

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Renovation Spaces in Heritage Districts: The Reviving and Renovation of Culturally and Historically Open Spaces in Islamic Regions

Mahdi Saleh Al-ataabi and Ali A. Alhelli

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/intechopen.73099>

Abstract

The study depends on a spatial orientation to open urban spaces in heritage cities for potential investment opportunities after eliminating the garbage and ruination. Spaces such as alleys must take their role to host everything from live music and dinner on candle lights to traditional games gatherings under colorful traditional sculptures to highlight historical values at the alley, where spaces transform into emerging and effective public places creating public awareness. Thus, these spaces, such as streets and alleyways are transformed to a creative district block that is enriched with arts, architectures, fashion shows, restaurants, coffee shops, music, museums, shopping stores, commercial agencies and tourist offices, theaters, galleries, cultural houses, libraries, and all entertainment means. Moreover, sustainable transportation devices which do not use regular engines in any form and do not pollute the heritage spaces can be used to replace regular engines to take care of the environment. The regulation of power usage is important to make people able to discover the hidden beauty in these cities behind the buildings, whereas these spaces can attract tourists toward the city to accomplish a sustainable urban scope.

Keywords: recreating spaces, renovation, heritage, roads

1. Introduction

Heritage district forms one of the critical regions due to its traditional, cultural, and historical values in the Arabic and Islamic world and the Middle East, a rich land for these heritage areas widespread from north to south and from east to west, that shape a private form within the urban fabric. In the urban heritage areas, all the housing units formulate one integrand unit,

formed into one adjacent mass. On the other hand, the opened spaces working on disrepute of the urban create for a vital ventilator {through an inner courtyard considered as a social core}.

Despite its uniqueness, many mutual characteristics and features appear in these cities through time, different factors from the heart of social life and its traditions, beliefs, and needs of its life demand, and environmental circumstances that all combined to construct the Islamic and Arabic cities to draw the outline and features of the social life on its architecture gave it a special and unique language.

2. Study vision

It contains the schematic characteristics of the spaces, roads, alleyways, and public spaces with human scale that suit the heritage elements and essential components in urban fabric structure. It includes buildings, pedestrian walking axes, open space landscape, and streets in traditional and heritage cities with architectural and planning characteristics. It is crucial for academics to confirm that the elements of cities from the Islamic world and Middle East represent large fields for those heritage districts and spaces, transform it from a negative to positive image through investment and display in a form that releases the potential powers in it and change it into spaces that support the evolution ([1], p. 12). In addition, it improves the quality of life with concentration on building environment development while paying attention in all aspects of urban fabric by distinguishing its theme (characteristics) and concentrating on the roads, streets ways, and its gradient from public to private ([2], p. 65):

- Using narrow and zigzag ways within the urban fabric.
- Division into urban scene and optical elements.
- Organic and zigzag street planning.
- The hierarchy take into consideration of the urban fabric characteristics such as function, scale, and privacy.

The architectural and heritage characteristics and features of the city ([3, 4], p. 55):

1. Organic.
2. Hierarchy (moving from central plaza to the main roads, then to the semipublic roads, then to the private roads in pedestrian blocks and finally to private alley for group dwellings than to a dead-end alley (cul-de-sac).
3. Enclosures by a positive response to the human requirements through creating a buildings.
4. Adjacent: buildings were close to each other and less exposed to the surroundings.
5. Human scale: through compatibility, human characteristics and environment depends on human scale.

6. Flexibility and adaptation and horizontal extension.
7. Geometrical rhythm.
8. Form and function.
9. Abstraction mechanism and symbolic strategies.
10. Unity and diversity.
11. Directionality and axial.
12. The beauty through achieving functional utilization and formal beauty.

This study focused on the status of (studying space circumstances in heritage alleyways) Baghdad to explore transformation of the alley to available space and mention the rich architectural pact of the city ([3, 4], p. 58), because the alleyways present a significant clue in the history of cities and buildings and reveal details on building constrictions and urban spaces and its cultural use with its economic and social history. However, even home life was in it, there will always be these significant details of buildings that provide a window through the history of ancient cities with not only just an abstract space but also alive lasting districts ([5], p. 22).

The study tries to create a full life space in the cultural and civilization city—Baghdad—and all the same heritage cities. Baghdad alleyways have the supper ability to recruit its available in these spaces like a front yard for the whole urban society that can be operated and invested in benefit of the public interest, and the value of urban experience depends on pedestrians ([6], p. 73). Moreover, because of the alleyways volume with unique features, we can create a unique environmental experience for pedestrian way from annoying transportation in modern cities ([7], p. 98).

This small zone shrinks and expands from time to time imposes an intimate feeling, the monotony of the pedestrian, where it can create surprise element. Renovation Spaces in Heritage Districts: The Reviving and Renovation of Culturally and Historically spaces... 501 [5], p. 25. it acquires importance from the nature of the journey and gave a full impression about the cities and its history. where it can be clearly observed through the building characteristics and nature ([7], p. 85).

The study aims to display the relationship between courtyards that represent the importance of it. Moreover, the outdoor space represented by roads forum and nodes by space adaptation for many and different usage or rehabilitation to achieve the development in heritage district by McClusky [6], p. 103:

- Existence (subsistence) means the optimum use of natural resources that exist in the heritage districts which is a form of conservation.
- Precedence in the select useful field for the nation (educational, cultural, ..., etc.).

The previous types represent the sustainable development of a heritage

- Economic factor.
- Environmental factor.
- Social factor.
- Political factor.
- Morphology and city planning.

It came with social, economic, environmental, and political motivation; space can be under strict division like service burying areas that lead to health and garbage issues (epidemic, garbage, crime), narrow space, and environmental considerations to explore the space and its rehabilitation ([5], p. 46). By concentrating on a specific space or an element to display its importance above the other space that the study focuses on or on one side of it, we can apply the space rehabilitation in heritage cities into two directions ([6], p. 32).

- Quotation (formal): trait as contemporary, cloning, and forced in.
- Fundamental (essential): combined content, configuration, and function.

The nature simulation in urban fabric heritage includes ([3, 4], p. 41):

- Studying future system in the design.
- Ecological system (climate).
- Adaptation methods.

Site topography within the urban fabric ([7], p. 42):

- Harmony between shape and context.
- Colors.
- Nature utilization.
- Power resources.

Briefly, we can classify urban fabric content in the urbanscape for Islamic city in to: **urban structure and urban spaces.**

3. Urban element functions

This building has excellent value within the traditional urban fabric of assignee unity or within the urban commotion in the overall context ([5], p. 26). These buildings include the central

mosque which occupies a central location in hears of the city in the central coda junction that connects between it and the city gates, markets, schools, and traditional houses ([7], p. 25). Each one of them is distinguished by its architectural particularity features within traditional fabrics; the study will illustrate (clarify) each one of these structures down to the residential area that includes multiple spaces.

3.1. The religious elements “mosque”

The mosque is the educational, cultural, and legal center and space to perform social activities besides ([3, 4], p. 93). Its fundamental function is lingoes entity which makes it earn a considerable importance reflected in its central position and domination on urban fabric composition. The most important feature of the mosque is its axis, which is oriented toward AL qibla. This orientation can be found in Arabic and Islamic cities, so that the mosque becomes an extension to the expansion and orientation of the buildings, roads, and paths even if it was far away from useful geometrical data ([5], p. 84). Moreover, the mosque is considered the dominant element in an old city, which can create a respectable skyline city by the dome and mosque minaret that exceed the mosque height, (uses as an extra space). For prayers in super-hot days, the ablution spaces (media) toilets, and some stores in one of its corners, and it has mostly a big plaza in front of it ([1], p. 84).

3.2. The commercials elements “markets”

It has an essential value in Arabic and Islamic city which has a significant role in the formation of the urban fabric and one of the critical branches in city development. The markets value appears in economic, social, and political life in the city. The commercial streets and markets are the leading characters of Arabic and Islamic cities: they are spread from central regions of the city as a connected network from alleys that gradually expands, then into a narrow way into the secondary markets; therefore it is similar to the alleyways and public streets of the city in scaling ([7], p. 52). The linear or irregular shape or markets have a profound effect in the Islamic and Arabic city, and the commercial streets in many types covered and uncovered, narrow and organic, pedestrian transportation roads. With particular care in design for creating a significant role in the streets function ([5], p. 91). Mostly, markets were completely covered, and shops have been distributed on both sides such as merchants and workers' shops connected with many spaces covered and uncovered, where networks are widespread ([6], p. 21). Usually, stores and bazaars are linked to the commercial markets (suq) as supporting units, for business trading ([1], p. 24). Commercial streets and bazaars lay in very dense and urban entangled fabric from surrounding buildings. The commercial streets are the only significant element in Arabic city; so, we can consider it as a cultural heritage. The arcade is the most critical element of the bazaar and an active binder for religious, educational, commercial, industrial and entertaining spaces, and the shop (mahal) is its constructional unite. A fundamental element in bazaar formation and the group of shops is a direct trade market ([1], p. 67). The bazaars (khan) have its significant role

in urban functions. Its importance is gradually sorted as its location, function, size and architectural style ([6], p. 193). Bazaars and buildings for different functions, as within the urban fabric, are divided into two parts due to its function ([5], p. 62):

- Marketing bazaars for storage, workshop within the industrial, and commercial core of the urban fabric.
- The other type is a hotel—bazaar (khan) which it can be used for lodging (habitation), these khans usually has an inner courtyard.

3.3. The residential elements “houses”

Traditional housing units that form the significant part of the urban fabric, about two-thirds, consist of many feature dwelling units, and its characteristic features are as follows:

1. Each district has its character and maintains its unity and homogenous fabric based on many foundations as religious, social, and personal basic (each tribe combined into one or more district ([3, 4], p. 55).
2. Its organization prevents the merge between districts, where every district is self-sufficient.
3. Architectural form for the residential unit, the form and construction of the dwelling, is an image to reflect climatic, environmental, technological, cultural, available construction material and social life of the family ([1], p. 21). Dwelling units provide a suitable household for the Islamic society in Arabic city. Therefore, these units have features and characteristics such as inward-looking, architectural, and ecological treatments that the courtyard provides.

3.4. Streets network

Streets planning standards are very accurate for each detail and cannot be all pointed in this area because they are branched down to the human behavior in the streets ([6], p. 35). The street width determines the necessity of its function, such as the main street in Basra is 60 arms width whereas the main street in Baghdad is 50 arms. Secondary streets were determined 20 arms width, and the minimum road width was 7 arms; the most important features of the roads planning in Arabic and Islamic city are ([5], p. 39):

1. Using narrow and twisted streets that are integrated with the urban fabric of the city.
2. Dividing the view into the deferent scene to avoid the boredom.
3. The streets are usually organic and in zigzag and irregular form to achieve privacy for inhabitation.
4. The traditional city has a hierarchy particularity for streets whether in function, scale, or privacy which leads to apparent differences in streets' scale.

5. The cul-de-sac street where they increased in a residential district to provide privacy.
6. The external roads which came from outside the city ended with the city wall which organizes the process of entry and exit.
7. The roads divided in privacy scaling to main roads as a semi-public space related to social activity for the public, condition as a semipublic or semi-private, spaces and alleyways as a semi-private related to the residence.

4. Urban spaces

An efficient urban space represents a factual extension to the three-dimensional world around humans; such space represents a place for human gathering that is not only a physical place which occupies land in the city but also a significant, philosophical, spiritual, natural, and economic attempt ([8], p. 112). Therefore, space is materialistic enclosure connecting buildings and considered as a vessel to contain human activity, and is formed by intellectual and humanitarian concept that presents human interaction with the natural and cultural environment. The urban spaces distinct with features and characteristics such as gradual and containment represent features and characteristics of heritage fabric ([7], p. 53).

From here, the importance of urban spaces stands out in Arabic and Islamic city as an essential part of information of urban form and heritage fabric in the city. From many studies that have been done within the Islamic city about the roads, it can determine the net movement in gradual levels as:

The first level forms the spinal essences for street system determined by main streets which combine the main gate of the city with each other, and with the city center, where central activities are located and combined with main roads that lead to other cities and villages. The city contains few numbers of these roads and one of them represent the central axis to the city center ([9], p. 57). **The second level** represented the main roads that combined adjacent buildings to the residential district or through them and linked directly with first level streets ([5], p. 175). **The third level** signifies secondary roads that serve the district within residential neighborhoods usually used by inhabitation of the neighborhoods or people who connect with them from another district; some points of this level show some commercial and service activities that are specified for neighborhood services ([10], p. 51). **The fourth level** represented by dead and alleyways (cul _de_ sac) leads to the specific dwelling, which assimilates a transition zone between semipublic and private space in the dwelling. These alleyways connect with the three levels and the alleyways length is usually between 9 and 140 m. This level has an essential role to reduce permeability to the private space ([11], p. 212).

Upon what has been mentioned above, we can divide urban space in heritage cities into (Figures 1–4):

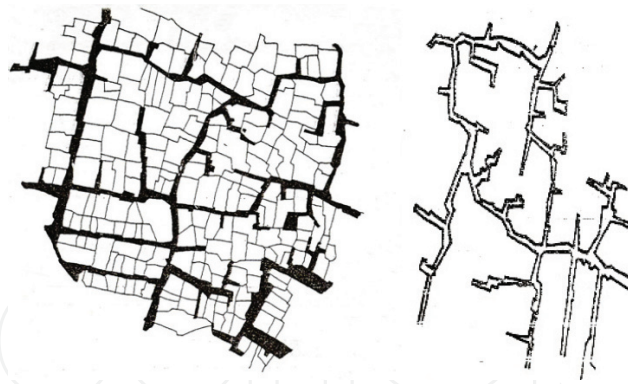


Figure 1. Old Arabic cities.



Figure 2. Old Arabic streets.

A. external space

- Main streets
- Secondary street
- Sub streets
- Alleyways
- Large squares (plaza)
- Small squares (plaza)
- Patio
- Nodes and road junction
- Permanent markets (bazaar)

B. courtyards

- Inner courtyards
- Secondary courtyards



Figure 3. Old Arabic roads (Zuqaq).



Figure 4. Alrasheed street in Baghdad.

5. The relation between traditional regulation and space formation in heritage district

A traditional building, that has a regulating architectural pattern, which reflects the urban heritage spaces, such as a house with two facades on two streets. The main house door set on

the private streets with less pedestrian and the buildings with high noisiness or pollutions functions such as ferniest, carpenters workshops blacksmith workshops ..., etc. They are placed away from the city ([12, 13], p. 63). In the beginning, the city construction was ruled by these regulations where the houses were designed with inner courtyard from one story to two stories. Architecture was characterized by:

- Simplicity
- Form intelligibility (clarity)
- Proportionally
- Harmony
- Human scale

The courtyard in the dwelling (house) is an open space to the sky, centering the house or on one side of the house, which can be considered as living space, most of the human activity can be translated into a rectangular space shape or a square space shape; sometimes, it takes different volumes and shapes to perform variety of functions; the courtyard in terrace is usually in one corner and is surrounded by an arcade which is higher than the courtyard. The arcade ceiling usually consists of stone arcades or cross stone vaults ([14], p. 163).

These corridors considered as an inner porch overlooking the courtyard, on the ground floor level, represents a terrace (veranda); the whole arcade is connected with the chamber ceiling, which is sometimes decorated with ornaments that are represented an Islamic decoration ([14], p. 163). Besides, there is another courtyard near the kitchen, bathrooms or toilets; some houses may contain a private yard for farm animals and that depends on the owner's richness and the family members which are mostly a combination of many subfamilies, such as the grand father and his sons, brothers, and grandchildren; some of them use a coal store for the stove or furnace which is illustrated in design philosophy of traditional house in the Middle East ([14], p. 163).

The courtyard functions:

1. Include the internal circulation horizontal and vertical movement in the traditional house.
2. Achieves the esthetic aspects in its architectural elements within decoration and the used material.
3. Achieve the healthful aspects which are the only air source to ventilation and lighting for the other inner spaces.
4. Achieve the social aspects, to be used as a private space for a family gathering to achieve social activities. In deferent occasions, the lobby is a suitable space for the family.
5. Considered as a service space for many activities and services such as food preparing, laundry, bathrooms, and toilets.

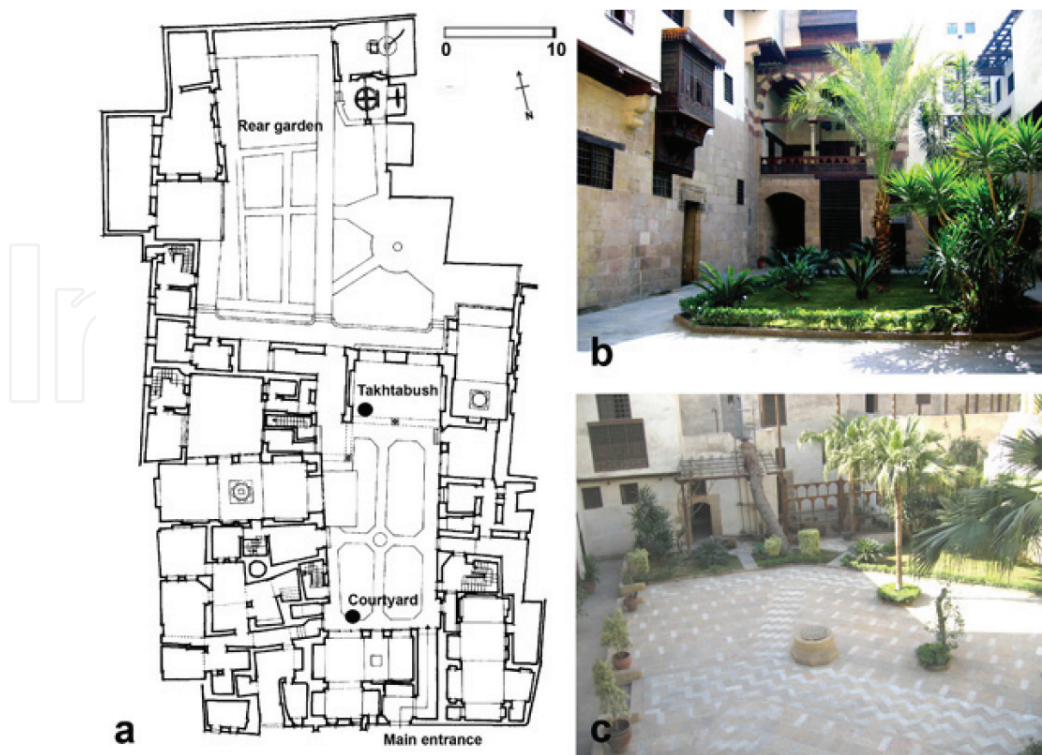


Figure 5. Traditional house in Syria.

6. Achieve and organize the connection between sky and earth through space perspective during day and night as a spiritual and psychological connection with the sky.
7. It achieves environmental sustainability and helps to soften the temperature inside the house. Cold air layers gathered in the yard during the night and together with greenery and water help to reduce the ambient air temperature during the day. Fountains and basins are used in different shapes and sizes.
8. The patio overlooks at the balconies called the "Al-Tauhous," which is open to the guest's reception. The terraces on the upper floors face the north to benefit from the cold wind and take on a more private character called the "seat."
9. As the concept of esthetics in the spaces where the concept of esthetics interferes in the formation of spaces through the use of local building materials and balance the human thought with the concepts of utility and beauty and the benefit of beauty, and as the impact of the movement in the formation of spaces and the relationship between public and private space in the heritage cities (Figures 5 and 6).

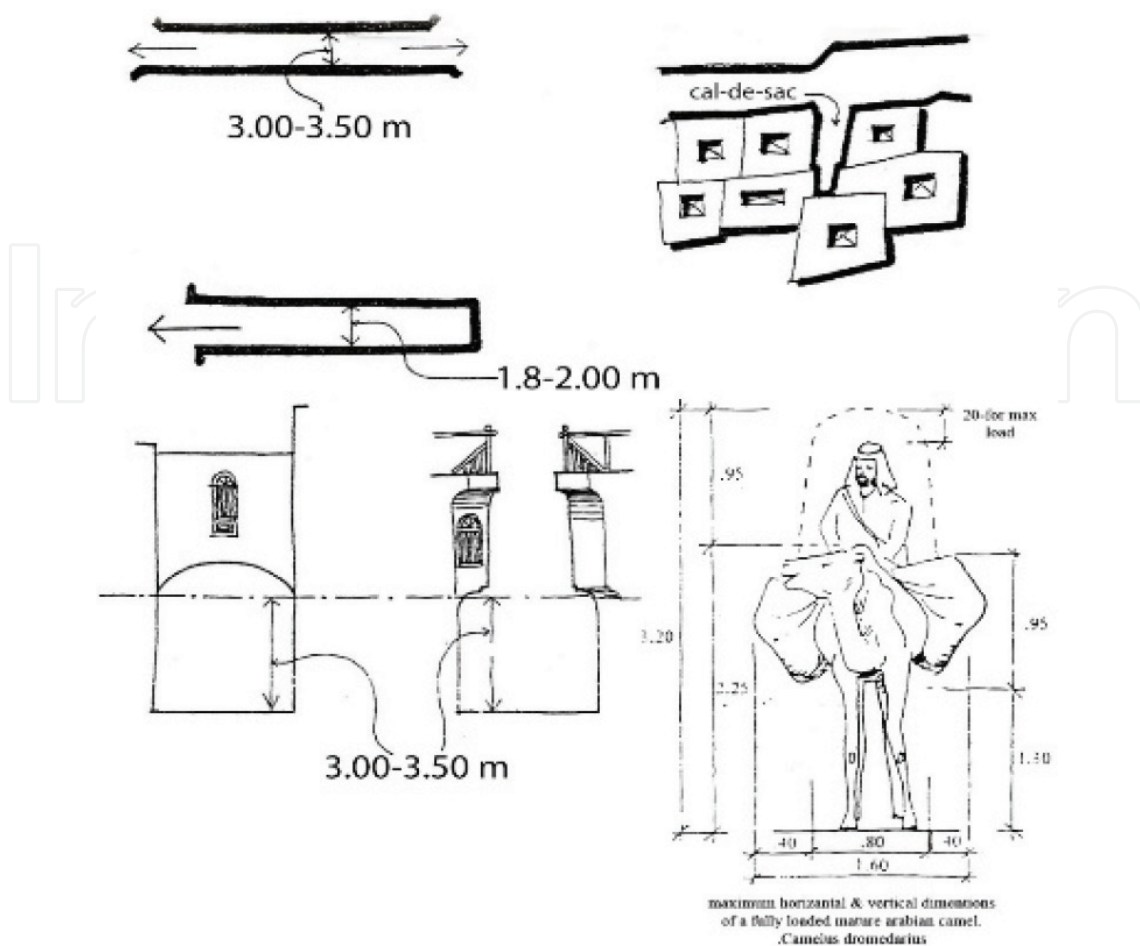


Figure 6. Arabic traditional roads details.

6. The relationship between the interior and exterior

The relationship between the interior and exterior and the transition between them from spaces are characterized by high enclosure and solidarity of the internal environment. The most important character is represented by the middle courtyard, which is the micro-social environment, and its entry is broken for security, environmental, and social considerations, and the gradient of privacy and access to the external environment and its paths called Alleyways ([5] p. 129).

The alleyways are one of the most marginal areas, where the spaces between “here” and “there” are at its best to serve the movement of the buildings surrounding them. Moreover, at its worst becomes the dark and even dangerous spaces, sometimes seen by the city’s residents as a dead space ([3, 4], p. 88). In the eyes of specialists, however, it has a great importance that the negative space occupied by the alleyways is not dead at all; it is only in a deep sleep waiting for a new birth of something new and a function that serves its surroundings. In cities where real estate is rare and costly, the alleys are being reclaimed, revitalized, and reused through rehabilitation. The rehabilitation in heritage areas is one of the best ways to preserve it ([5] p. 129).

It is rehabilitated and recultivated. New spaces can make societies safer, cleaner, and more prosperous. The ancient and heritage cities areas are always in the changing process in the size and nature similar to the human being grows, and ages when change functions and become damaged and vanity. This necessitates looking at their problems from time to time and dealing with them. The Urban renovation is one of the ways to deal with these problems. The Urban renovation is being taken in the development of new areas outside the cities rather than the reconstruction of regions or districts in which they are already faded ([5] p. 193).

The need for a more comprehensive urban renovation has emerged. The maintenance and rehabilitation of the old dilapidated areas are defined as a decisive influence on the development and improvement of the urban environment by organizing a massive scale of the existing city areas according to present and future requirements regarding urban life ([10], p. 85). Including comprehensive replanning of land, conservation and rehabilitation of areas with urban problems are consumed without attention to its historical location and heritage value ([14], p. 42). In another definition, it is a process of changing the urban environment of the city, through which the old structures and service lines are improved or rebuilt, which are not compatible with the contemporary time to face economic and social changes. Districts are used at the end of the useful life of areas of urban fabric over time because ([3, 4], p. 71):

- The structural form of the building blocks deteriorates due to aging.
- Due to the rapid and often uncontrolled urbanization process and the changing lifestyle, many buildings have become inadequate even if they are highly functional.
- Staggering population inflation and the consequent increase in demand for housing within the city to obtain a better quality of services and the corresponding technological development that helped to find structural patterns to replace previous patterns.
- The process of rehabilitating heritage spaces and investing in different functional patterns that meet the needs of the people according to current time style, so that rehabilitation and investment are the best ways to preserve buildings and heritage spaces.

7. Rehabilitation policy

It is expressed by upgrading existing buildings to an acceptable level. It is the most common method to date. It includes the improvement and development of the areas through the partial demolition of some buildings, the reconstruction of new buildings, and the development and repair of others. Here, most of the urban structure has been retained with the addition of open spaces, but this may make fundamental changes in heritage spaces ([1], p. 24).

The focus on the rehabilitation policy as an important principle in the urban renewal in terms of social, economic, and urban rehabilitation processes have become very important urban processes at present time because urban transformation has affected the urban fabric of the old areas due to the neglect and the lack of maintenance and migration of owners and can be adopted in

areas where the buildings are partly deserted “and is characterized by the unavailability of open spaces and green areas and lack of organization and congestion ([10], p. 75).

Rehabilitation can be defined as a process whereby the built-up areas are improved according to a comprehensive plan that deals with the intensive development of certain types of land use. This process includes reducing population density and land tenure, removing and identifying dilapidated buildings, and providing essential services, health facilities, and preservation of property ([2], p. 100). It can be defined as the process aimed at improving the physical structures that suffer damage in some parts and lack of essential services and social services. It also means the procedures for treating old areas at the beginning of the phase of conservation, which maintains a large proportion of the good or repairable and reused physical structures, are adapted to meet contemporary requirements in order to rebalance those areas and ensure their continuity and relevance to time ([3, 4], p. 13).

Rehabilitation means a series of works through which areas, spaces, and buildings are improved through repair or development while preserving the parts of the building and its elements that carry outstanding historical, architectural, or cultural values through the ages that have passed since its building. Memory and mental and physical and materialistic presence mean finding a new function for the building so that it can be utilized and exploited, while at the same time ensuring its continuity and preserving it. The principle of rehabilitation can be adopted in areas where buildings are partially deserted, lacking internal spaces or green areas, and are highly organized, overcrowded, and underserved. They are concerned with raising the urban and environmental level of the urban fabric, heritage spaces, or even distinctive architecture ([11], p. 39).

8. Levels of rehabilitation

There are multiple levels of rehabilitation, which may be either a single building, a group of adjacent heritage buildings, or a heritage corridor in case of a group of buildings that represent a connection between one area and another, the rehabilitation of the entire heritage area in case of a complete area represents the urban heritage, which includes buildings and heritage corridors. Accordingly, we can illustrate levels of rehabilitation as follows ([14], p. 71):

8.1. Rehabilitation of building (building and location)

This approach in rehabilitation is the rehabilitation of the building or the group of buildings in their physical existence, so that the product is a new construction that physically either entirely or partially interferes with the building or the historical site and as a result of the rehabilitation process, dialectical relations between the past and the present occur, such as, the return of missing parts for a particular building, or the adding new parts to the building or site containing a number of historic buildings ([1], p. 92).

The process of a building rehabilitation itself leads directly or indirectly to the revival of the urban heritage surrounding it, and the degree of this process depends on the importance of the

building and its role within the urban fabric and the importance of its function, which revives the building ([3, 4], p. 120).

8.2. Rehabilitation of a group of buildings (urban fabric)

This approach is concerned with the rehabilitation of certain aspects of the building or the group of buildings so that the output appears in new buildings, a link between the old and the new, and may have a certain type of physical relations of a particular style, and the rehabilitated side enters into new relationships within the new buildings and its previous relations. This rehabilitation process of a group of buildings represents the revival of urban heritage fabric and restores its function ([2], p. 11). The rehabilitation is based on two main aspects:

The first aspect is to revive the function of the building or the heritage fabric. The function may be outdated and it used to suit the needs of that era such as the traditional craft markets or planning for a new function that responds to the requirements of that era and works on attracting people to the fabric or heritage site because this outdated function was unable to attract people and revive the old fabric ([9], p. 63).

The second aspect is the preservation of the building or the heritage fabric and the preservation of its distinctive identity and the work to revive its heritage, and it represents the heritage aspect of the rehabilitation process.

8.3. The benefits of rehabilitation

The continuity of the historic building yields many benefits to society, such as ([5] p. 82):

1. **Urban benefits:** it works to improve the urban environment in which the inhabitants of the old areas live and to make it a safe and healthy environment that is suitable to the human by improving the style of uses and providing infrastructure services.
2. **Social benefits:** people and cities preserve their identity and social ties.
3. **Cultural benefits:** preserves art, architecture, and monuments.
4. **Economic benefits:** provides employment opportunities for residents of the old areas and creates centers to attract economic activities in those areas by encouraging investors and owners of capital and reuse of the existing building is more economical than demolition and reconstruction.
5. **Environmental benefits:** the old buildings are more environmentally friendly, because the traditional materials that were built from them, like clay, are natural materials that do not harm the environment.
6. **Benefits of preservation:** and maintaining the reconstruction of buildings through their function.

9. Mechanisms of rehabilitation at the individual or urban levels

9.1. Infrastructure system

The infrastructure is a system of facilities and techniques worthy of attention during the process of rehabilitation of urban spaces and heritage units, which provides users a sense of comfort. The system works as fully integrated with the rest of the components of rehabilitation to meet the requirements of spaces in terms of comfort, convenience, and requirements of security and safety ([14], p. 49).

It can be described as a set of interconnected systems and networks that represent physical and incorporeal aspects, societal needs, goods, and essential services. The physical infrastructure includes the social, economic, cultural, entertainment, and sports aspects that are necessary to provide an organizational structure, development, and sustainability of successful and productive societal systems ([14], p. 94). These include primary and secondary services, which are educational and cultural services, health services, entertainment services, works and public roads water, sanitation services, rainwater, solid waste management and treatment, energy services, green infrastructure, telecommunications services, transportation and security services, which are move as follows:

1. The transportation of these systems' services moves vertically and horizontally on two levels:

- The level of individual buildings, where rehabilitation can be done by hiding the small parts within the walls, and the vast parts require allocating channels to contain them vertically ([5] p. 37), while technically small ones can be hidden within the floors while the large parts require false ceilings to hide. In some rehabilitation projects, it is difficult to enter such services because of the difficulty of manipulating the structure or because of the high economic costs associated with providing such spaces for putting this kind of services. Some interior designers rely on the means of transportation of these services to appear in pleasantly decorated courtyards in an interior environment ([14], p. 81).
- At the level of the public spaces (external), rehabilitation is a complex operation and at the same time, it is expensive regarding materials and needs a long time as it is the first and necessary step in any process of rehabilitation of traditional spaces ([3, 4], p. 45).

2. Electrical and communication services

- During the day, these sources of lighting work with natural lighting ([5] p. 44).
- During the night, the artificial electrical lighting is effective in the lighting of the indoors and outdoors and for other purposes that may relate to the exterior of the building and monuments and different signs at the level of private and public spaces or for the purposes of movement or display at the level of public spaces ([5], p. 44).
- Electrical equipment and installations: These include electrical protection devices, circuit breaker, wiring systems and cables, which deliver electrical power to all

building devices, as well as, other electrical systems of the communications system, firefighting, and elevators of different spaces [5].

3. Health services

This includes the supply of drinking water, irrigating, and the water pipe system within these spaces. Other systems may be added, such as water purification and desalination, especially water for conditioning and pumping systems, as well as, water's drainage services [5].

4. Sewerage network

The restoration of the sewerage system, as it is often destroyed or severely damaged, and the rehabilitation ensure the preservation of the safety of the buildings, which promotes their sustainability in a proper manner and reduces the expected and probable destruction caused by damage and deterioration of the network, and in addition to what affects the spaces, especially the streets due to the damage of tiling and paving, and what is reflected on the rest of the services and activities that have an effect on the overall effectiveness of the urban spaces and the inability to represent them in an appropriate manner that achieves the greatest ability to invest these spaces and activate them according to what is planned (**Figures 7–9**) ([6], p. 88).



Figure 7. Sewerage network.



Figure 8. The lighting.



Figure 9. The transport services.

5. Transport services

The importance of dealing with transport within the public spaces and streets is a matter of concern because it has a significant impact on the effectiveness of these spaces. The first step to be taken is to cancel and prevent traditional means of transport to pass into the

heritage spaces because they cause pollution, damage, and confusion of the complete rehabilitation and development. The use of nonpolluting transport means that rely on electrical energy, such as, electric cars and vehicles, as well as, traditional transport means, such as, horse-drawn carts and various types, sizes and shapes of bicycles that give esthetic and nontraditional touches, which enhances the recall of the collective mental memory of the place and thus supports the material and physical memory and adds to the human soul of joy. This requires the use of various kinds of barriers (the fixed and moved ones) that allow the wheels to pass when necessary (the apparent and hidden ones) with modern forms that add elegance and beauty to the spaces and works to restrict the traffic in general, which allows at the same time the service vehicles such as cars for the transport of materials and goods to some shops within heritage spaces, as well as, garbage truck for cleaning and transport, emergency cars, ambulances, firefighting trucks and other necessary vehicles to sustain life within these heritage spaces ([5], p. 82).

6. Agriculture

The rehabilitation of spaces requires putting monuments, development, and creation of the requirements and making green spaces that suit with the capacity and importance of some places and panting them in different ways to achieve many aspects, firstly, esthetic, psychological, and environmental comfort [5].

9.2. Materials and quality of details

The use of local materials such as bricks, stones, marbles, and woods can be the used in modern building technology. Nowadays, many things have changed, as many different methods and styles of production materials in the stores. Building's materials play an essential role in creating visual homogeneity and contrast between heritage buildings and adjacent modern buildings. Building materials are an essential element to the sense of belonging to the surrounding environment ([8], p. 94).

Because the essential issue of the building is façade which reflects many properties such as texture, color, and its suitability for reflection and absorption of light. The designer's task is to know the characteristics of the surface and the properties of the used materials and their techniques and the ability to form the elevation mentally with their materials and colors. The materials cannot be visualized unless you see it to be used in many buildings or models. The expression of architecture and raw materials, which are used in construction is the privacy of the place where the cities were built at that time ([10], p. 34). Robertson confirmed that the change in the use of materials leads to change the characteristics of the urban landscape of the heritage areas. This change has not only occurred in the architectural style but also has weakened the sense of locality and identity, thus weakened the local architectural character due to the development of transportation and communication, which helped to use global materials instead of local materials that have particular traditions, but the impact of local materials remains strong in promoting privacy and identity ([12, 13], p. 54).

The use of nonlocal materials has led to the diversity of architectural forms according to these materials; they are distinguished by different properties from traditional materials, due to their

different properties and nature, and thus led to visual and expressive changes that were not previously familiar with local architecture, especially in color and texture. The buildings were characterized by smooth texture and flat surfaces in the 1950s, 1960s, 1970s, and 1980s representing the orientations of global architecture. The harmony between architecture and society in previous eras belonged to the fact that the society possesses and absorbs the techniques of that era. This society produces these techniques and is not an emergency case ([3, 4], p. 23). The details and their quality sometimes play a more important role than the building materials themselves, as the presence of uniform details in adjacent buildings gives greater flexibility in making changes in color, materials, texture, the height of the building, etc. Moreover, the difference in the quality of details is related to the movement of the viewer and speed ([9], p. 69).

Use of the smallest architectural vocabulary for details: The composition is achieved through the use of repetition, which is determined by the use of structural materials and colors, in addition to the selection of one shape and one material ([12, 13], p. 54). The use of the highest architectural vocabulary for details: The visual formation composition is obtained through the highest use of elements and architectural details, which represents the nature of the individual who moves inside the complex and the simplicity to analyze the information within (Figures 10 and 11) ([12, 13], p. 54).

9.3. The floors

The floors are the link between the buildings and between the spaces. It also represents the surface between these elements in the urban landscape, as well as, being a place for walking and waiting for pedestrians and cars. The floors have two primary purposes ([3, 4], p. 145):

- Functional purpose: Multiple models of behavioral patterns, pedestrian movement; waiting; seating, children's play yard, or traffic.



Figure 10. Materials and quality of details.



Figure 11. The effect of agriculture.

- Visual purpose: Floors work as an esthetic element to connect the various buildings and determine the space confined between them as a space of rest or movement of pedestrians and cars.

9.3.1. Characteristics of the shape of the floors

The shape of the floor surface is one of the most important characteristics that affect the overall structure of the building and the urban landscape. The difference in the surface shape of the floor occurs as a result of the difference in the relationship of the surface level of the ground with the horizontal level, as well as, the ground level's location with regard to level of view, gives this difference in the forms of floors, for the level of view the following cases ([10], p. 86):

- Floor with level of view
- Floor below level of view
- Floor above level of view

Each of the previous cases expresses meanings and feelings and works to form the relationship between the place and the human; it can be divided into two basic types: horizontal floors (one level) and floors (multi-level) ([10], p. 63)

9.3.2. Horizontal floors

The most important features are:

- Less specific to organize and arrange the elements in different ways whether free or regular ([1], p. 116).
- The sloping or curved floors of the outer spaces are more impressive and distinct than the flat horizontal floors where the limited vision range makes discovery more difficult ([1], p. 117).
- Ease and freedom of movement on the horizontal floor, especially when changing direction while moving or visually, as well as, easy to control the vision both in moving objects around us, and vision of moving things ([1], p. 118).

The problems of flat floors, especially if extended, are visual boredom, especially when the urban landscape lacks apparent attractions ([1], p. 118).

9.3.3. *Multilevel floors*

They are divided into the following types ([12, 13], p. 54):

- Simple slope floors.
- Floors with a steep slope.

9.3.4. *Treatment of floors surface*

The nature of the used materials in the construction of the floor works on giving the final appearance and can be confined to ([12, 13], p. 111):

- texture
- color
- divisions

9.3.5. *Floor texture*

The texture helps to determine the type and speed of movement. The flat concrete floor helps to increase the speed of walking, while the rugged floors oblige the person to move slowly. The materials should be chosen with an appropriate texture, and thus it is necessary to choose materials with a texture that suits the type of movement whether fast or slow with attention to the safety factor in the design of the texture of the floor. The floors are divided into two parts depending on the texture ([3, 4], p. 94):

- Floors with a soft texture.
- Floors with a rough texture.

9.3.6. *The color of the floor*

The shape, proportions, relationships, and characteristics of architectural elements are greatly influenced by the color of the floors. The choice of flooring colors should be subjected to some of the essential considerations ([12, 13], p. 54):

- Although light color values help spread light, however, they do not fit with dust, dirt, and footprints.
- Floors with dark colors, unsuitable, where footprints appear more pronounced, so the most appropriate colors are those with light gray values.

9.3.7. *Floor divisions*

Divisions affect the identification of movements, facilities, and different possibilities. The movement on the ground is determined by the movement of the receiver in an innate manner

between the buildings, and the extension and homogeneity between the elements, and these divisions can be inspired by the spirit of the place ([12, 13], p. 68).

The floors play an essential role in the process of understanding the urban landscape within the heritage spaces, achieving visual pleasure, surprise, directing attention to famous buildings, breaking the visual boredom, creating a state of diversity and suspense in the urban landscape and connecting building blocks visually.

9.4. Trees and plants

Trees and plants play a significant role in organizing the urban landscape within the heritage spaces as one of the natural phenomena of nature that captures the human admiration and enchants them in their renewed colors with the seasons of the year, beauty, diversity, and natural effects that bring pleasure to person.

The design of urban landscape is a work of art when its elements are properly organized in an esthetically pleasing composition. Plant and tree designers are influenced by site characteristics and architectural elements when designing outdoor spaces and green spaces ([7], p. 57). When designing, it is necessary to consider the following elements and characteristics: identify lines accurately on the site, form, texture, color, scale, proportions, and unity. Moreover, taken into consideration the characteristics of the used architectural elements, such as walls, fences, walkways, outdoor terraces and all other elements, they cannot be separated from the esthetic and functional considerations of plants. All elements are taken to form a whole homogeneous, just as the melodies form musical instruments in a homogeneous unit within the symphonic band to produce an enjoyable vocal output ([2], p. 90).

In addition to the elements of design, consideration must be given to the functional characteristics of plants, such as the work of visual and physical barriers, climate control, and reduction of soil erosion ([12, 13], p. 76). The artistic influence of external spaces is experimented in a variety of ways, so that the viewer usually interacts with the event by passing through these spaces and taking a position through, around, above, and under its elements, which creating diversity through the vistas emergence and its disappearance.

The esthetic pleasure of the senses remains and is compatible with the function and the physical environment, since the green elements (plants) have a set of characteristics that contribute to the formation of the landscape of the external urban spaces, and these characteristics are the form, texture, and color. These properties also contribute to find line, mass, diversity, repetition, balance, and assertion. Moreover, they are important to consider the final size of the growth of plants compared to the space to be occupied and then its relationship with the size of a human and the rest of the elements and buildings within the surrounding. The importance is in the following (**Figures 12 and 13**) ([12, 13], p. 76):

1. Linking buildings visually and closing spaces between them, as well as, optical connection between buildings and the site.
2. Determining the features of spaces and streets.
3. Achieving privacy through its work in defying vision.



Figure 12. Using plants in re-habitation places.



Figure 13. The floors.

4. Protecting from wind, dust, and heat of the sun.
5. Confirming the moving and visual axes in the direction of the viewer.
6. Framing the vision toward the crucial scenes.

7. Creating variation in shape, color, and texture with buildings.
8. Achieving visual integration with adjacent blocks.
9. Achieving visual diversity through changing and moving shadows, as well as, changing colors throughout the year.

9.5. Street furniture

All elements of the street reflect the importance of visual impact on the importance of functional, which is as considered one of the primary components and the critical scene of the city and its streets ([3, 4], p. 75). The formational components play a role in the urban planning process which works with the surrounding buildings to unite the place, as they are components with elements such as booths, fountains with their sizes, fountain basins, flowers, and stationary street furniture ([7], p. 83).

It is worth to mention that there are no specifications and fixed determinants of street furniture and they are different according to the street and its characteristics from one country to another, but in general, there are essential customs that must be taken in the selection of street furniture; they are ([5] p. 100):

- **Scale:** The dimensions of street furniture and the area it contains.
- **The site** for the viewer: achieving the best esthetic and visual properties and serving the visual angles of the scenes. In general, the used colors are neutral to the most of the elements unless the function requires the opposite of it, and the finishing materials and the methods of connecting the elements to the different surfaces of the street are essential to create a feeling of belonging to the street scene as a whole. Street furniture can be divided into:

A. Signs

They are symbols or signals placed in specific places to convey information to street users. These marks are classified as follows ([12, 13], p. 76):

1. **Identification sign:** these are the signs that carry information that defines the type of activity or function and its names, such as, private building, stores, etc., and represents the most critical type because of its remarkable presence in the commercial streets ([2], p. 90).
2. **Directional signs:** it relies on the use of signs (arrows) to direct road users to event sites and services, such as traffic signs ([2], p. 90).
3. **Orientation signs:** they are signs that represent information regarding the time and venue of the events of different types ([12, 13], p. 76).
4. Prohibitory and warning signs.
5. **Official notices:** they represent precise information in general that requires signs of the significance of the following ([2], p. 90):

- The simplicity of expression and using signs instead of letters as much as possible.
- They have standardized forms including the fixation method.
- Their dimensions are commensurate with their function or the importance of their information.
- Be visible through the day and light at night.

The uncontrolled use of signs and identification of various activities in the streets of the city make the receiver to feel confused and also distorting the urban environment of the street ([5] p. 100).

B. Lighting

It has been used for street lighting, areas, and open spaces since past for safety and lighting, and can be classified into two types ([2], p. 90):

1. General lighting: such as fixed poles for streets, squares, and traffic signals (controlled).
2. Special lighting: the lighting of buildings and trade exhibitions.

It should be noted here that the poor distribution of poles in the streets of the city reduces the importance of the scene and the effectiveness of its use.

C. Pedestrian roads

The design is influenced by standards related to the quality of the used materials and colors. It is preferable to use bright colors because they do not fit with the open places where the footprints appear. Therefore, it is preferable to use nonslip gray piles. In vast areas, appropriate patterns and layouts are made to minimize boredom due to the large areas which they lack in the Arab heritage cities while they exist in the western heritage cities, such as the Plaza in the cities of Roman and Agora in Greek cities (**Figures 14 and 15**) ([7], p. 83).



Figure 14. Signs in streets.



Figure 15. Lighting.

D. Seats and sitting places

Sitting places represent one of the essential components of the street, and their shapes are affected by the nature of the used materials, and must have standard specifications related to the dimensions of the human body, and must be located in places away from traffic so that people can enjoy ([12, 13], p. 76), rest, and observe the various events, as well as prefer to be shaded by a number of sun shades and shading facilities to protect people from various weather conditions ([5], p. 100).

E. Plant containers and trees

It is essential to define spaces and achieve containment; also, plants and trees have value and an esthetic and symbolic importance through their psychological and visual effects. Trees and plants with their various sizes, bodies, and colors give a sense of joy ([5] p. 100), vitality, activity, and psychological comfort to the street users. Also, it improves the image of the urban scene by organizing its sites parallel to the street or in front of the ruined buildings or places with undesired scene, as well as it provides shading and a protected environment for street users, and the choice of plants and trees in the street depends on ([7], p. 83):

1. The characteristics of the street and its harmony (shape, color, and texture) which fit with surrounding components.
2. Performed function.
3. The appearance during the stages of growth and seasons of the year.
4. Their symbolic value.
5. The required maintenance costs.



Figure 16. Seats and sitting places.



Figure 17. Plant containers and trees.

F. Bus stops

These components, play an important role in giving a distinctive character of the place or street, where they must be the used and structured the street outline based on the right

foundations and in harmony with the character of the urban scene to be distinctive sensually and visually ([5] p. 100). The most important characteristics and productive relationships can be confined to achieving the state of continuity and harmony between the buildings and the rest of the elements that provide the overall picture of the urban scene. It should be noted that relations are not constants ([5] p. 100), but are subjected to change, and the ongoing budget that requires the designer to take into account depending on the location and its nature and physical characteristics, and these relations are classified as characteristics in two directions (**Figures 16–18**):

1. The first direction: it is the relationship and control that contributes to the process of creating homogeneity, harmony, and continuity of the visual context of buildings and adjacent blocks to achieve a visual structure which is coherently visual and compatible with each other and with all ([5] p. 100).
2. The second direction: it is the formal relationship and esthetic addition that achieves visual and psychological pleasure, where they play a role in creating a formal expression and giving a coherent urban image to adjacent buildings with the other elements (complementary parts of the structure of the urban scene) ([12, 13], p. 76).



Figure 18. Pedestrian roads.



Figure 19. Landmarks.

G. Landmarks

There are useful components in the streets, squares, and spaces of heritage that sometimes give a personality of the place (the area sometimes takes the name of the landmark or vice versa); some examples of these components are gates, monuments, and clocks or the transfer of distinctive trees in their qualities or ages and other components ([12, 13], p. 76).

The journey within the heritage spaces can be an indefinite experience ([7], p. 83), lacking the sense of place and time if the structure of the place is clear and transparent, where the vision can be achieved from different locations, and this helps the traveler to guide his behavior in the environment and heritage spaces ([2], p. 90). The landmark can achieve this function in different ways, and the landmark can be appealed to the field of vision to guide the road and then disappears and reappears as a visual reference to guide precisely to the road, and in other cases, the precise construction within the field of vision is essential by seeing within different trips and in various ways helps to gradually build the mental image of the viewer in the heritage spaces ([5] p. 100). Some buildings, such as the mosque, the church, and other religious buildings, are located in a clear location, for example, on the top of the hill and they can be seen from different roads and locations and guide pedestrians and vehicle riders to know the road in heritage spaces and environments (**Figure 19**) ([12, 13], p. 76).

10. Conclusions

1. The most important policy in the revival of heritage areas is the rehabilitation by preserving those heritage areas with their fabric and buildings or to restore them to a proper form that harmonizes with their identities regarding materials and design and then reoperating these heritage spaces in a way that achieve benefits and preservation.
2. The heritage spaces are spaces with different functions and activities that are overlapped with each other, such as, cultural activities, tourism, entertainment, marketing, commercial,

etc., which necessitates to find different strategies and mechanisms to promote these functions in order to achieve higher efficiency, benefit, development, and higher investment in those spaces that is appropriate to the aspects, such as architectural, esthetic, utilitarian, economic, cultural, social and entertainment in those heritage spaces.

3. The use of sustainable means of transportation which does not consume fuel and does not cause pollution, such as horse-drawn carts, electric vehicles, and various bicycles, as well as, walking in the heritage spaces that would strengthen the connection of individuals with the place and the achievement of social aspects as well as the promotion of spatial affiliation and feeling the spirit of the place, which adds joy, pleasure, and a sense of psychological comfort in the tours.
4. The occupancy of heritage spaces in several functions, whether esthetic, cultural, social, economic or environmental, increases the effectiveness and performance of these spaces positively and supports and promotes the principles of sustainability and development, which are essential goals in the contemporary architectural and urban planning trends.
5. The revival and rehabilitation spaces in the heritage areas require the creation of points of visual attraction at the level of squares, green spaces, and spaces using the Landmarks, which gives heritage areas their identity and true privacy.
6. The style and diversity of covering the streets and spaces that are included in the heritage fabric harmoniously are one of the most critical points that give attractiveness and add contemporary esthetic touches that increase the effectiveness and glamor in heritage spaces.
7. The open spaces in the heritage fabric can be revitalized through the rehabilitation of these spaces to include green spaces, simple playgrounds, fountains, individual bodies of water or landmarks, as well as, monuments and statues.
8. The rehabilitation act of furnishing the streets and spaces in traditional areas and heritage spaces plays a significant role in their revival: ticket booths, food booths, ice-cream booths and seats; and even lighting lamps, if chosen in a distinctive and appropriate way with the heritage, may play a significant role in attracting tourists.
9. The revival of heritage spaces requires consideration, attention, and importance to be given to them by taking into consideration the proportions of what is added to the new fabric so that it does not lead to losing the importance of those buildings and heritage spaces as those spaces and buildings are the targets of rehabilitation.
10. It is necessary to pay attention to landscaping and adding green spaces in most heritage areas. It creates psychological comfort and gives points of attraction, as well as, the transfer of some trees of formal or age distinction makes them attractive points, also being landmarks within the heritage spaces.
11. The adoption of the rehabilitation strategy for heritage spaces enhances the functional, visual, and spatial integration and correlation within heritage spaces on the one hand and between the cities as a whole on the other hand.

12. By using mechanisms in the rehabilitation strategy of spaces, the coherence between the parts and components of the heritage spaces is developed and rehabilitated.
13. The revival of heritage areas through the rehabilitation of spaces with religious, spiritual, and educational characteristics, such as, mosques, churches, and schools, works in turn to preserve the spiritual and cultural aspects of these areas.
14. The revival of heritage areas in general and alleys in particular achieve general visual form.

Author details

Mahdi Saleh Al-ataabi^{1*} and Ali A. Alhelli²

*Address all correspondence to: Alfaraj200824@yahoo.com

1 University of Technology (UOT) – Department of Architecture, Iraq

2 University of Technology (UOT), Iraq

References

- [1] Rees C. Environmental assessment in development banks and aid agencies. In: George C, Lee N, editors. *Environmental Assessment in Developing and Translational Countries*. The University of Manchester, NewYork: John & Sons; 2008
- [2] Sadler B. *Environmental Assessment in a Changing World*. Ottawa: Canadian Environmental Assessment Agency and International Association for Impact Assessment; 2011
- [3] Al-Atabbi MS, et al. *Urban Air Quality Evaluation Over Kut City using Field Survey and Geomatic Techniques*. University of Technology/Department of Architecture; 2017
- [4] Al-Atabbi MS, et al. *The Effect of Social Mobility to Disfigure Houses Elevations*. University of Technology/Department of Architecture; 2017
- [5] Al-Atabbi MSA-F. *The Originality in Modern Architecture* [dissertation unpublished Ph. D.] Baghdad: University of Technology/Architecture of Architecture; 2006
- [6] McClusky J. *Road Form & Townscape*. London: The Architectural Press; 2010
- [7] Ward P. *Conservation & Development in Historic Towns & Cities*. London: Oral Press Limited; 2015
- [8] World Bank Regional Environmental Assessment, *Environmental Assessment Sourcebook Update*, No. 15. Washington, DC: Environment Department, World Bank; 2006
- [9] Green K, Raphael A. *Third Environmental Assessment Review (Fy 96-00)*. Washington, DC: Environment Department, World Bank; 2016

- [10] Krier R. Urban Space. London: Academy Editions; 1970
- [11] Eames E et al. Anthropology of the City. New Jersey: Prentice Hall; 2008
- [12] Al-Atabbi MSA-F. Inside and Outside the Commercial Centers in Arab and Islamic Architecture. Baghdad: University of Technology/Department of Architecture; 2016
- [13] Al-Atabbi MSA-F. The Impact of Veneration Concept in Mosques Architecture. Babil: University of Bable; 2016
- [14] Al-Atabbi MS et al. The Impact of Religious Monuments in the Scheme of the Arab Islamic City. Baghdad: University of Technology/Department of Architecture; 2014

IntechOpen

