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The Role of Architectural Preservation Processes on the Permanence of Heritage Buildings of Value

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ABSTRACT

Architectural heritage is the cultural and civilizational achievements that man inherited from his ancestors, acquiring a qualitative value that has proven its importance and originality in resisting the forces of change. It is becoming a visual reference. The architectural heritage has been exposed to natural and human factors that caused much damage. This requests to deal with these factors at every level through joint action, which includes the maintenance and protection of heritage buildings. One of the essential parts of the preservation process is the reuse of the building, whereby an actual or new function is given to the building to preserve, sustain and reconfigure it in a way that preserves its originality, composition, and balance without compromising its relationship with the environment. The research problem is the fragile focus on the importance of functional value when starting the architectural preservation work, even though it requires an in-depth study of the extent of the impact of this change on preserving the heritage value of the building. The study aims to clarify the process of preservation in heritage buildings and the use of the rehabilitation process based on the architectural characteristics of the building. For this purpose, the analytical method approach of pre-and post-conservation blueprints was used through photographs to illustrate the impact of functional change in preserving the building's heritage value. The new role can introduce new values, such as political, historical, or social, to satisfy the needs of the new structure. From here, the research concludes that preserving the permanence of the architectural heritage can be

achieved through cooperation between all values and that the functional value significantly affects the permanence of the heritage building.

1. INTRODUCTION

The significance of architectural conservation is expanding, particularly in the modern era, by means of it is considered one of the scientific disciplines [1]. Due to the fact that architectural tradition is transmitted down through the generations, it provides positive components for imagination and induction in new building and construction projects [1]. The preservation as described by "Fielden" is a struggle against the collapse and destruction of structures or infrastructures due to of a variety of reasons, usually caused by people themselves [2]. While the human race is a component of construction, it is also a major cause of destruction owing to many reasons, the most important of which is negligence due to a lack of knowledge and interest in heritage. Furthermore, "Sanpacles" defines architectural preservation as; "maintaining the constructions and buildings along with preventing them from falling if not repaired, as well as servicing the parts that were negatively affected in the past." When preservation reached a more comprehensive level, It was meant to refer to as urban preservation, which is defined as a process of planning, protecting, and increasing the value of a complex of historically or architecturally significant buildings and sites [2].

From here, the research problem can be summed up as follows: Inaccuracy in the influence of each historical building's change in function on the permanence of heritage buildings of value.

The research aims: to identify, analyze, and prioritize physical values for conservation measures based on the function of each historic property.

The researchers hypothesized that: because there are many different architectural design values, each of which includes a large number of sub-values, each with its significance and weight of attachment. Are the main factors that determine the historical structure's long-term viability being in the ability to meet present and future community needs, maintain and enhance the balance of the form, and prosper via functionally occupying the building?

The research limited conserved heritage buildings similar in scale, have been renovated in the same period, and designed by the same architects (Foster and Partners), and also have different types of functional changes (same function, partial changes in function, different functions). The study includes an Induction methodology to prove the research hypotheses through an analytical approach that incorporates graphical analyses for three different kinds of heritage buildings. The analyzing process to diagnosis function value is depend on the modifications described in the case studies.

The quantitative content analysis is applied to assess the relationship between the values and conservation in this study, while the qualitative content analysis is utilized to evaluate the relationship between architectural heritage and conservation.

1.1. Heritage building (with a distinct architectural style)

Heritage building is a building or facility with historical, symbolic, aesthetic, architectural, urban, or social value. It has been agreed that the buildings, the heritage facilities or the distinguished architectural style should be characterized by the following:

- Community acceptance: to gain community acceptance and positive interaction so that it can continue.
- Cultural and social phenomenon: to be expressive of physical, intellectual or ethical phenomenon in a particular time dated.
- Resilience and continuity: that is its current state permits for its continued existence and the opportunity of coping with it.

Before starting a conservation project, it's significant to find out what to be achieve, then come up with a presenting strategy. The goal could be as simple as maintaining a structure or as

sophisticated as exhibiting it in its entirety, with its documentation and historical context, for educational and artistic purposes. This will include assessing the structure's core values [2]. As the main purpose of heritage building renovation is to restore a property to its original condition of function through repair or change while preserving the historic, architectural, and cultural characteristics. This can be accomplished by carefully considering factors such as minimizing changes to the building's defining characteristics, distinguishing the new from the old while maintaining architectural integrity, and retaining the historic building's essential character even if new additions are removed in the future [3].

1.2. The approach to conservation process

Buildings deteriorate over time due to a variety of factors such as aging, weathering, and use depletion. Because the level of building wear is determined by the construction, materials, and servicing, repair approaches may change depending on building cultures and technologies. The main goal of heritage building restoration and conservation, which is comparable around the world, is to retain and preserve the work of the original builder for both present and future generations. [2].

Identifying the architectural style of the existing building is critical whether the project entails rehabilitation, restoration, an addition, reconstruction, or simply changing materials. The character of a building is defined by its features and details. The roof, overhangs, doors, porches, windows, railings, artistic work, and trim are all examples of this. These elements should be considered as buildings change and evolve due to new uses and ownership because they could be an essential part of the building's historic character [3]

International organizations and conservation experts stress the fundamental importance of documentation for cultural heritage identification, conservation and management [4]. Thorough documentation is the first step to preserving buildings and structures of great architectural or historical value [5]. Middle-eastern states often continue to face tremendous challenges related to the anticipated goals for the conservation of their respective natural and cultural heritage. Political instabilities, socio-economic transformations and overall global changes put pressure on the region’s ability to invest in funds to protect and conserve heritage sites within the region for future generations [6].

1.3. International conventions and agreements on the preservation of architectural heritage

Internationally there is an agreement on the status of continuity in the content of heritage for its significant necessity in the sustainability of societies. Therefore, firstly, it is essential to identify the technical sources referred to in the definition and codification of the basics of heritage and the need of preservation, which are often "Charter, Convention and Law".

Then, the development of the concepts, theories and objectives related to heritage preservation and in accordance with the most famous international conventions and agreements should be discussed in parallel with the historical sequence of their publication in order to reach a renewed vision of the concept of preservation of heritage in the twenty-first century [7] (Table1).

Different views about the conservation and restoration of heritage buildings have arisen throughout history; nevertheless, most theories emphasize maintaining a heritage building with minimal intervention when necessary [2].

The main objective of each of the conventions and agreements is to become a mandatory application to be applied in the signatory states, that is to say, those international conventions become laws within these countries.

Through a brief overview of the most important objectives affirmed by the international charters and agreements on heritage, a clear development is evident in the world heritage concept, which began with the heritage figures and all its cultural, aesthetic and social values. However, it has to be clarified that these international conventions represent theoretical aspects that require applications and through which solutions can be found to the problems facing heritage, meanwhile highlighting the objectives and decisions on architectural preservation.

Table 1: The most important objectives and resolutions affirmed by the international charters and conventions concerned with the preservation of architectural heritage.

	International conventions and agreements	Objectives and decisions regarding the preservation of architectural heritage
1	**Charter of Athens 1931**	All disciplines should be involved in the preservation of architectural history.
2	**UN Charter 1945**	Supporting international cooperation in the preservation of heritage.
3	**1954 Hague Convention**	Great interest in, architectural, artistic, historical and religious heritage buildings and arte fact
4	**charter of Venice 1964**	Preserving the archaeological character of the buildings and what is inside them
5	**Italy Charter for Restoration 1972**	Pay attention to all works of art from any era was in a holistic manner
6	**1972 Paris Convention**	Cultural and natural heritage preservation as archeologically significant architectural works.
7	**The European Charter for Architectural Heritage (ECAH) 1975.**	The importance of transferring the architectural heritage to future generations in its original state
8	**charter ICCROM1980**	Protecting heritage buildings from damage and destruction
9	**1980The Lahore Charter, International Symposium on the Conservation of Islamic Architectural Heritage**	The original uses of heritages and sites can be dispensed with, Provided should conform to the original functions
10	**The Lausanne Charter for the Preservation and Management of Archaeological Heritage 1990.**	Preservation of the archaeological heritage of Switzerland as part of physical heritage.
11	**New Zealand's Charter for the Protection of Cultural Heritage Sites 1992**	Preserve architectural heritage as an individual's identity and entity. To provides a model to compare the past and the present, for communication between eras
12	**Burra Charter 1999**	Protecting the heritage by using methods that can contain the aesthetic, historical, scientific, and spiritual values of a location from the past to the present, and then into the future.
13	**Paris Convention 2003**	Preserving heritage buildings that possess architectural, aesthetic, historical, documentation, archaeological, economic, social, political, religious and symbolic values

The worldwide development of the concept of conservation of architectural heritage

1.4. Value Assessment

All architectural heritage-related actions require value assessment; as Fielden points out the first stage is to describe the goal of the conservation project [5]. The next step is to determine the 'values' in the object, monument, or location that makes up the cultural property in question, and place these values in order of priority. The object's core messages will be honored and retained to this extent. The values are divided into three categories: 'emotional,' 'cultural,' and 'use' values [2] (Figure 1).

Functional value is crucial when considering building repair or refurbishment, particularly for newer structures. Building surveyors can make a significant contribution in this field.

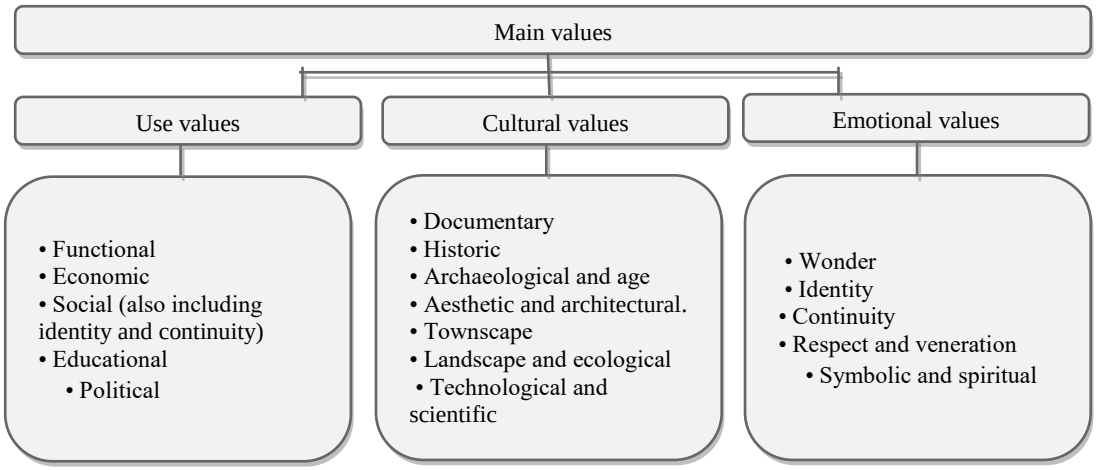


Figure 1: The main and sub values and resolutions affirmed by the international charters and conventions concerned with the preservation of architectural heritage (source: researchers based on [2].

2. CASE STUDY

The Induction methodology is used to three different types of heritage buildings using an analytical approach that includes graphical analysis. The analyzing procedure for diagnosing function value is based on the case studies' modifications.

After the theoretical phases of the preservation of architectural buildings were discussed, there is a practical study. Three conserved heritage buildings have been selected as case studies. The criteria is based on comprehensive types of functional changes (same function, partial change in function, different function). They are designed from the same architects (Foster and Partners), similar in scale and have been renovated in the same period of time. The analysis of each case study starts with general information about the building, brief history, and dates related to construction and remodeling. Besides, the strengths and weaknesses points have been highlighted for the projects. The samples are as follow:

- Same Function- Reichstag Building / New German Parliament
- A Partial change in function- British Museum
- Different function- The Hearst Tower

2.1 The First Project: Reichstag Building / New German Parliament

Between 1884 and 1894 the Reichstag was constructed. During the German Empire and the Weimar Republic, it was the seat of parliament. The structure was severely destroyed during World War II. It has been repaired and renovated since 1994. The Reichstag now serves as the seat of Germany's federal parliament [8].

A building's physical characteristics reflect its historic character (i.e. shapes, forms, materials, colours, size, height, setting, and others). Historic buildings' mass is usually altered by new additions. As a result, old and new should coexist [3].

One technique to preserve historic character is to put the new addition back from the front wall plane, making the non-historic side less noticeable.

The Reichstag's creation of the New German Parliament was merely the most recent chapter in the building's lengthy, complicated, and controversial history. The building is neither completely new nor merely a restored historical edifice. It is combination of old and new. The work priority was attached to three main principles: in term of its construction, the conversion was to meet the demands of a modern working parliament, secondly, it was to take account of historical links, and thirdly, the design was to be environment friendly. The first principle related to the functional needs of the client, The German Bundestag (Table 2) (figure2).

Table 2: Reichstag Building / New German Parliament

Adjustments	Before	After
Architect	Paul Wallot	Foster and Partners
Floor Area (m^2)	≈ 61,200- 6 floors	≈ 61,200- 6 floors
Current use	parliament in the German Empire	German Federal Parliament
Materials	Steel+ glass	Same Materials
Intensity of use	Low	Low
Circulation elements	Stairs+ Lifts	Same Elements
Add or removed part	No Added Part	

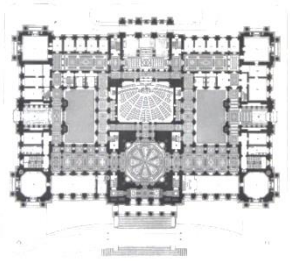
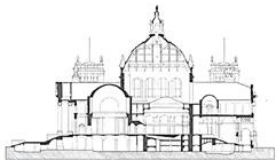
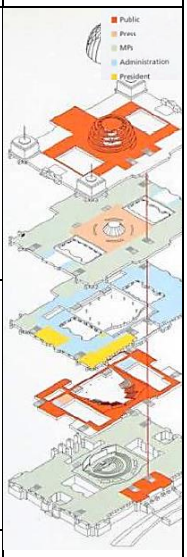
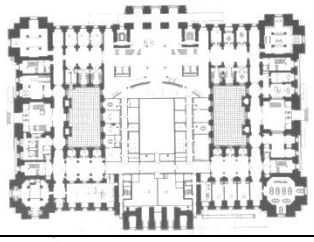
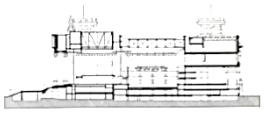
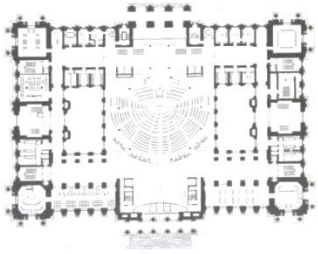
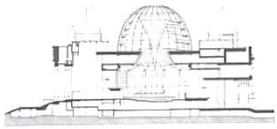
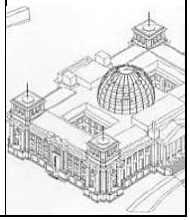
Year	Plans	Elevations	Distribution of Functions
1894 Wallot			
1971 Baumgarten			
1999/ Foster			

Figure 2: Architectural details and building function of Reichstag Building / New German Parliament [8].

2.2 The Second Project: British Museum

The British Museum was established in 1753 and first opened to the public in 1759. It was the world's first national museum, encompassing all branches of human knowledge and welcoming visitors from all over the globe. The structure was constructed in 1852 using cutting-edge technology, including concrete floors, a cast-iron frame filled with London stock brick, and Portland stone on the building's front layer [9].

Designers frequently employ techniques such as repeating historical characteristics and using the same materials and colours for new additions. However, if there is no visual contrast between what is old and what is contemporary, imitating a full architectural style and design will not preserve the historical relevance and integrity [3].

The redesign of the Great Court made it possible to see the previously concealed area again, making it accessible to the general public, as well as providing two new exhibition spaces: the Sainsbury Galleries and the Welcome Trust Gallery (Table 3) (figure3).

Table 3: British Museum

Adjustments	Before	After
Architect	Sir Robert Smirke	Foster and Partners
Floor Area (m^2)	75,000	92,000
Current use	Natural History Museum	National Museum and Library
Materials	concrete + cast iron-+ brick	Adding: Magnificent Glass+ Steel Roof
Intensity of use	Medium	High
Circulation elements	Stairs + Lifts	Adding more stairs and lifts
Add or removed part	Added Horizontally	

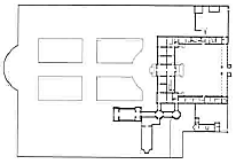
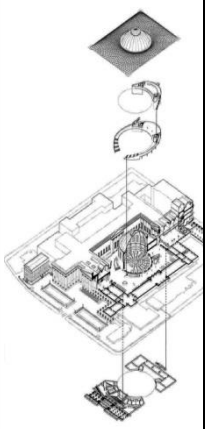
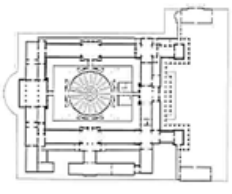
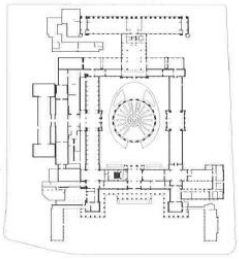
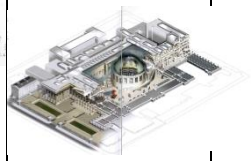
Year	Plans	Elevations	Distribution of Functions
1753			
1857			
2000			

Figure 3: Architectural details building function of British Museum. [9].

2.3 The Third Project: The Hearst Tower

Construction on the building began in 1927 and ended in 1928. The International Magazine Building was the original name for the 3,700-square-meter structure. The difficulty in designing such a tower at a distance of seventy years was to produce a creative conversation between old and new, similar to the approach used in the Reichstag and the Great Court at the British Museum [10].

The building is also significant from an environmental standpoint. It was constructed using 90% recycled steel and is projected to use 26% less energy than its conventional counterparts.

As a result, it was the first office building in Manhattan to receive a gold rating under the Leadership in Energy and Environmental Design (LEED) program of the US Green Buildings Council [10].

In buildings, change is happening, especially when more services are required. Because new additions have the ability to modify the building's architectural character, it's vital to use acceptable preservation methods to verify that additions blend in with the historic resource [3]. The cast stone facade has a two-story foundation and four levels set back from it. The structure of the building was reinforced from the start to accommodate an office tower, and plans for nine extra floors were filed in 1946 but never implemented. The building was designated a Landmark Site in 1988 by the New York City Landmarks Preservation Commission as a "significant monument in the architectural heritage of New York." (See Table 4) (figure4).

Table 4: The Hearst Tower

Adjustments	Before	After
Architect	Joseph Urban, George B. Post	Foster and Partners
Floor Area (m^2)	79,525 - 6 floors	79,525- 46 floors
Current use	Hearst Magazine Building	World Headquarters of Media Conglomerate Hearst Communications
Materials	Cast stone	Adding: Stainless steel + low E-clear glass
Circulation elements	Stairs+ Lifts	Adding more lifts (21Lifts)
Intensity of use	Low	High
Add or removed part	Added Vertically	

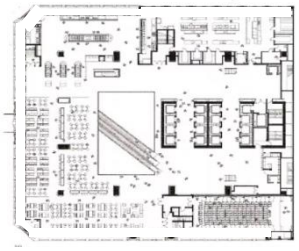
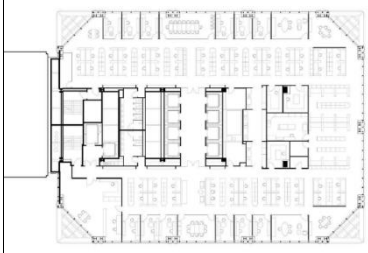
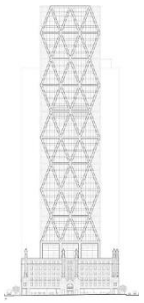
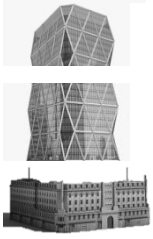
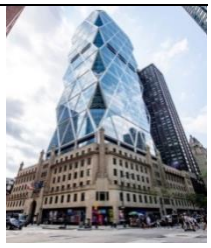
Year	Plans	Elevations	Distribution of Functions
1928			
2003			

Figure 4: Architectural details and building function of The Hearst Tower. [10].

3. RESULT AND DISCUSSION

- Via the analysis of the case studies, it is possible to reach the suitability of the new use of the buildings and the needs and requirements for that function, as shown in Table (5).
- The new function can add new values such as political, historical, or social, which has to meet the demands of the new building.
- The ratio of circulation elements alters as the building expands (vertical or horizontal), which is one of the crucial elements for building efficiency.
- The buildings that show a high level of permanence have highly responded to the new demands environmentally, historically, and the modern functions.
- Some materials, such as stainless steel and low-E-clear glass, have been added to the Hearst Tower, to increase the durability and then the permanence of building value.
- The amount of added or removed parts does not have a great impact as long as the building responds to the new functional and environmental needs.

Table 5: The Suitability of the new use of the buildings and the needs and requirements for that function

	Reichstag Building	**British Museum**	**The Hearst Tower**
			
Re-use aim	New German Parliament	Museum + Library	the world headquarters of media
The added value	Political	Historical	Social
The noticeable adjustments	Hardly noticeable	Not noticeable	Highly noticeable
Conservation level	Medium	Strong	Medium
The suitability of the new circulation elements	suitable	suitable	Very suitable
Re-use activity fitting	Very Efficient	Very Efficient	Very Efficient
New structure fitting	Traditional	Traditional	Modern
Direction of additional or removed parts	Horizontal	Horizontal	Vertical
Amount of additional or removed parts	10% Added	30% Added	60% Added

4. CONCLUSION

It is necessary to study all the formal aspects of the building in the case of adding or removing an element or re-designing the original element so that it fits with the content, context and heritage concept of the building. As this contributes to creating an integrative relationship between the historical events of the building and as far as possible from the introduction of other elements because it affects the value of the original heritage of the building. The permanence of the historical building depends on the extent to which it can meet the current and future requirements of the community, maintain and enhance the balance of the form and value system within the urban landscape, and its ability to succeed economically and environmentally through functionally occupying the building.

The process of preserving buildings with architectural heritage still depends on accurate documentation and registration processes according to all international schools and charters, and without them, preservation would be somewhat distorted, both in terms of concept and in terms of application. As in the process of preserving heritage buildings, we focus on maintaining and using them in a way that maintains their original architectural character through suitable usage while not reducing the value of the heritage. As for the function of the building, its importance in preserving heritage buildings is the importance of restoration, registration, and maintenance, and this should be studied for each building separately and according to its current status.

It is clear that there are different perspectives on the adaptive reuse of heritage buildings, whether by keeping the same function of the building, making partial changes, or having a different function, yet the scope of preservation should be on a comprehensive level and not on a detailed level only, as its success depends on its ability to meet the current and future requirements of society and on its ability to continue to occupy the building functionally.

5. RECOMMENDATION

- The original form, shape and material of the building should be preserved, and minimal interventions should be made in the building, under the supervision of a specialized team of architects, archaeologists, construction experts, mechanics and electricians, specialists in the field of conservation.
- Before beginning the conservation procedure, all design values should be thoroughly examined and analyzed.
- The study urges architects to collaborate with experienced engineers in teams to register, restore and maintain the historical building, through studying all building values and specifies.

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