level Related to the Building Materials					Second Level Related to Structure						Third Level Related to Building Functions				
	Maintenance	Preservation	Deterioration Prevention	Restoration	Consolidation	Reconstruction	Remodeling	Recreate	Integration	Saving	Replacement	Adaptive reuse	Development	Rehabilitation	renovation	Improvement
Intervention Objectives																
Protection and Retention	3.4.5.7.8.9.10.13.14.15.16.18															
Restoration of the original features						1.2.6.11.12										
rehabilitate the building												17.19				
The Building's Physical State																
Wholly or partially dilapidated						1.5.6.8.9.10.11.12.13.14.17										
Under negative effects	3.4.7.15.16.18.19															
In good condition internally and externally												2				
Causes for the deterioration of the building																
The building's lifespan	3.4.5.7.13.14.15					1.6.8.9.10.11										
Natural factors	16					12.17.19										
Human factors	10.18											2				
Emergence of stressors as a result of change in the type and intensity of the user																
Completed Works																
Replacement of deteriorated parts with similar ones	3.4.5.6.7.8.9.10.11.13.14.15.16.18															
Reconstruction of the entire building to become an image of what it used to be						12										
Reformulation of spaces												1.2.19				
Making a clear separation between old and new works in interior design												17				

Table 5.2 -Preservation Matrix indicating the operations numbers

5.6.2 Discussion:

First, the data and information obtained were classified into one of the four preservation determinants (deterioration causes, intervention objectives, building's physical state, completed work). The determinants were classified according to their impact on the building to one of the three levels, according to the proposed methodology that was designed in advance in preparation for the assessment and analysis of its data (Table 5.3).

Number	Deterioration Causes	Intervention Objective	Building's Physical State	Completed Work
1.	Human Factors - Fire Reconstruction (Second Level - Completion)	Restoration of the original features (Second Level)	Partially dilapidated (Second Level)	- Reformulation of spaces. (Third Level) Rehabilitation
2.	Human Factors – Lack of knowledge in development and preservation (Third Level)	Restoration of the original features (Second Level)	In a good condition internally and externally (Third Level)	- Remodeling. (Second Level)
3.	End of Lifespan (First Level)	Protection and retention of the whole building First Level)	Under negative effects (First Level)	- Replacement the deteriorated parts with similar ones. (First Level)
4.	End of Lifespan (First Level)	Protection and retention of the whole building (First Level)	Under negative effects (First Level)	- Replacement of the deteriorated parts with similar ones. (First Level)
5.	End of Lifespan (First Level)	Protection and retention of the whole building (First Level)	Under negative effects (First Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Consolidation
6.	End of lifespan (Second Level)	Restoration of the original features (Second Level)	Partially dilapidated (Second Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Maintenance

7.	End of Lifespan (First Level)	Protection and retention of the whole building (First Level)	Under negative effects (First Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Maintenance
8.	End of Lifespan (Second Level)	Restoration of the original features (Second Level)	Wholly or partially dilapidated (Second Level)	- Replacement of the deteriorated parts with similar ones (First Level) Consolidation
9.	End of Lifespan (Second Level)	Protection and retention of the whole landmark (First Level)	Wholly or partially dilapidated (Second Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Maintenance
10.	Human factors – Lack of knowledge in preservation and development (First Level)	Protection and retention of the whole building (First Level)	Wholly or partially dilapidated (Second Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Restoration
11.	End of Lifespan (Second Level)	Restoring the original features (Second Level)	Wholly or partially dilapidated (Second Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Preservation
12.	Natural Factors - Erosion (Second Level)	Restoration of the original features (Second Level)	Wholly or partially dilapidated (Second Level)	- Reconstruction of the entire building and rebuilding it to become an image of what it used to be. (Second Level) Reconstruction
13.	End of Lifespan (First Level)	Protection and retention of the whole building (First Level)	Partially dilapidated (Second Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Restoration
14.	End of Lifespan (First Level)	Protection and retention of the whole building (First Level)	Partially dilapidated (Second Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Preservation

15.	Natural Factors - Erosion (First Level)	Protection and retention of the whole building (First Level)	Under negative effects (First Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Preservation
16.	natural factors (First Level)	Protection and retention of the whole building (First Level)	Under negative effects (First Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Consolidation
17.	End of lifespan (Second Level)	Rehabilitation (Third Level)	Partially dilapidated (Second Level)	- Change and addition in the form (addition of contemporary formations) (Third Level)
18.	Human factors (First Level)	Protection and retention of the whole building (First Level)	Under negative effects (First Level)	- Replacement of the deteriorated parts with similar ones. (First Level) Deterioration prevention
19.	Natural Factors – Natural Forces (Second Level)	Restoration of the original features (Third Level)	Under negative effects (First Level)	- Reconstruction of the entire building and rebuilding it to become an image of what it used to be. (Third Level) Rehabilitation

Table 5.3 -Classification of the Four Preservation Determinants

The cause of deterioration for all operations was assessed and it was determined that for most of them the deterioration was caused by lifespan, while in some other cases it was caused by human factors such as fire and ignorance in conservation and development. In a few cases, the reason was natural factors such as floods and rain. (Figure 5-14) shows the frequency percentage for each of these three factors.

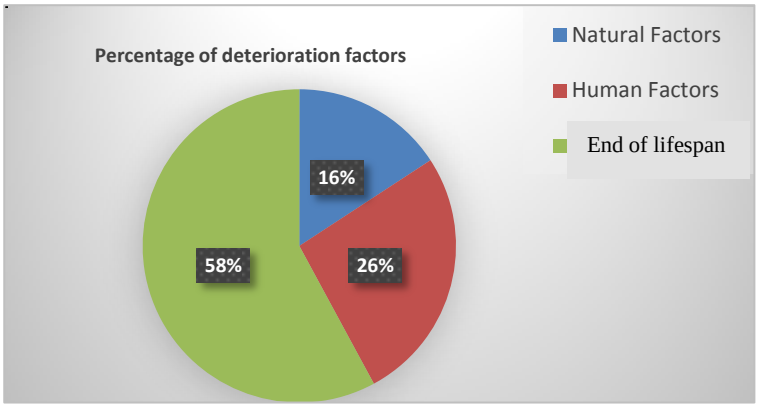


Figure 5.14 -The Frequency Percentage of the Three Factors

The physical condition of the building after each deterioration was evaluated. The study found that in all cases of deterioration caused by the lifespan of the building, the building condition was one of the following:

- Wholly or partially dilapidated in (7) cases. The intervention objective in all these cases varied; Protection and retention of the whole building in (3) cases, restoration of the original features in (3) cases, rehabilitate the building in one case occurred in the year 1375 AH.
- Under negative effects in (3) cases, the intervention objective in all these cases was protection and retention of the whole building.

The completed works all were similar. It was at the first level of intervention which replaced the deteriorated elements with new similar elements, except for case number (17) where a change and addition in the form was attempted by adding additional contemporary formations.

In the case of deterioration caused by human factors, the building was:

- Wholly or partially dilapidated in (2) cases, the intervention objective varied; Protection and retention of the whole building in (1) case by replacing the deteriorated elements with new similar elements. Horizontal extension and expansion in the first case by reformulation of spaces.

- Under negative effects in (1) case, the intervention objective replaced the deteriorated elements with new similar elements
- In a good condition, internally and externally in (1) case, the intervention objective was protection and retention of the whole building by remodeling the building.

In the case of deterioration caused by natural factors, the building was:

- Wholly or partially dilapidated in (1) case. The intervention objective was restoration of the original features by replacing the deteriorated elements with new similar elements. Horizontal extension and expansion in the first case by reformulation of spaces by reconstruction of the entire building to become an image of what it used to be.
- Under negative effects in (2) cases, the intervention objective varied; Protection and retention of the whole building in (1) case by replacing the deteriorated elements with new similar elements and restoration of the original features in (1) case by reconstruction of the entire building and rebuilding it to become an image of what it used to be.

Based on the above, it was concluded that, in most cases under study the deterioration level varied between the second and third levels by 58%. The percentage of preservation works in the second and third levels did not exceed 26%, In other words, it could be said there was a deterioration at the first level of 42%, while the intervention at the first level achieved 74% (Figure 5-15).

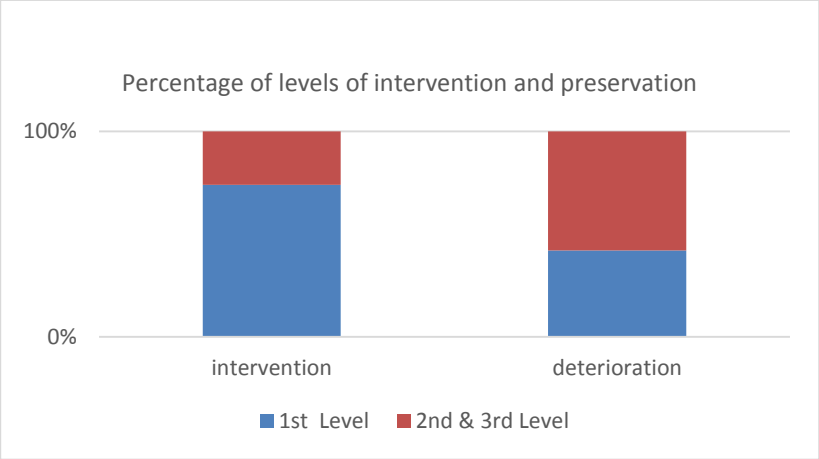


Figure 5.15 -Percentage of levels of intervention and Deterioration

The cases of over-maintenance are summarized in three operations, Numbers 1,17 and 19, in which the deterioration occurred due to human factors, natural factors and due to the lifespan. The over-maintenance in (1) operation which is reformulation of spaces, was due to a desire to act based on the prophetic commandment at that time. It was an exceptional case. It was not subject to radical interference by the authorities and bodies responsible for the Holy Mosque. The other two cases were caused by natural factors and lifespan. In both cases, modern building techniques were used which could attribute to over-maintenance.

5.6.3 Results and Recommendations:

The results showed that after assessing the levels of the four determinants (the Determinants of the Intervention Levels in the Valuable Buildings), the minimal intervention principle was achieved in a large number of the operations that have been studied by a percentage of 42.11% of the total operations. The operations recorded 15.78% of the exaggeration in the restoration with the increase in the intervention level over the deterioration level. The balance between the deterioration level and the preservation level was achieved by 42.11% as well.

Based on this result, the principle of minimal intervention has been achieved, the Over-maintenance due to non-human factors occurred when modern preservation and restoration techniques were used. The result shows that there is some deficiency in the application of the methods of preservation of architectural heritage according to the approach suggested by the study, one of the main reasons for this may be the sacredness of the place, taking advice, caution when conducting repairs and dealing with the situation with total transparency, clarity and concern by the authorities and bodies responsible for the Grand Mosque and the Holy Kaaba during the period under the study.

It was revealed through the theoretical study and through the tracking of the phases and procedures of the restoration operations carried out on the Kaaba that all the causes of deterioration that happened to Kaaba were due to a physical deterioration caused by one of the three basic factors, whose impact has varied on the safety of the structure and the original building materials of the building which are the human factors, the natural factors and the lifespan of the building. This means that there has never been any functional deterioration to Kaaba during the period under the study. Therefore, when putting a plan to preserve the buildings of historic value in the study area, it is essential that this plan would be based on taking these factors into account and avoiding their negative effects as much as possible. The study also found that the deterioration caused by human factors and natural factors is usually followed by variable levels of intervention, which commensurate with the amount of the damage caused by these factors, while the deterioration resulting from the building's Lifespan factor usually is followed by interventions on the First Level. It is worth mentioning that a single intervention on the Third level was made due to the deterioration resulting from the Lifespan of the building (number 17) as a result of using modern techniques in restoring the ceiling as mentioned in

this paper's previous studies. (Figure 5-16) illustrates these factors and their subsequent impacts.

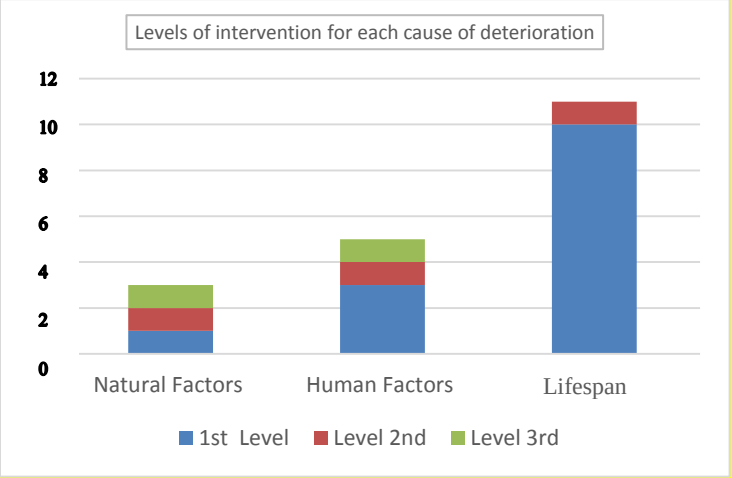


Figure 5.16 -Levels of intervention for each cause of deterioration

From the above, the most important missing elements of previous preservation method could be occurred and followed by the preservation institutions, which might contribute to changing the actual reality in the experiment of preserving the architectural heritage according to Saudi Vision 2030; in order to be able to develop a plan afterwards to support the preservation methods of the architectural and urban heritage in the region, in accordance with a clear and locally acceptable methodology. These elements were identified based on the shortage that emerged in the preservation methods of the architectural heritage in the Holy Kaaba experiment after the application of the proposed approach.

Most of the deterioration factors that occurred during the study period are due to the lifespan , and this is one of the most important observation of this study, it can also be an indication of the importance of developing a future plan organize and support by electronic programs, And contribute to the periodic registration of the building condition and details of any intervention operations Which was conducted

on the building, this may facilitate the design of prevention maintenance plans that help to protect the building and reduce processes of deterioration due to lifespan .

In general, when the deterioration and the intervention level have been compared, (Figure 5-17) and (Table 5-4) it become clear that the minimal intervention printable has been achieved in most of this study restoration operations, when average deterioration and intervention levels was calculated to verify the result of the main question was formulated in the study (intervention level – deterioration level), the result was (0.21), which illustrate that the restoration process that took place on the Kaaba during the Islamic period Was generally oriented towards achieving the principle of minimal intervention in the preservation of historical buildings.

Number	Deterioration Level	Intervention Level
1.	2	3
2.	3	2
3.	1	1
4.	1	1
5.	1	1
6.	2	1
7.	1	1
8.	2	1
9.	2	1
10.	2	1
11.	2	1
12.	2	2
13.	2	1
14.	2	1
15.	1	1
16.	1	1
17.	2	3
18.	1	1
19.	1	3

Table 5.4 -The Deterioration and Intervention level

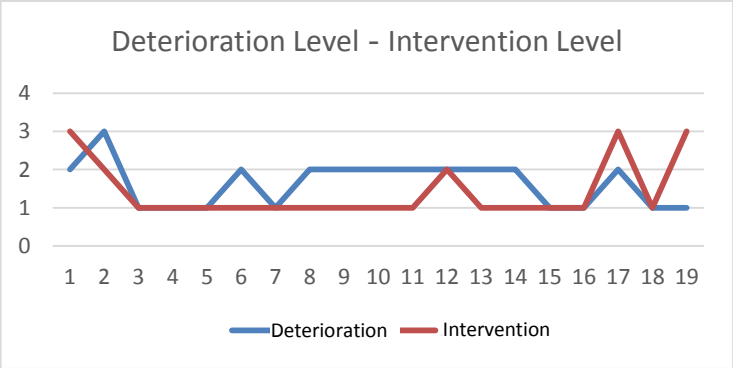


Figure 5.17 -The Final Result

5.7 Conclusion:

-The minimal intervention principle was achieved in a large number of the operations that have been studied.

-Causes of deterioration that happened to Kaaba were due to a physical deterioration caused by one of the three basic Factors, lifespan, human factors and natural factors.

-There has never been any functional deterioration to Kaaba during the period under the study.

-The deterioration caused by human factors and natural factors is usually followed by variable levels of intervention.

In most of operations under the study, the deterioration caused by lifespan.

-Deterioration resulting from the building's Lifespan factor usually is followed by interventions on the First Level.

-The Over-maintenance due to non-human factors occurred when modern preservation and restoration techniques were used.

-By this study, it become clear that there was some deficiency in the application of architectural heritage preservation methods according to the approach suggested

-Weak relationship between the exaggeration in the Kaaba restoration operations and the changes that have occurred to the Kaaba's form and components during the Islamic era.

-This study contributes in the formulation of conservation matrix, which formed the theoretical basis for dealing with the conservation of architectural heritage. to become the base for the analysis, classification and evaluation for the operations under the study

-A systematic approach that can be applied to maintain the valuable historic buildings that have been recently discovered in some regions of Saudi Arabia to contribute in achieving one of the most important objectives of Saudi Vision 2030 represented in the revival of the national historical buildings.

-The impact of the approach taken in the restoration operations that were conducted to preserve the Kaaba might be a good base for similar future studies.

5.8 References :

Arabic References:

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Sixth Chapter: Evaluation Examples of Historic Preservation in Cairo

6.1 Introduction:

This chapter presents an application for the work of the matrix that was adopted in the evaluation of the restoration operations, which were conducted for the Kaaba during the Islamic period (discussed in the fifth Chapter of this Thesis) Please refer to Table (5.1), The sixth chapter in the experimental application depends on two buildings in the historical city of Cairo, Egypt, and the choice of these two buildings because of them high archaeological value, As well as being used similarly to the original use of the building when it was established, this study is an important and essential as a part of the theoretical and applied parts in the previous chapters, By addressing projects to preserve and evaluate some valuable buildings with a view to clarifying the proposed evaluation methodology, and to find a clearer image of included drawbacks, To come up with recommendations that help develop the proposed evaluation plan by identifying vulnerabilities and problems.

6.2 The History of the Building and Its Context (Afifi, Amin, 2013)[44]:

6.2.1 Mohamed Mahmoud Khalil Museum, Egypt:

In 1915, Mohamed Mahmoud Khalil Pasha, the Egyptian Senate President and one of the world's largest collectors at the time, asked a French architect to build a private palace building to be his residence on the West Bank of the Nile in Giza, , And the use of French architects was common at the time among members of the wealthy class.

[44] Afifi, Amin, Environmentally Compatible Architecture as an Approach to Preserving Buildings of Heritage Value in Egypt, Master Thesis, Ain Shams University, 2013.page 47- 58.

Mohammed Mahmoud recommended it after his death to the Ministry of Culture to turn it into a museum of its valuable holdings to become the museum of Mohamed Mahmoud Khalil and his wife.

The building is designed in classical style, which is based on the classical thought such as the use of baroque art in the inner and outer columns, and the use of the Art Nouveau in the use of iron and curved glass in the glass room overlooking the Nile, (Figure 6-1).

Figure 6.1 - The in classical style of the museum (Afifi, Amin, 2013,page 79)

The building is located on the Nile Corniche in Giza, in a very quiet location with limited traffic. It is located in an urban content consisting of several palaces built shortly before the construction of the Mohammed Mahmoud Khalil Palace. The building is a distinctive architectural landmark in this area because of its unique architecture (Figure 6.2).

Figure 6.2 – The Museum Location (Afifi, Amin, 2013,page 79)

The classical-style building consists of:

Basement: Contains library, and administrative offices.

Ground floor: Reception halls and exhibition halls.

First Floor: Value Antiques Showrooms.

The second floor: a variety of diverse galleries, (Figure 6-3).

In 1991 there was a restoration of the building, and most important restoration work carried out on the building:

- Restoration of all Kranish and roof and wall and gilding as in the previous case.
- Add walls and concrete bases to strengthen the walls and basement bases that began to collapse.
- Replacement of all steel beams bearing roofs with new ones.
- Injection of the walls of the basement with special chemicals to prevent access to water through them.

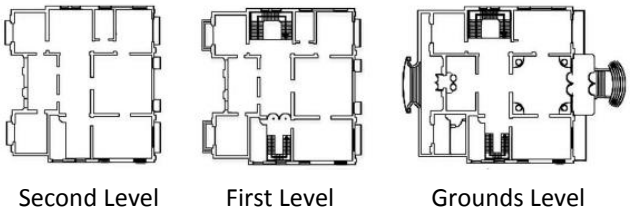

Figure 6.3 – The Museum Floor Plan (Afifi, Amin, 2013,page 83)

6.2.2 The Egyptian Diplomatic Club, Egypt:

The building was built in 1895 when the royal family in Egypt decided to establish a private club for members of that family. The site was chosen to overlook the Nile at the time. It was located between Abdeen Palace and the English camps. After the revolution in 1952, Diplomatic missions from home and abroad, a place to receive foreign delegations and diplomatic missions, and at that time was named the Egyptian Diplomatic Club.

An Italian designer designed the building, some historians believe that the architectural elements and frescoes represent the classic French character and not the Italian character. In any way, the building is rich in terms of valuable architectural elements (Fig. 6-4), ranging from the marble columns and its classic crowns, Wall panels, ceiling panels, as well as marble and wooden flooring specially designed for that building, as well as rare wooden doors and stained-glass window models.

Figure 6.4 -The Egyptian Diplomatic Club (Afifi, Amin, 2013,page 87)

The building is located in the heart of the capital, in the center of the city amidst a distinct urban range of classic European-style buildings, (Figure 6-5).

Figure 6.5 -The Building Location (Afifi, Amin, 2013,page 87)

The building consists of:

Basement: Services and administrative offices.

Ground: Reception halls and salons.

First: Library and main dining halls.

Second: Senior visitors and sitting salons.

Roof: Open seating areas for celebrations, (Figure 6-6).

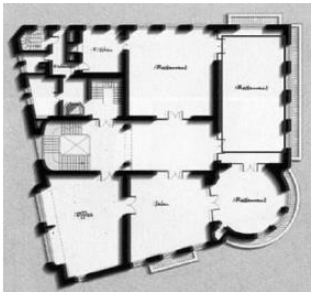

Figure 6.6 - Floor Plan of The Second Level (Afifi, Amin, 2013,page 89)

In 1999, a renovation of the building was carried out. The most important restoration works were carried out on the building:

- Restoration of architectural spaces to their original functions.
- Restoration of all Kranish in the roofs and walls
- Add walls and concrete to strengthen the walls and basement bases that began to collapse.
- Reinforcing all old and new openings with columns and metal beams to form an iron frame that bears the loads.
- Reinforcing the concrete ceilings in the basement with metal beams at equal distances that carry loads to metal columns.

The most important restoration operations carried out in these buildings were summarized in the following table (table 6.1).

Number	Date	Causes	Deterioration	Repair
1.	the building was built in 1915, the treatment was in 1991	Human Factor, Lifespan	The building lost parts of the decoration as a result of the alterations of the building, such as changing the shape of the architectural elements in the wall and ceiling, in addition a partial collapse of the basement, water leakage from the retaining walls, weakness of the ceiling, and many deep cracks in the walls of the building.	The building was restored to the original shape and especially the exterior facades. Most of the decoration was also redesigned to its original form due to the removal and reconstruction of many ceilings. The basement walls and all the wall openings were reinforced with metal frames of beams and columns. All the concrete ceilings were removed and replaced.
2.	the building was built in 1895, the treatment was in 1999	Human Factor, Lifespan	The building lost some of the valuable elements due to the random restoration processes, such as the blurring of some of the decorations, in addition to the groundwater that led to the emergence of many superficial and deep cracks on the walls ، In addition to the collapse of parts of the building as a result of damaged foundations .	The building was restored its elegance but was influenced by the development of the systems and the emergence of many alarms and fire resistance. Reinforced retaining walls were reinforced with concrete walls, all wall openings were supported by metal frames of beams and columns, and the basement ceiling was fully reinforced with metal beams loaded with metal columns, which helped to increase the capacity of the building to withstand the upper floors.

Table 6.1 -Restoration Operations Carried Out In The Tow Buildings.

6.3 Methodology:

This analyze of the elements of the approach used in the restoration operations under this study including assessing the amount of change in the building's formal properties and its original components through the preservation matrix that was derived from similar studies, to find out the impact of the restoration approach according to the building's original components and form

The restoration operations under the study are 2 restoration operations, all of which were performed for Historic Buildings in Cairo.

The study follows the descriptive analytical method. As the data was analyzed using the Preservation Matrix (Table 5-2), which was inspired by a number of studies concerning the preservation of the architectural heritage and the design of a practical methodology for assessing the restoration operations, its objectives and the relationship between the extent and the causes of deterioration with the restoration operation that followed.

The designed strategy works on assessing the restoration operation performed to the buildings of a historical nature according to one of four different levels, and then comparing them with the extent of deterioration incurred by the building. After assessing the type and size of deterioration at the four different levels, the result can be achieved by comparing the deterioration level with the intervention level through the following equation in order to clearly the suitability of the work performed for the building and its incurred deterioration at the time.

6.4 Discussion:

First, the data and information obtained were classified into one of the four preservation determinants (deterioration causes, intervention objectives, building's physical state, completed work). The determinants were classified according to their impact on the building to one of the four levels, according to the proposed methodology that was designed in advance in preparation for the assessment and analysis of its data (Table 6-2).

Number	Deterioration Causes	Intervention Objective	Building's Physical State	Completed Work
1.	Human Factor, Lifespan (second level)	Restore the original Features. (second level)	Wholly or partially dilapidated. (second level)	Reconstruct the building to become an image of what it used to be. (second level)
2.	Human Factor, Lifespan. (third level)	Rehabilitate the building. (third level)	Under negative effects. (third level)	Reformulation of spaces. (third level)

Table 6.2 - classification of the four preservation determinants.

The causes of deterioration for both operations were caused by human factors such as ignorance in conservation and development, beside the natural factors such as Groundwater.

It is clear from the previous table (6-2) that the preservation operations in the two cases under study were consistent with the current state of the building at the time, This may be the result of the progress of techniques and methods of preservation of buildings at the time compared with the restoration processes evaluated in Chapter Five of this research. On the other hand, the positive and consistent evaluation may be due to the ease of obtaining a description of the building's preservation operations,

6.5 Results

The results showed that after assessing the levels of the four determinants (the Determinants of the Intervention Levels in the Valuable Buildings), the balance between the deterioration level and the preservation level was achieved in both cases. Based on this result, neither the principle of minimal intervention has not been achieved nor the Over-maintenance. The result shows that there is no deficiency in the application of the methods of preservation of architectural heritage according to the approach suggested by the study.

The aim of the study was to create a method that helps to evaluate the restoration processes, in order to facilitate the possibility of exploiting and employing the positive outcomes of the previous preservation operations in future projects, which target ahistorical or archeological buildings.

6.6 References:

- Afifi, Amin, Environmentally Compatible Architecture as an Approach to Preserving Buildings of Heritage Value in Egypt, Master Thesis, Ain Shams University, 2013.page 47- 58.
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Seventh Chapter: Conclusion and Recommendations

7.1 Conclusion:

In this study, several important points have been made, which can be summarized as follows:

1. Value building is one of the most important resources of social development within a society, by linking the community with its historical assets and symbols of value that emphasize the identity of that community.

2. Islamic architecture is an architecture featuring characteristics of the Islamic religion. These characteristics were reflected in ancient societies and their buildings.

3. Architectural development is multifaceted and influenced by the surrounding environment. Human interaction with this development may make its impact negative or positive. In case of the therapeutic buildings, the impact of urban development has been balanced, lacking the appearance of the design elements of Bimarstan on the building. While modern technologies were able to provide an environment accepted by users according to the current study, it is difficult to predict the positive impact of development or measure their degree of passivity. However, these effects can be observed and evaluated periodically to achieve balance and re-evaluate their negative effects.

4. There is no doubt that the preservation of heritage buildings affects the community. Architecture is a part of our daily lives. We are influenced by it, yet affecting on it. The study that was carried out for the restoration of the Kaaba has resulted in different results than what the study expected. Despite the lack of studies since the beginning of the Islamic era, Muslims have been able to measure the need for and the degree of maintenance in most of the operations studied. In a few cases, the over-maintenance operation was conducted, but they were exceptional cases and do not represent the general image.

5. The connection between the level of conservation and the features of architectural identity is the primary objective of research. The study of the level of preservation in Mecca, recorded a high degree of awareness in the restoration during a long period of time and it is clear from the study that the original form and materials have not been significantly changed. Full respect for the sanctity of the place and its monuments were noticed. On the other hand, there has been little visible reflection of identity on contemporary buildings, according to the current study. It is, therefore, possible to say that architectural identity can be lost and changed, in a society that preserves its historic buildings at a high level. However, it is important not to predict what is the opposite, meaning that the current study has not been able to measure the impact of non-preservation of heritage on the identity, thus, a new question arises: Is the architectural identity of a society reflected on its buildings if it wasn't preserving the architectural heritage؟

6. The study provides a quick image of the current situation in Saudi Arabia, and the hopes that the community and its leaders incorporate Saudi Vision 2030. Through the study presented in chapter 3 on the vision of Saudi Arabia 2030, it is possible to predict a bright future in the field of heritage conservation, based on the care received by conservation and rehabilitation projects in various regions of Saudi Arabia recently.

7. The preservation of the urban heritage and the evaluation of the preservation methods in the Makkah area need more effort, especially in the preservation of historic buildings with distinctive heritage value.

8. The attention to content is poor according to the study. Many of the attempts to restore contemporary buildings to the original characteristics were just an explicit transfer of Islamic architectural features or simplification of elements.

9. The speed of urban and architectural development in Makkah led to a cultural transition to keep up with the times. This resulted in the removal of entire areas

with their heritage buildings. As a result of the loss of the large number of the heritage features, the area witnessed a modern architecture that is not compatible with its climate, geography and the principles of Islamic architecture.

10. When the restoration process is considered, it is important to take into consideration the date of the restoration process. The development of the techniques and methods of preservation of the buildings may affect the possibility of evaluation, given the ease of obtaining a description of the state of the building prior to restoration and the results of repairs in a number of references. Old processes, most of which lack the references described in the drawings and detailed explanation, increase the probability of confusion or lack of evaluation.

11. According to the study, there is a relationship between the architectural identity of contemporary buildings and the preservation level of historical buildings. Whenever the historic buildings are well preserved, the architectural form of the contemporary buildings will be positively influenced.

12. The preservation of the historical buildings and the architectural identity of the Makkah region have been negatively affected by the urban development that the region has experienced in recent decades.

7.2 Limitation of This Study and Scope of Further Studies:

The study aims to reach a comprehensive vision of the concept of preservation and identity and to study the relationship between them with the possibility of exploiting the results as a motive to activate the methods to sustain architectural heritage and architectural identity. The following provides some recommendations that will support the trends of preservation and identity and contribute to the promotion of the idea of linking the architectural heritage to everyday life in order to preserve the architectural identity in Saudi Arabia. It may also serve to achieve the direction of Saudi to reach the ranks of developed countries in the preservation of heritage.

These recommendations will be divided into three levels:

At the national level:

- Working towards the success of the objectives of the vision and support future goals; to be a starting point and a breakthrough towards the future of hope.
- Prepare competent governmental bodies to monitor the conservation processes that have been dated; to evaluate and benefit from them and the formation of a database that facilitates both researchers and publicists in the field of preservation.
- Establishment of electronic programs or plans to assist in the evaluation of the restoration process carried out for the building in order to facilitate the possibility and benefit of the previous restoration and development in the future.
- Setting construction requirements that limit the freedom of using different architectural styles, which causes architectural stochasticity, and regulate options to create a consistent environment linked to a basic reference.
- To spread public awareness in society about the importance of respect for the relationship between man and his heritage and the importance of preservation of

historical buildings; to explain its dimensions in a simplified way to open the door for community dialogue in this field.

At the level of institutions and organizations:

- To entrust the specialized institutes to prepare a program of evaluation and documentation of conservation operations so that they can be easily facilitated, in order to increase the awareness of individuals about the preservation of historic buildings and the seriousness of wasting it.
- The formation of integrated research teams to study the negative effects of evolution on the architectural environment and explain the methods of assessing these problems; increasing awareness of how to employ modern architectural elements in accordance with the identity of the place without contradicting with it.

Recommendation for future study:

- Further development of what has been studied in the research; formulate a comprehensive and integrated vision of the impact of the levels of preservation of architectural identity and develop methods of evaluating the methods of conservation to become a clear and simplified methodology which can be followed by an integrated evaluation system.

Appendix

Questionnaire Sampel

Comprehensiveness of services provided at the building.

No.	Phrase	Yes	No
1	Does the building provide its services during the morning and evening hours?		
2	Does the building take into account, in its design, the needs of the people with mobility impairment?		
3	Are there places to isolate the patients with infectious diseases from healthy people?		

A reflection of the Islamic architecture heritage and art on the building

No.	Phrase	Yes	No
1	Is there an inner courtyard in the building?		
2	Are there elements or water bodies inside or surrounding the building?		
3	Is there any type of decorations on the internal walls of the building?		
4	Is there a landscape inside the building or in its external courtyard?		

Direct Contact with Nature

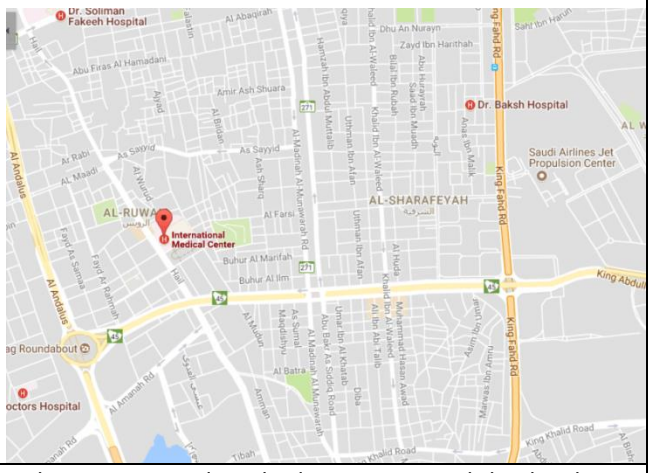
No.	Phrase	Yes	No
1	Do you think that the internal openings in the building achieve adequate natural light?		
2	Do you prefer to increase the size of windows generally in the healthcare centers in the city?		
3	Do you feel introversion and isolation due to the industrial lighting?		

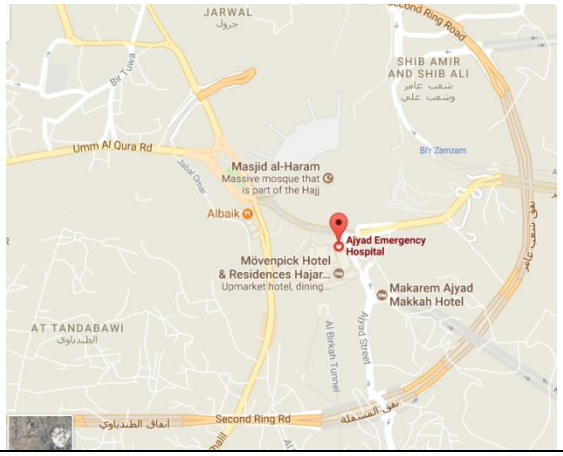
Building's Overall Rating

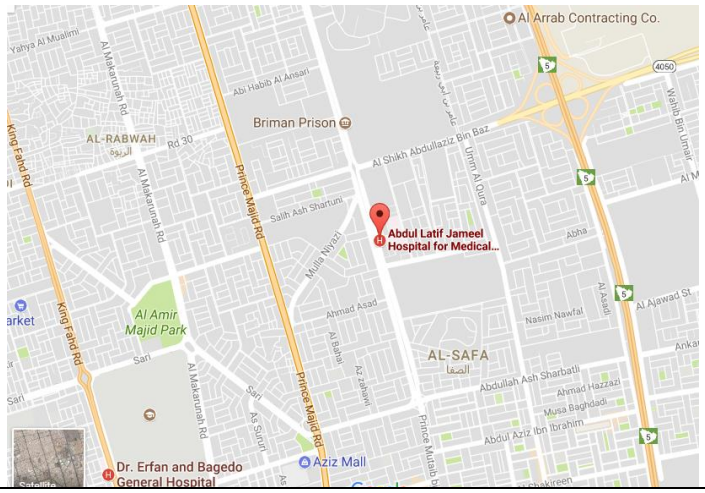
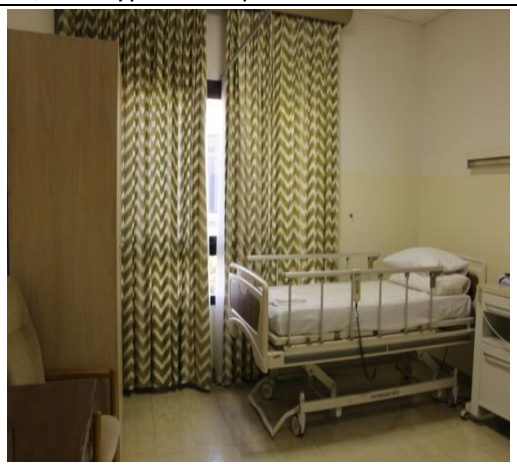
No.	Phrase		Answers in Percentage	
			Good	Bad
1	What do you think about each of the following:	Building Area		
		Building Shape		
		External Frontage		
		Internal Design		
		Ventilation		
		Appropriate Environment		
		Furniture		
		Lighting		
		Industrial Lighting		
		Natural Lighting		
2	What is your overall rating of the building?	Excellent	Good	Bad

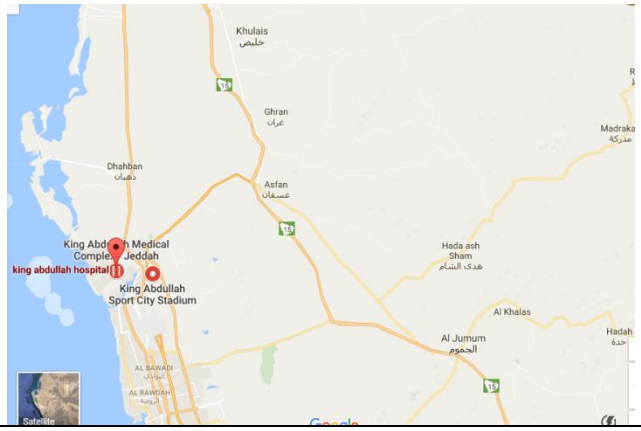
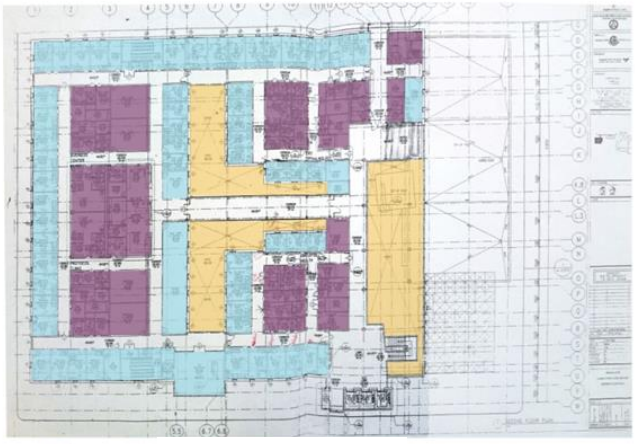
3 Space	Appropriate and comfortable		The spaces serve the patients		Its location to the building		the place capacity in general	
	Yes	No	Yes	No	Yes	No	Yes	No
Physician Room								
Examination Room								
Therapy Room								
Patients' Room								
Reception								
Physical Therapy								

4	All areas of the building provide the function quite will.	Yes	No

Building(A)	International Medical Center
Location	
Information	Message from the International Medical Center towards healing by the design mentioned by Dr. Waleed Fitaihi in the writing of healing design, which is based on "the manufacture of a unique model of health care with a comprehensive view of the recovery of human body and mind and spirit by following the best international medical standards for treatment and follow the standards of God in treatment and ethics" The influence of Islamic architecture and the teachings of Islam on the details of the building, the selection of spaces, the design and the design of the spaces are evident. Undoubtedly, this influence was reflected in the satisfaction of the users and the continuity of the medical team's free offer, as well as the spreading of the spirit of Islamic civilization that has been neglected and distorted during the present time.
	

Building(B)	Ajyad Hospital
Location	
Information	The building does not contain any aesthetic elements, although the facades of the building are affected by the Islamic architecture and its elements. The presence of natural elements and gardens but to form a view of the hotel residents and not the users of the building of the hospital. The eastern façade of the first three floors of the building is missing due to the presence of mountains and tunnels next to the building. A design error is apparent in the distribution of spaces to include the interfaces through which the natural light can penetrate the spaces that do not require the functional process where the natural lighting and vice versa. Take into account the building of the privacy aspect of both sexes (males - females) by allocating spaces inside the hospital that preserve the privacy of both.
 	

Building(C)	Abdullatif Hospital for medical Rehabilitation
Location	
Information	It was founded in 1992 AD and officially opened in 1995 AD. It is the first hospital in Saudi Arabia to specialize in motor medical rehabilitation and preventive care programs. The hospital occupies an area of 36000 square meters, which is a single ground floor to facilitate the movement of patients with special needs to all facilities. The hospital consists of three sections, including eight suites with a capacity of 100 beds, patients' rooms, physiotherapy and relaxation areas overlooking the landscaped gardens. There are separate suites for men and women. The capacity of outpatient clinics is 4500 thousand patients per month. The hospital includes a rehabilitation department, specialized clinics department, pharmacy, lab, and a section dedicated to the manufacture of artificial limbs, radiology department, and hypnosis department.
	

Building(D)	King Abdullah Hospital
Location	
Information	The square is divided into two symmetrical parts around a horizontal axis, showing the similarity in the division of spaces between the two parts. Each section is also divided into two parts to divide the plan into four main sections The natural lighting coming from the facades of the building, especially the open entrance facade on all the floors of the building and serves the main corridor connecting to the basic spaces of the floor (staff clinics and eye clinics). In both forms and celestial openings provide natural light for the spaces located in the depth of the building, The middle of the projected and symmetrical axis around the horizontal axis of the building.
 There is natural lighting Indirect natural lighting Not naturally lit