# Sustainability of Values in Heritage Buildings: Insights from Iraq

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**Abstract**

This study examines the ways to improve the environmental performance of heritage buildings of value to achieve sustainability. To do so, it proposes to adopt economic, social, and cultural values as the basic tools for assessing environmentally sustainable values of heritage buildings However, there is a serious lack of knowledge and methodologies to achieve this objective.

Therefore, the paper first produces a general framework for evaluating sustainability in heritage buildings of value. It further determines the primary indicators for this purpose which are then applied to selected local and international architectural products. The paper takes the position that sustainability has a role in preserving the heritage environments by recognizing the diversity, generating economic well-being and protecting resources. It stresses upon the importance of incorporating community participation in developing heritage environments. The paper concludes that by taking decisions regarding the communities with their participation, reaffirms the moral depth of the state of heritage production of local sustainable values as well as the social interdependencies of indicators of the human environment.

**Key words:** Sustainability, value, value theory, value sustainability, heritage.

## Introduction

The concept of sustainability does not necessarily focus on buildings of value, although sustainability criteria have been applied in its various dimensions to evaluate valuable buildings preserved through community awareness and their inherent value systems. However, no individual can indicate any visual or mental image or the level of maturity of the society and what represents its values. It is also not clear as to who has the right to, or have added the values and the significance and importance to the buildings. However, despite the presence of many studies looking at sustainability and heritage separately, there is an absence of studies that examine the values of historical and heritage buildings and how they implicate sustainability.

Thus, there is a lack of clarity about the general frameworks that can be applied to achieve the sustainability of heritage buildings of value. In this context, this research focuses on building a general framework for assessing the sustainability of heritage buildings of value. Then it is applied to the selected buildings. Its goal is to ascertain the degree of suitability of the framework, as well as to ensure the sustainability of heritage buildings of Arab and local values compared to their global counterparts

This paper thus accomplishes the following.

- Presentation of the general concepts relevant to the research: sustainability, values, and heritage buildings.

- Ascertaining the theoretical and intellectual connections between them. The formation of a theoretical framework that includes the basic vocabulary for the interdependence of these ideas in the verification of sustainability in the heritage buildings of value.
- Applying the previous theoretical framework on a building carefully chosen to evaluate the sustainability characteristics as related to the concepts and their interrelationships.
- Ascertaining the general framework in terms of the suitability of the indicators and the basic vocabulary to achieve the sustainability of values in heritage buildings.
- Verification of local and international samples to ascertain the applicability and if there are any differences.

## 1. The General Theoretical Background
### 1.1. Literature survey

Unsurprisingly, there is very little research that connects the three ideas buttressing this research: sustainability, values and heritage. However, as a preamble to this research, some of the previous research conducted into the issues of values as related to heritage have been examined. A summary of them is presented as follows.

**Table 01**: A summary of literature
Source: Author

| Researcher and the year of study | Study Title | Analysis of the contents |
|---|---|---|
| Chadirji 1995    -1 | Dialogue in the structuralism of art and architecture | The study reviews third directions for the production of contemporary local architecture that represents the methods of interactions between the past and the present, ranged between complete compatibility and reproduction of heritage, and between ignoring it and adopting the Western models.<br>The first trend is to preserve and maintain the local architectural traditions.<br>The second direction is represented by the assimilation of Western arts and linking them with the local traditional treatments.<br>The third approach adopts a contemporary structure that is crafted with selected elements of heritage. |
| Murtak 2006    -2 | Keeping Time: The History and Theory of Preservation in America | The study reviews the history of the American experience in architectural preservation at the level of the individual building as well as the sector. It stresses the importance of private institutions and associations that have an essential role in the preservation process. It also examines the role of the media and computers in spreading awareness about the importance of preservation, as well as the training programs.<br><br>The study focuses on the methods of classical preservation of formal features, through mummification of the form (the idea of the museum), which has been later applied on a larger scale, such as the sector and the city, in what was known as the external museum.<br><br>However, this study did not clearly raise the issue of preserving moral values, nor did it develop a clear formula for evaluating the role of preserving methods in achieving communications between the past and the present. |

| Al-Jumaili 2008    -3 | Biotourism and architecture | The study linked the topics of reshaping and preserving the historical and heritage elements to the tourism incentives of the place, and paid attention to historical symbols as tourist and cultural attractions.When reshaping a place in a historical environment.

The study recommends preserving the social fabric with all its characteristics, and preserving cultural heritage as an irreplaceable historical system through intervention patterns represented in preservation, rehabilitation and urban renewal. It proposes to reshape the functions it performs, and re-employ archaeological buildings for purposes that serve the place in displaying antiquities and sculptures, while avoiding the introduction of new buildings to the place.

The study points out that philosophical interventions and myths would contribute to the reshaping of the place and its reflection on the identity of the place and the formation of public spaces. It also indicates that there is freedom for a designer to select the elements that expresses the identity of a place, especially in the surrounding areas, through meditation, inspiration, metaphor, and imitation to create historical continuity and express the identity of a place.

The importance of this study lies in its dealing with the levels of preserving urban heritage, but it made the levels of architectural intervention for the traditional and historical areas limited to formal preservation and rehabilitation operations exclusively, with concentration on preserving the moral values and the possibility of deriving new meanings inspired by the old exclusively on the areas surrounding the traditional and the historical areas. |
|---|---|---|
| Stelmach 2010    -4 | Aleppo Diverse/Open City | The study linked the issue of preserving the urban heritage with tourism, encouraging it, and educating the tourist on the history of the region. Conservation has also been linked to improving the living environment in the area.

The study generally dealt with the importance of preserving heritage buildings and areas, especially in the field of tourism.

It focused on exploiting and reviving the distinguished cultural heritage to enhance the city's identity and preserve the existing traditional social and economic structures.

The study emphasized the role of heritage in defining the identity of the region, enhancing the individual's belonging to his urban surroundings, and encouraging tourism. |

## 1. 2. General Concepts

### 1. 2.1. Sustainability

Today, buildings are expected to be designed in a way that respects the environment with an eye on minimizing energy, materials and resource consumption and on minimizing the impacts of construction. They should create the environments while being in harmony with Nature. This green approach to design in the field of architecture is known as sustainability which means not depleting natural resources to ensure their continuity for the future generations (Williamson, 2003).

The concept of sustainable development has been associated with many contemporary global issues such as environmental concerns related to the depletion of the ozone layer, the

rise in atmospheric temperature, the limited nature of the fertile soil, scarcity of fresh water, poverty, massive consumption of natural resources, urban population growth, as well as health and education. One of these definitions is to continue performing activities until they become productive in an indefinite way so that they are better off than they started. These activities can also be related to the following.

A- Education, environmental protection.
B- Improving human health.
C- Population stability.
D- Conservation of resources and international responsibility and whatever it takes to achieve economic values and social and environmental justice (Gohar, 2016).

### 1. 2.2. Sustainable strategies and mechanisms

The strategies of sustainability usually employed in urban developments focus on implementing energy-efficient systems for a site, dealing with energy use, waste management, as well as the use and selection of materials (Talal,2013). They can be summarized as follows.

**Table 02**: Strategies for Sustainability
Source: Author

| Application mechanism | | Area of Concentration |
|---|---|---|
| Reduction of dependence on fossil fuels for transportation, industrial facilities and power stations. | - | Atmospheric protection |
| Separation of industrial areas from the residential areas in planning. | - | |
| Collection and recycling of rainwater. | - | Water conservation |
| Planting low water consumption plants. | - | |
| Provision of sewage treatment plants. | - | |
| Recycle used water. | - | |
| Use of natural soil. | - | Respect the site |
| Taking into account the capabilities of the site. | - | |
| Taking into account good guidance. | - | |
| Making the most of architectural materials and treatments. | - | Energy conservation |
| Reduction of energy wastage through equipment used in construction. | - | |
| Use of local and on-site materials. | - | sustainable management of materials |
| Reuse of building materials and structural elements. | - | |
| Provision of waste treatment plants generated from energy consumption. | - | Administration sustainable waste |
| Reduction of construction waste and other waste resulting from excavation and construction operations. | - | |
| Production of clean energy using modern methods. | - | Using modern technological methods |
| Reliance on smart technologies and computers. | - | |
| Provision of afforestation and green spaces to get rid of air pollutants. | - | sustainable urban planning |
| Improvement of emergency response and reconstruction operations. | - | |
| Reduction of building operating costs. | - | Design and operation efficiency |
| Provision of lighting and control of humidity inside the building. | - | |
| Use of plants on rooftops. | - | |

### 1. 2.3. Sustainability framework for environmental solutions

Some of the most important indicators of sustainability are as follows.
- Rationalizing building methods and energy consumption as one of the pillars upon which the success of sustainable development in any society depends.
- Taking into account the environment surrounding the buildings and the suitability of the buildings for that environment in order to achieve environmental and economic sustainability.
- User satisfaction is an important component of the success of buildings and cities representing the general community.
- Using ventilation more efficiently for buildings through the correct orientation and forms appropriate to environmental variables.
- Reducing environmental impact and creating a comfortable and enjoyable environment to achieve comfort at all levels (Hilal, 2014).

As can be seen, values of heritage buildings usually do not come into this process of sustainability although it should.

### 1. 2.4. Values

Values in the general sense (ethical - social - religious) are expressions of the existence of humanity. They include human rule and the meanings and evaluations established over time. They relate to the same historical heritage establishments known for their institutions of architectural value that tell the history of the city as a result of their association with distinct events, people, activities, places or models and even the eras themselves (Abdel Wahab, 1990). Building evaluations thus include four main values as follows.

1. Historical Values.
2. National Values.
3. Urban Values.
4. Architectural values.

Being what it characterizes, values in general are considered sustainable characteristics that Man seeks to preserve. They are usually classified positively or negatively based on people's views of them. They make a person act according to the behavior in question, and thus they represent the moral control of a person in his society in order to maintain the continuity of existence (Almanie, 2005).

### 1. 2.5. Value theory

This theory suggests that the value of a thing is actually hidden in it, but it expresses its own nature. Thus the value of a thing is objective and is independent of the person who watches it and his feelings, and is determined in isolation from his experience in real life. For this reason, values in their view are fixed and unchanging. It became clear to Plato, who lived in a society dominated by turmoil, that there is no way to reform except with the three ideals: truth, righteousness, and beauty. These three things, in his view, have the highest meanings, the most valuable, and the greatest status (Al-Ahwani, 1962). Plato indicates the following.

- The right side of science and knowledge.
- Goodness is in the aspect of morals and behavior.
- Beauty is on the side of artistry and proportion. (Islamic Humanities Blog, 2008).

### 1. 2.6. Values of heritage assets

Heritage is the system of ideas and knowledge created by Man through his daily experiences and behaviors passed down from generation to generation. It is connected to the past, has a strong influence and presence in the present, and is an indicator of the course of human experience in the future as well. This is what has caused the contemporary crisis because of the lack of permanence and continuity of heritage. The essential heritage values stem from the balanced relations between the three axes of the environment: people, space, and time. The

value of heritage and the values of assets are determined according to the history and characteristics of the area and are also based on the presence of groups of heritage buildings in these areas. They are also affected by the state of the urban fabric of heritage and the valuable areas (Fatal, 2001).

### 1. 2.7. The concepts of heritage buildings and the values

Heritage buildings with values are those that bear the civilized characteristics of a society. Accordingly, they are known as homogeneous civilized buildings that abound with a set of heritage vocabulary. Often, they fall under the jurisdiction of the Laws for the Protection of Antiquities.

Indeed, they contain dynamic and static values that indicate the characteristics of a society, where we find the urban values and architectural characteristics as well as customs, traditions and heritage formulas. Heritage buildings are characterized by the dynamism of their data, in which life, activities, and various influences are lamented. This is in addition to the continuous mutual relationship between them and the human beings who greatly influence them, which is what characterizes it (City of Glat, 1995).

### 1. 2.8. Strategies to deal with buildings of value

### 1. 2.8.1. Building reuse strategy

It is a process in which a building is rehabilitated in sustainable ways to carry out the basic function for which it was established, as is the case in most heritage buildings that have been restored (City of Glat, 1995). Buildings of value must be used for the purposes for which they were established, but we find many buildings no longer perform their original functions, as they are either abandoned or useless due to demolition, or the need for them no longer exists. For example, in the popular baths whose functions have been nullified and therefore, they have stopped working, the buildings have been used for commercial benefits and various other purposes (Rafeeq, 1999).
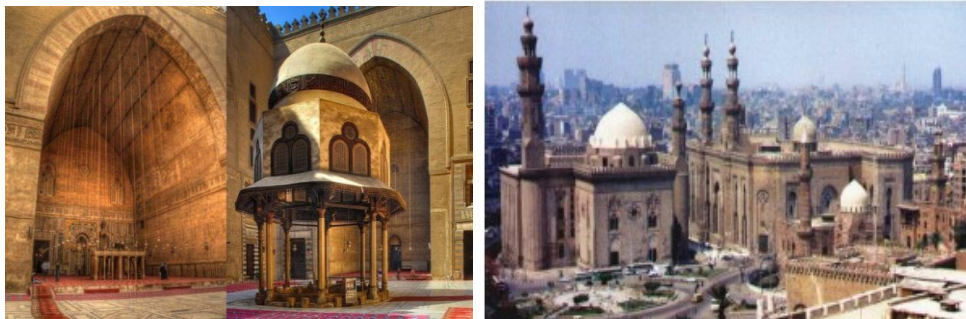


**Fig. 1:** The Sultan Hassan Mosque in Cairo - Restoration using sustainable methods.
Source: https://www.emaratalyoum.com

### 1. 2.8.2. The Strategy of re-using buildings with values

Re-use is the creation of a function for a building other than for which it was built, and such work may be accompanied by some unnecessary changes in the building to suit the new function. They appear with an optional re-purpose of buildings in the case of buildings of value whose original function still exists. (Rafik 1999). As Ahmed (1990) says, the concept of re-employment of areas of value as an integration between the maintenance and preservation of buildings of value controls the manifestations of change associated with the processes of urban, social and economic developments.

Such a strategy can achieve the following.

- Preserving the values of architecture and the aesthetics of the building values.
- Achieving an economic return on the building through maintenance and operation. Thus, the building becomes self-sufficient, making it the nucleus of economic development of the urban environment.
- Creating an intimate relationship and a close connection between the buildings and their surroundings, represented in the exchange of benefits. This can lead to a psychological attachment to value construction (Rafiq, 1999).



**Fig. 2**: The Marriott Hotel. Source: https://ar.wikipedia.org/



**Fig. 3**: Al-Sihaimi house_ repurposed. Source: https://middle-east-online.com/

## 1. 3. The theoretical connections: values and sustainability

### 1. 3.1. Theoretical indications of the public sustainability values in heritage buildings

Value is related to the intellectual perceptual aspect associated with the human mind, whether it is productive and interacting or receiving up bringing in its social environment, and like the human personality, it contains the mind and conscience and their formulation and the formation of the individual to the society in which he grew up (Al-Wardi, 2005). Thus, in sustainable heritage, intellectual values represent the starting point from which the architectural text is formed. It acquires meaning and transforms from material elements that have no meaning to elements that carry a sustainable semantic and symbolic dimension. As Jencks (1988) says, they are generated as a result of time and environmental reasons, as well as the constants present in the formation of the intellectual system. The state of equilibrium is among the constant variable causes in an intermediate state in the formation of the intellectual value system.

Indeed, they also involve the following.

1. Promote new values and methods of human life to achieve a more harmonious relationship with the local resources and environments both regional and global.
2. Provide public awareness about building values.
3. The genesis of living culture perpetuates the natural response and natural harmony with the local environmental factors.
4. Respect the natural and cultural resources of the site and minimize the negative impact of any design (Jamal al-Din, 2010).

### 1. 3.2. Sustainability of valuable heritage buildings

The concept of sustainability has expanded to include not only natural and environmental resources, but also to the processes of preserving heritage environments to include a more general and comprehensive concept of that process as a second step in dealing with those environments. Modern definitions of sustainable developments have focused on three pillars, namely the economic pillar, the environmental pillar, and the social support pillar (Berit, 2011). In fact, sustainability of heritage environments is only a preparatory step for investing in heritage environments, and this means preserving them to meet the future needs. (Fuda and Abonella, 2010).

### 1. 3.2.1. Standards for the organization within heritage environments
One of the most important criteria for revitalizing heritage environments is as follows.

- Preservation of all the architectural details of the heritage buildings that emphasize the distinction of the character of the heritage environment.
- Observations in all modifications to the heritage buildings the significance of character, so that these modifications do not lead to damage the character of the heritage as a whole.
- Preservation of the original elements such as the doors of the heritage buildings (City of Glat, 1995).
- Control of the extension of the display windows not beyond the top of the building to modify the facades. There must be a commitment to the places designated for the display windows.
- Removal of the shops in the buildings that are not designated for commercial use on the ground floor or the mezzanine.
- Retaining when changing use, the openings of windows or balconies, without extensions (The Urban Coordination Authority, 2009).

### 1. 3.3. Heritage values within the framework of environmental treatments
There are two main approaches to architectural preservation and treatment methods:

- Confirming the authenticity of the origin as it is, maintaining the original structure.
- Confirming the importance of the origin as a historical symbol. This trend accepts the idea of rebuilding the original and creating a copy of it (Thamer, 1978).

Heritage values are classified within the framework of environmental treatment as follows.
1. Traditional methods: Aim to nullify the visual effects of damage to the building, without addressing its causes.
2. Contemporary methods. These methods aim to:
   A- Ensure that the structure or a group of buildings acquires a permanent function through its maintenance and rehabilitation while preserving the sustainability of the cultural and economic value it bears.
   B- Search about a new function for the building as close as possible to the original function.
   C- Consider the character of the building, its original objectives, and its relationship with the neighborhood before making any modifications to it (Abdel-Razzak, 2006).

It is seen that these trends can be classified according to the determinants of dealing with the building and its requirements (Bukhash, 2004) to what intangible cultural heritage can contribute to, in terms of environmental sustainability. While human activities globally consume the natural resources at increasing and unsustainable rates, many local communities have developed lifestyles and practices related to the values of intangible cultural heritage (Bukhash, 2004).

### 1. 3.4. The role of sustainability in preserving the structure of an urban heritage
A heritage environment of a city is a living, ever-changing organism and buildings in a city generally need to be preserved and maintained, and encroachments removed from them on an ongoing basis to be able to meet the changing needs and requirements (Williamson, 2005). Hence, the importance of the two aspects of achieving sustainability in the heritage environment are the economic and the social, and they must be clarified.

## 1. 3.4.1. The economic sustainability of heritage environments

Sustainability, in its comprehensive sense, means protecting, supporting, and the continuity of resources at an acceptable cost for the benefit of the society and the state.

Economic sustainability focuses on the optimal management of heritage environments as part of the basic resources of cities, by focusing to get the maximum benefit from the developments such as economic development, provided that the heritage environments and their qualities are preserved.

Economic development although takes into account the environmental standards of those environments and works to limit the damage that may be left by the necessities is not enough to prevent the collapse of the environment in the long term. The restrictions that shackle human behavior also apply to a limited globe that cannot have its population grow endlessly. (Mahmoud, 2006).

The Visual studies confirm the importance of harmony and diversity in the urban environment in general and the heritage environment in particular, as harmony and visual harmony give the environment its identity and a sense of place. Diversity attracts attention, banishes boredom, and helps to identify the built environment (Nasar and Song, 1999).

## 1. 3.4.2. The importance of community participation in the sustainability of heritage environments

Sustainability is achieved by emphasizing the responsibility of the society towards the surrounding environment through community participation in decision-making and administrative processes since the beginning of the early stages of development indicators (Mahmoud, 2006). The process of managing a sustainable development of heritage environments requires the active participation of all parties benefiting from and influencing development, such as the heritage environments community (Abdel Moneim, 2014). This means achieving participation in socially extensive projects in the sustainable development of historical regions, and regional cooperation to meet the requirements of life in a developing country.

However, it is not expected that low-income people will maintain a building they live in, even if this building is ancient. Rather, the low-income individuals look at their human requirements first and the requirements of the historical building in which they live later. Therefore, the higher authorities must intervene to create the required balance in the historical environments between the residents and the historic buildings (Al-Majidi and Al-Tai, 2015).

## 2. The general framework

The theoretical framework for the research is thus constructed on this basis. It is then applied as a model to analyze a number of case studies in order to demonstrate the following.

1. The validity and appropriateness of the indicators and the framework.
2. The level of sustainability of the buildings in the Arab world and Iraq in particular, as evaluated using the framework and the indicators.

The framework so developed is presented below.

## 2. 1. Formation of the evaluation framework

**Table 03:** The evaluation framework.
Source: Authors

| The Main Issue | possible values | The code | The main Issue | possible values | The code |
|---|---|---|---|---|---|
| The intellectual level of value sustainability<br><br>x-1 | Perceptual and intellectual aspect of value | x-1-1 | **Frameworks for regulating the**<br><br>**sustainability of heritage** | Preservation of the architectural details | x-4-1 |
| | Sustainable intellectual heritage values | x-1-2 | | Taking into account the facade modifications of the heritage buildings | x-4-2 |

| | | | | | |
|---|---|---|---|---|---|
| | The sustainable value formation of meaning | **x-1-3** | **buildings of value x-4** | Rehabilitation of the building in a sustainable manner | **x-4-3** |
| | Sustainable restoration of historic buildings | **x-1-4** | | Preserving the architectural and aesthetic values of the a building | **x-4-4** |
| **The theoretical level of value sustainability x-2** | Integration of green design methods and smart technologies | **x-2-1** | | The connection of the building of value and the surrounding community | **x-4-5** |
| | Promoting new sustainable values and methods of human life | **x-2-2** | **Sustainable preservation of the values of the heritage environment x-5** | Fulfilling human requirements and needs | **x-5-1** |
| | Increasing public awareness about technology | **x-2-3** | | Integration of needs | **x-5-2** |
| | Immortalizing natural responsiveness and harmony | **x-2-4** | | Taking into account the surrounding environment of the buildings. | **x-5-3** |
| | Reducing the negative effects of design | **x-2-5** | | Connecting Man and the environment with technology. | **x-5-4** |
| | Improving assessment of the natural environment | **x-2-6** | **The economic aspect of sustainability values in the heritage environment x-6** | Optimal management of sustainable heritage environments | **x-6-1** |
| | Flexible use of spaces and future expansion | **x-2-7** | | Harmony and diversity in the heritage environment in an economical manner | **x-6-2** |
| | Sustainable restoration of historic buildings | **x-2-8** | | Achieving environmental economic value | **x-6-3** |
| **Frameworks for achieving the sustainability of heritage buildings of value x-3** | The long-term balance between human resources and environmental protection | **x-3-1** | **The social aspect of sustainability values in the heritage environment x-7** | Confirming the community's responsibility towards the surrounding environment | **x-7-1** |
| | Investing in sustainable heritage environments | **x-3-2** | | Coordination and technical support | **x-7-2** |
| | Confirm the authenticity of origin | **x-3-3** | | Achieving broad popular participation in sustainable development | **x-7-3** |
| | The importance of origin as a historical symbol | **x-3-4** | | | |
| | traditional methods of treatment | **x-3-5** | | | |
| | Taking into account the personality of the origin and its original goals | **x-3-6** | | | |

## 2.2. Research methodology

This research uses the descriptive approach, and the theoretical review presents the most important theoretical definitions of the concepts, strategies and mechanisms of sustainability. These include sustainability as a framework for environmental solutions, value theory and values and their relationship to heritage assets and heritage buildings of value and strategies for dealing with them. They deal with heritage and the importance of community participation in the sustainability of heritage environments.

Once the theoretical framework and its pointers have been established, they were tested through case studies of two projects, the Sinnari House and the Musée d'Orsay. The researchers analyzed the two projects and verified the possible values of the indicators based on the researchers' judgment. Possible values were set and total values were determined for each case study.

Here, a synthetic measurement is adopted by studying the formal changes and treatments related to the realization of research concepts within an analysis that is carried out for the selected samples based on the interpretation and information of the researchers. Finally, this is reflected in determining the possible values achieved as a result of that analysis. Those values for the main vocabulary were finally put forward as the analysis and discussion. The outcomes within the overall analysis show the extent to which the research objectives were achieved through the application.

## 2. 3. Case studies
## 2. 3.1.1. Case study A: Beit Al-Sinari

Al-Sinari House was built during the Ottoman Empire. This house was one of the remaining luxurious palaces built for the elite in the Ottoman Empire in Cairo (Al-Nasiriyah district - Al-Sayyida Zainab). The house contains most of the features of that era: a bench that overlooks the inner courtyard, a harem room (space for ladies), and a wind tunnel (malqaf) facing the hall from the North side to reduce the heat during the summer. At the front of the house was a large garden.

The significance of the Bayt Al-Sinari lies in the fact that it carries between its walls the aesthetics of decorative architecture, which makes it a rare masterpiece in the form of a historical house. It completed the composition, as evidenced by what appears in the unique architecture with the presence of the magnificent mashrabiya overlooking the main street. The house mediates from the inside, a distinctive courtyard with a fountain.

The French Mission for Cooperation *forsauvegarde du Caire Islamique* (French Cooperative Task Force for the Preservation of Islamic Cairo) was tasked with the restoration, which began in several stages to reduce the level of groundwater, followed by the selection of craftsmen with the experience to work on the restoration task. It was important to lower the level of the street next to the house; to restore it to the same level as it was in the previous century, allowing the main entrance to be fully visible for the first time. The halls of the house, the mashrabiya, and the wall safes were also renovated (Ahmed Amin, 2013).

This work was carried out by a team of Egyptian and French members to exchange experiences between the two sides, as well as train nearly a hundred craftsmen on the work. The process of preserving the Sinnary House follows the standard of ethics in restoration work, and it was an important aspect in preservation. Although physically separating the past and the present, the historic building has been restored as an arts center and book store and used its terminal for cultural meetings and seminars. It can be seen that the adaptive reuse of the building satisfies a major concept of sustainability by extending the useful life of the existing building. This reuse results in lower costs in terms of materials, transportation, energy, and pollution when compared to the construction of the new buildings (Afaf Abdel Hafeez,et al.,2021).
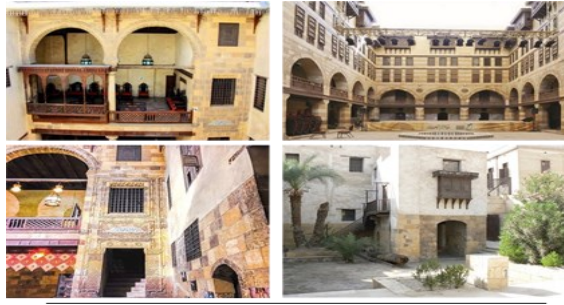
**Fig. 4:** Sanari House.
Source: http://www.cairo.



**Fig. 5**: The interior spaces of the Orsi Museum.
Source: www.flickr.com/search/?q=The+Orsay+Museum



**Fig. 6:** Exterior of the Orsi Museum
Source: www.flickr.com/search/?q=The+Orsay+Museum

**2. 3.1.2. Orsi Museum Project The Orsay Museum in Paris,France:  B**

The building is located on the Southwest (left) bank of Seine, in Paris. There exists parallel to it from the opposite end to the South, the Rue de Lille avenue and facing it on the other bank of the river, the Tuileries Gardens and the Grand Louvre. The site's entry into history dates back to the beginning of the seventeenth century, but its distinction began in the eighteenth century. As for the age of the building, it dates back to the last year of the nineteenth century.

The rehabilitation of the Orsi Museum is a result of the sustainable preservation of the building and its moral and historical values. It was necessary to find an activity (a specific function) that works to revive the historical building, and therefore its reuse works to increase the social and economic benefits of the building, which helps to perpetuate it.
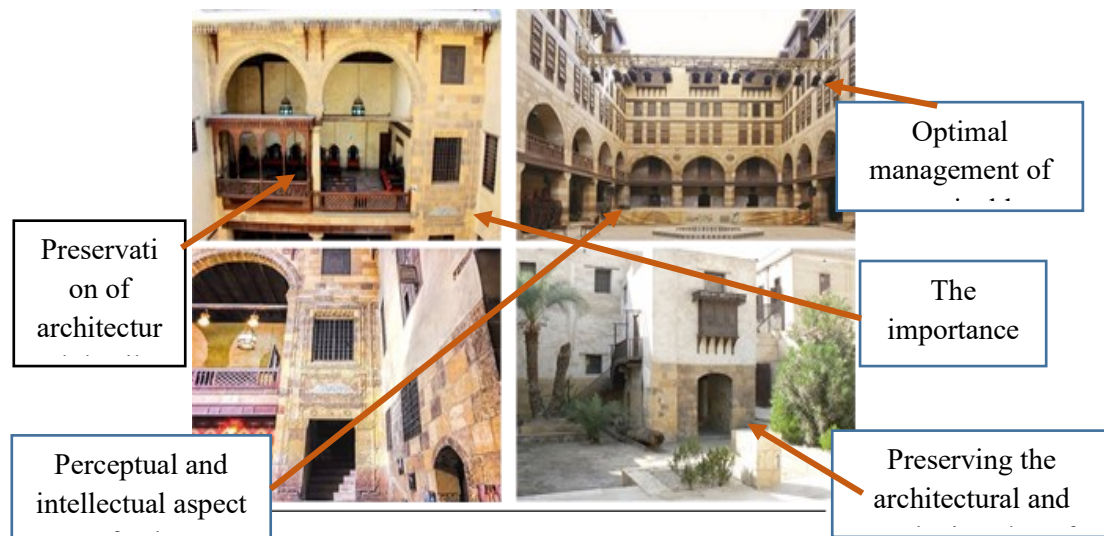
It is understood that historical buildings must have a function to continue to exist at all levels. Functional reuse was achieved through a total change of the functions. This means a change in the functional type, a change in the relationships between spaces, and a change in the movement patterns between the interior spaces of the building. The rehabilitation process has dealt with the internal spaces by respecting the original internal configuration of the station, as

it has preserved its longitudinal space, which is distinguished in size and area relative to the rest of the spaces. The respect for the architectural features and the formal arrangements of the general character in the Orsi building had its effect. It allows the reconfiguration of its internal spaces on the one hand and emphasizes the contemporary overlap on the other hand (Al-Taei, 2015).

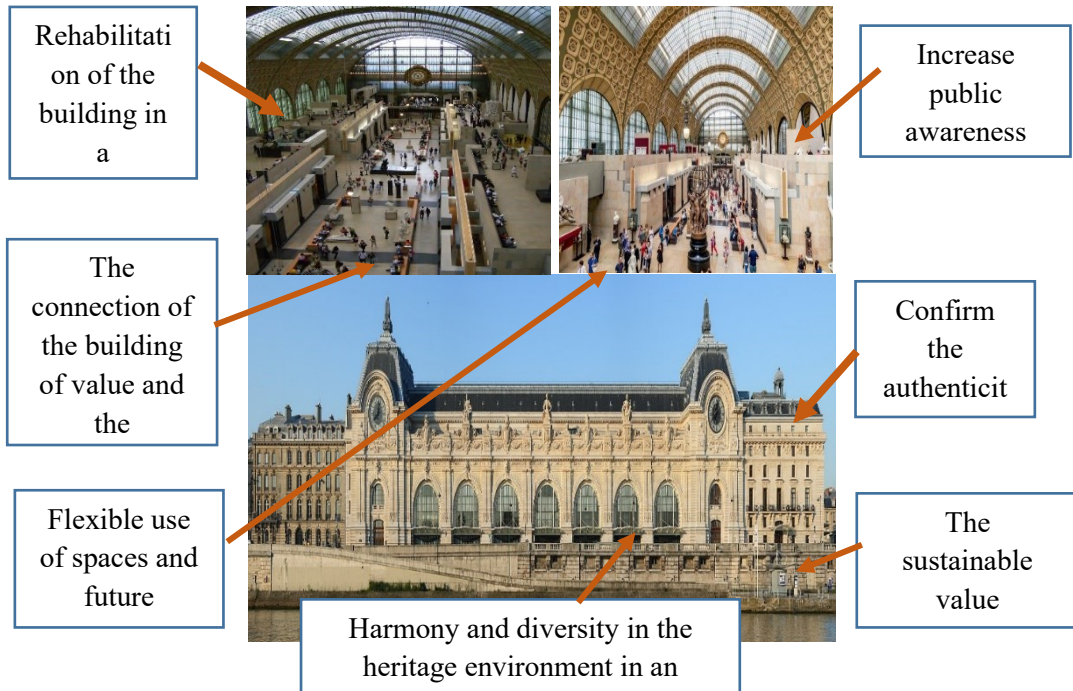**Table 04:** Indicators of values Applied to the case studies
Source: Authors

| The indicator | Sinari House | Orsi Museum |
|---|---|---|
| The state is intellectual | The process of rehabilitating Al-Sinari House because it was built in the style of Islamic architecture | The process of rehabilitating the Orsi Museum as a result of its moral and historical value |
| environmental treatment | In the middle of the courtyard of the house is a fountain that works to equalize temperatures, as well as the use of wood next to stone in construction. | Work has been done to rehabilitate the external parts |
| economic sustainability | The existence of an economic return on the building through maintenance operations, and thus this makes the building characterized by self-sufficiency | Reusing it works to increase the social and economic (investment) benefits of the building, which helps to sustain it |
| Repurpose the building | Many diverse activities are held in it, such as the literary youth salon and art exhibitions, as well as training courses in ancient Arabic calligraphy, the Coptic language, and the hieroglyphic script. | Converting it into an effective building to be a museum |



**Fig.7:** Indicators and values of Sanari House.
Source: http://www.cairo

| Rehabilitati on of the building in a |
| Increase public awareness |
| The connection of the building of value and the |
| Confirm the authenticit |
| Flexible use of spaces and future |
| The sustainable value |
| Harmony and diversity in the heritage environment in an |

**Fig. 8**: Indicators and values the Orsi Museum.
Source:  Musée d'Orsay The Station, 2005

## 2.4. Practical application

The derived theoretical framework is applied here to a model for verification to determine the values (Table 4). The following shows how these values have been evaluated in terms of the two case studies A and B.

**Table 04**: Application of the theoretical framework on the case studies.
Source: authors

| The Main Issue | possible values | selected samples | | The main Issue | possible values | selected samples | |
|---|---|---|---|---|---|---|---|
| | | A | B | | | A | B |
| x-1 | x-1-1 | * | | | x-4-1 | * | |
| | x-1-2 | * | * | | x-4-2 | * | * |
| | x-1-3 | | * | x-4 | x-4-3 | | * |
| | x-1-4 | | * | | x-4-4 | * | |
| x-2 | x-2-1 | * | | | x-4-5 | * | * |
| | x-2-2 | * | | | x-5-1 | | * |
| | x-2-3 | | * | | x-5-2 | | |
| | x-2-4 | * | * | x-5 | x-5-3 | * | * |
| | x-2-5 | * | | | x-5-4 | | * |
| | x-2-6 | * | * | | x-6-1 | * | |
| | x-2-7 | | * | x-6 | x-6-2 | * | * |
| | x-2-8 | * | | | x-6-3 | | |
| x-3 | x-3-1 | | | x-7 | x-7-1 | * | * |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | x-3-2 | * | * | | x-7-2 | | |
| | x-3-3 | * | * | | x-7-3 | * | |
| | x-3-4 | * | | | | | |
| | x-3-5 | | * | | | | |
| | x-3-6 | * | | | | | |
| The total | A | 21-33 | 12 | 10 | B | 18-33 | 9 | 8 |
| The total | 39-66 | | | | | | |

**2.4.1 Analysis and Discussion**
  1. **The intellectual level of value sustainability**
        The evaluation recorded the achievement of two (2) possible values for the project A (the cognitive and intellectual values, and the sustainable heritage intellectual values). Three (3) possible values were recorded for the project B (sustainable heritage intellectual values, sustainable value formation of meaning, sustainable restoration of historical buildings).

  2. **The theoretical level of sustainability value.**
        The evaluation recorded six (6) possible values for the project A (integration of green design methods and smart technologies, promotion of new sustainable values and methods of human life, perpetuating natural response and harmony, reducing the negative impacts of any design, improving assessment of the natural environment, sustainable restoration of historical buildings). Four (4) possible values were awarded to the project B (increasing public awareness about the technology, perpetuating natural response and harmony, improving assessment of the natural environment, flexibility in using spaces and future expansion).

  3. **Frame investigation sustainability buildings heritage same the value)**
        The evaluation recorded four (4) possible values ) for the project A (exploiting sustainable heritage environments, confirming the authenticity of the origin, the importance of the origin as a historical symbol, taking into account the personality of the origin and its original objectives. Three (3) possible values were recorded for the project B (exploiting sustainable heritage environments, confirming the authenticity of origin, traditional methods of treatment).

  4. **Frame to organize sustainability buildings of heritage with same values**
         The evaluation recorded four (4) possible values for the project A (preserving architectural details, taking into account the facade modifications of heritage buildings, preserving the architectural and aesthetic value of the building, linking the building of value to the surrounding community) Three (3) possible values were recorded for the project B (taking into account the facade modifications of heritage buildings, the rehabilitation of the building in a sustainable way, the connection of the building of value and the surrounding community).

  5. **Preservation of sustainable values in heritage.**
The evaluation recorded one (1) possible value for the project A (taking into account the surrounding environment of the buildings). Three (3) possible values were recorded for the project B (fulfilling human requirements and needs, taking into account the surrounding environment of buildings, linking people and the environment with technology).

  6. **The economic values of sustainability in heritage.**
        The evaluation recorded two (2) possible values for the project A (optimal management of sustainable heritage environments, consistency and diversity in the heritage environment in an economical way), while one (1) value for the project B (consistency and diversity in the heritage environment in an economical way).
  7. **The social values of sustainability in heritage**
        The evaluation recorded two (2) possible values for the project A (emphasizing the responsibility of society towards the surrounding environment, achieving broad popular

participation in sustainable development), while one (1) possible value for the project B (emphasizing the responsibility of the community towards the surrounding environment).

*2.4.1.2. Aggregate analysis*
### 1. Self-evaluation of the model the A
In terms of the model A, the evaluation recorded that (21) out of a total of (33) possible values were within the main vocabulary (level intellectual for sustainability value, level theoretical for sustainability values, frameworks investigation sustainability buildings heritage Same value, frame to organize sustainability buildings heritage Same value, preservation sustainable values the environment heritage site The economist values sustainability in the environment heritage side social values sustainability in the environment heritage).

### 2. Self-evaluation of the model B

The evaluation recorded 18 out of a total of 33 possible values were within the main vocabulary (level intellectual for sustainability value, level theoretical for sustainability values, frameworks investigation sustainability buildings heritage Same value, frame to organize sustainability buildings heritage Same value, preservation sustainable values the environment heritage side The economist values sustainability in the environment heritage site social values sustainability in the environment heritage).

### 3. Overall evaluation

Recorded evaluations show 39 of the total 66 conditions for possible values for all the key vocabulary and for the two projects.

## Conclusions
Sustainability respects the environment, reduces energy consumption, regulates harmony with Nature, achieves economic, social, and environmental values, and has multiple applied strategies and mechanisms. It is also considered one of the frameworks for environmental solutions and has many indicators.

This paper shows that value as a concept is an ethical-social–religious expression evaluated on the basis after detailing the types of architecture and buildings that arise. It affirms that the nature of Man and his tendencies play a role in the formation of values. It turns out that the most important characteristic of it is that it is sustainable and that Man seeks to preserve it. The value theory proposes that the value of a thing is objective, independent, and inherent in a thing, and considers that it is the motives and incentives for the formulation of the urban environment.

Heritage has a relationship with the core values it contains that depend on the three axes (Man, place, and time) with the environment from which it is formed, with its buildings that bear the civilized characteristics of the society. There are strategies to deal with those buildings of value, including the re-use and re-employment to preserve the architectural and aesthetic values, achieve an economic return and close connection with the community.

Sustainable intellectual heritage value has a connection with the intellectual cognitive aspect of Man and represents the basis for the formation of meaning and its transformation into a physical element. It also has many general theoretical indicators, including indicators of sustainable design.

Sustainability of the valuable heritage buildings has brand strategies, and it is a step for the operations of investing in the heritage environments to preserve the heritage and achieve its future needs through two directions: confirming authenticity of the origin of heritage and emphasizing the importance of the origin as a historical symbol with the classification of the environmentally tainted heritage values by traditional and contemporary environmental methods. There are many detailed criteria for organizing sustainable heritage environments.

The role of sustainability in preserving the city's heritage environment is demonstrated by adopting consistency and diversity in the heritage urban environment within the framework of generating economic well-being and protecting its resources. Moreover, it presents the

importance of achieving community participation in the sustainability of heritage environments through decision-making regarding them.

It is clear that there is a relative superiority in achieving the general indicators of the concept of the value of sustainability in the heritage environment, which included (the intellectual and theoretical levels, frameworks for achieving and regulating the sustainability of heritage buildings of value, sustainable preservation, and the economic aspect of the values of sustainability in the heritage environment) within the local Arab productions than in their global counterparts to ensure the achievement of the goal search. The study concludes that the framework so develop to evaluate the sustainability of heritage is useful and can be employed to evaluate heritage buildings. It also concludes that there is evidence that the preservation of cultural heritage in Iraq does employ values.

## Recommendation
1. The research recommends the expansion of the sub-concepts of the study related to the theoretical frameworks of value sustainability in future studies.
2. The research also recommends to examine the design role of the concept of value sustainability and its impact on the heritage.

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