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THE CREATION OF GUIDELINES FOR ADAPTIVE REUSE OF HERITAGE BUILDINGS IN JORDAN, CASE STUDY PALACE OF THE ALI ALKAID BASHA (JORDAN)

Mohannad Tarrad, Salam Mtawea Husban
Al-Bayt University, AL- Mafraq, Jordan

Abstract
Jordan is one of the countries rich in heritage buildings that are distinguished by their style of construction, and the beauty of their composition. This abundance has led to the emergence of a trend of re-use of heritage buildings, as most heritage buildings that have become functionally unused are converted to other uses, as this matter often requires modifications to suit the new use. However, there is often some confusion in knowing how to reuse heritage buildings without affecting on origin buildings. Therefore, it is necessary to follow deliberate methods that take into account the design aspects of the internal space and the structural characteristics of the building. This research aims to clarify how a designer can reuse heritage buildings without damaging their historical value or affecting their structural elements. Where research is discussed by addressing the concept of reuse, adaptive, reuse and its importance, and discussing the policy of preservation and re-use of heritage buildings. Through a heritage building as a case study in Jerash – Jordan.[1]

Keywords: Reuse, Adaptive reuse, Documentation, Preservation

РАЗРАБОТКА ПРИНЦИПОВ АДАПТИВНОГО ИСПОЛЬЗОВАНИЯ ИСТОРИЧЕСКИХ ЗДАНИЙ НА ПРИМЕРЕ ДВОРЦА АЛИ АЛКАИДА БАШИ (ИОРДАНИЯ)

Моханнад Таррад, Салам Метавеа
Университет Аль-Байт, Инженерный факультет, Аль-Мафрак, Иордания

Аннотация
Иордания – одна из стран, богатых историческими зданиями, которые отличаются своим стилем строительства и красотой своей композиции. Такое изобилие привело к появлению тенденции повторного использования исторических зданий, поскольку большинство исторических зданий, которые перестали использоваться функционально, переоборудованы для других целей, а этот вопрос требует модификаций для соответствия новому использованию. Однако часто возникает некоторая путаница в понимании того, как повторно использовать исторические здания, не затрагивая исходные здания. В таких случаях необходимо следовать научным методам, учитывающим аспекты дизайна внутреннего пространства и конструктивные характеристики здания. Представленное исследование направлено на выяснение того, как проектировщик может повторно использовать исторические здания, не повреждая их историческую ценность и не затрагивая их структурные элементы. В исследовании обсуждаются концепции ревитализации и адаптации зданий, а также политика сохранения и повторного использования зданий культурного наследия на примере исторического здания в Джераше, Иордания.[2]

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[2] **Для цитирования:** Моханнад Таррад, Салам Метавеа. Разработка принципов адаптивного использования исторических зданий на примере дворца Али Алкаида Баши (Иордания) //

Ключевые слова: повторное использование зданий, адаптивное повторное использование, архитектурное наследие, сохранение зданий

1. Introduction

Old historic buildings typically possess features capable of contributing to society's culture and keep of its architectural history in a comprehensive manner [1]. Jordan is rich in Cultural heritage linked to important historical and political events globally and locally. Cultural heritage is a resource for the development of economic and movements of place making in urban areas worldwide [2]. The Jordanian cities such as Salt, Irbid, Jerash, and others are full of heritage buildings that have artistic, aesthetic, historical, and cultural values. Most of these buildings were palaces, guest houses, and houses of administrative rulers, whose construction period dates back almost to the period of establishment of the Emirate of Transjordan and before it [3].

This abundance caused the need to preserve and revive these buildings with all their values. Consequently, this led to the spread of the phenomenon of reuse of heritage buildings with new jobs that suit the needs of the current society, such as, Ali Khulqi Al-Sharayri house in Irbid, which was reused as a political museum, Nabulsi house in Irbid which was reused as an exhibition for plastic art and the heritage building (Dar Saraya) in Madaba which was reused as Building Tourism Development Association and the preservation of heritage. The village of Umm Qais was also rehabilitated, which was a small village for housing, as it was acquired by the Ministry of Tourism and Antiquities, and to become a multi-functional village, such as cafes, restaurants, a library and other projects (fig. 1). According to Throsby and others, the most practical and cost-effective development path is the adaptive reuse of heritage buildings [4, 5].

a) b)

Fig. 1. Some of the reused heritage buildings in Jordan: a) Umm Qais Heritage Village; b) Ali Khulqi al-Sharayri's house

Despite this, there is a lack of research and studies on previous experiences in reusing heritage buildings in Jordan, especially adaptive reuse. Besides, some common mistakes that were made intentionally or unintentionally during the reuse of heritage buildings, including:

– Changing the architectural style by interfering with deleting or modifying some parts, as well as breaking walls without taking into account its structural characteristics;

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– Adding technological devices such as air-conditioning units, light advertisements without taking into account the aesthetic of the heritage building and thereby distorting it;
– Carrying out random maintenance works, such as re-creating fasades by ill-considered methods, distorting the heritage building and its architectural character;
– Not to choose the appropriate function of the building;
– Failure to follow international conventions when maintaining and restoring heritage buildings, causing damage to the heritage building or its parts [5].

Consequently, the result of these practices for heritage buildings is a visual distortion, damage to their architectural aspects, and weakening of the constructive aspect for it. According to Haddad et al. 2009, heritage buildings suffer from mixed-use activities that do not match their cultural values [6]. Al Rabady and others asserted that the architectural heritage in Jordan had not been fully utilized, and no good plans have been made to maintain and use it properly [3, 4].

Based on the preceding reasons, there is a need to continue this additional research towards knowing how to reuse Jordanian heritage buildings correctly by clarifying the adaptive reuse methodology for one of the Jordanian heritage buildings according to one of the international conventions. In order to reach an informational base on the methodologies used in the reuse of heritage buildings for researchers, designers, practitioners and project managers in Jordan to better understand how these buildings are reused, and to improve the performance of the heritage buildings reuse projects proposed by the Ministry of Tourism and Archaeology in the future. The purposes of this study were: to Define guidelines for the correct adaptive reuse of heritage buildings in Jordan and according to international conventions; to enhance the reuse of heritage buildings to make the process more useful and practical by following international conventions but in proportion to the materials and tools available to us; to organize and manage projects for the reuse of heritage buildings in Jordan in order to improve their economic performance.

2. Concept of reuse of heritage buildings

Changing existing buildings for new functions is not a new phenomenon; in the past, structurally secure building have been adapted to fit changing needs or new functions. For example, during the Renaissance period, classical monuments were converted for new uses, or during the French Revolution, religious buildings were converted for industrial or military use [7].

Prosperous heritage adaptive reuse projects are those that respect and retain a building's significance and add a contemporary layer that provides value for the future. In some cases, adaptive reuse may be the only way that a building's structure and form can be adequately cared for, revealed or interpreted while improving the use of its new function [8].

The term reuse differs from the term adaptive reuse. According to researchers, the concept of re-use of heritage buildings is to re-employ the heritage building in its original function for which it was built, without any modification or change in the building but with the necessary rehabilitation of this building due to its reuse only [9]. Indeed, the reuse of the heritage building in its original function will suit its location, engineering, and capabilities without the need for any modification or change that may damage its authenticity and historical position. Changes to buildings can include main interior space reorganization and service upgrades or replacement. Adaptive reuse may require minor restoration works as nothing changes except the functional use of buildings [10].

When applying adaptive reuse to heritage buildings, it does not only preserve the building but also preserve the effort, skill, and dedication of the original builders, adaptive reuse involves transforming a building to make a change of use required [11]. Whereas, adaptive reuse is the adaptation of the heritage building to perform a new function that suits the current place and era, and at the same time maintains the exterior shape and essential elements of the building, and its historical and artistic values. Additionally, the adaptive reuse of heritage buildings usually includes modifications of spaces or structural changes in the heritage building according to its new function but taking into account the international principles of reuse of heritage buildings [5].

3. Importance of reusing heritage buildings

Adaptive reuse is the process that changes a disused, obsolete, or ineffective building into a new one that can be used for a different purpose [12]. The reuse of heritage buildings helps to prevent damage that may occur to these buildings. There are many benefits, whether in the economic, urban, social or cultural aspects of using this method: The economic aspect. Adaptive reuse and rehabilitation of heritage buildings is the most attractive and economically beneficial proposal. Fakhouri and others emphasized that the adaptive reuse method is one of the most effective self-financing methods and a sustainable form of preservation as the building's maintenance is through its own income [13]. Therefore, the state does not incur any financial burdens, so it is considered appropriate and necessary, especially in developing countries that suffer from a lack of cultural and social services. According to Throsby 2014, the main reason that adaptive reuse is preferred over demolition and replacement is that reuse costs are lower than demolition and replacement costs. Additionally, saving the cost of constructing a new building to perform this function while taking advantage of the location of the existing building [5].

The urban aspect. The reuse of heritage buildings is one of the most important methods of preserving the urban heritage, as it helps to rehabilitate and integrate them into the urban fabric of the city instead of being closed monuments.[8] Moreover, the appropriate employment of heritage buildings and heritage sites will stimulate many planning and organizational measures in the surrounding areas. The social and cultural aspects. Heritage buildings play a positive role in the community after their rehabilitation. According to Throsby et al. 2014, the rehabilitation of heritage buildings encourages the opening of shops and services, thus providing job opportunities for the local population [5].

4. Methodology for reuse of heritage buildings

Due to the use of a new function for the heritage building that is different from its original use, this new functionality may impose on the building some modifications, whether internal or external, by deleting or adding. Therefore, it was necessary to return to the charters that established the policy of dealing with heritage buildings and to know the possibility of changes and borders in a correct way. The building must be able to accommodate users' technical requirements to be a successful case for adaptive reuse [14].

The methods and procedures that must be followed in the preservation and maintenance of heritage buildings and sites are determined in accordance with international conventions such as UNESCO or relying on the charters of some centers such as the International Council on Monuments and Sites (ICOMOS) and the International Centre for the Study of the Preservation and Restoration (ICCROM), as these charters set various definitions related to heritage and methods of preservation it [15, 16]. In this study, the Burra Charter was chosen because it includes adaptive reuse in a detailed way, unlike other international conventions. Also, it contains a description of conservation principles and good practice processes [17].

The Burra Charter was first adopted in 1979 in the historic city of Bora, Australia, by ICOMOS. This charter developed the principles in the Venice Charter to suit Australian domestic needs. Moreover, it is the Burra Charter that provides a guiding methodology for caring for urban heritage and has been widely adopted as the standard guiding principles for heritage preservation practices not only in Australia but also in other parts of the world. This charter can be applied to all types of heritage places of cultural, historical, and political importance to another, taking into account the different states and their capabilities.

The Burra Charter begins with a series of definitions of the cultural significance, whether the aesthetic, historical, scientific, social or spiritual value of past, present or future generations. Then, the charter includes a list containing definitions of topics such as location, conservation, maintenance, restoration, reconstruction, and adaptive reuse and contains a description of conservation principles and good practice processes. Additionally, it contains the Burra Charter process flow chart, which is a policy summary for dealing with heritage buildings, which revolves

around three main axes: understanding the importance, developing the policy, and managing according to the policy (fig. 2) [17].

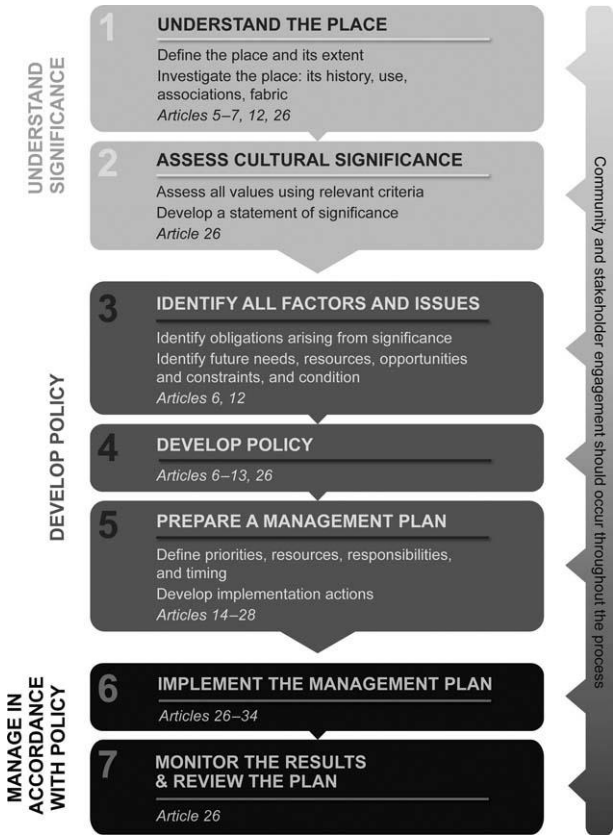


Fig. 2. The Burra Charter process flow chart

5. Methods and Materials

This research followed methods of field study and literature review. Additionally, a practical example of the adaptive reuse of a Jordanian heritage building was carried out according to international conventions, including conducting personal interviews and reviewing laboratory analyzes that assess the current state of the heritage building. In this paper, we chose the Basha Ali Al-Kayed Palace in Jerash, due to its historical importance that comes from the way it was built and the period in which it was built (between 1920–1921) also, because this palace has been proposed to be re-used by the Ministry of Tourism and Archaeology to establish a regional training center for the restoration and maintenance of archaeology.

6. The case study building

25 years ago, the Al-basha Palace was expropriated by the Ministry of Tourism and Archaeology in order to protect it from deterioration and misuse. But according to the residents of the area, the palace turned into an abandoned place and a children's playground after this long period of expropriation and neglect and the lack of any maintenance or restoration. Recently, the Ministry proposed that the Basha Ali Al-Kayed Palace be a site for the establishment of a Jordanian-Italian project, which aims to establish a regional training center for the restoration and maintenance of archaeology in the restoration and maintenance of building and sites under the name "Regional Center for Maintenance, Restoration and Training." Moreover, this project is necessary due to its ability to assist neighboring countries after the end of the wars, especially in Syria, in the reconstruction, restoration, and maintenance of their damaged and destroyed monuments. Additionally, this project will contribute to creating job opportunities in this field and learning new and modern methods.

Furthermore, assessing the cultural importance of the heritage building by evaluating all the values that the building carries using relevant criteria and develop a statement of significance. Figure 3 shows the historical importance of the Basha Ali Al Kayed Palace, represented by the events and narratives that the palace witnessed. Additionally, the era in which the palace was built in the era of local rulers (Alpashoat), the end of the end of the Ottoman era and the beginning of the era of the emirate of Jordan, which represents an important historical period in Jordan. This tendency of reuse emphasizes the need to retain the original identity, personality, structure and real significance of ancient historic buildings through the adaptive process of reuse [18].

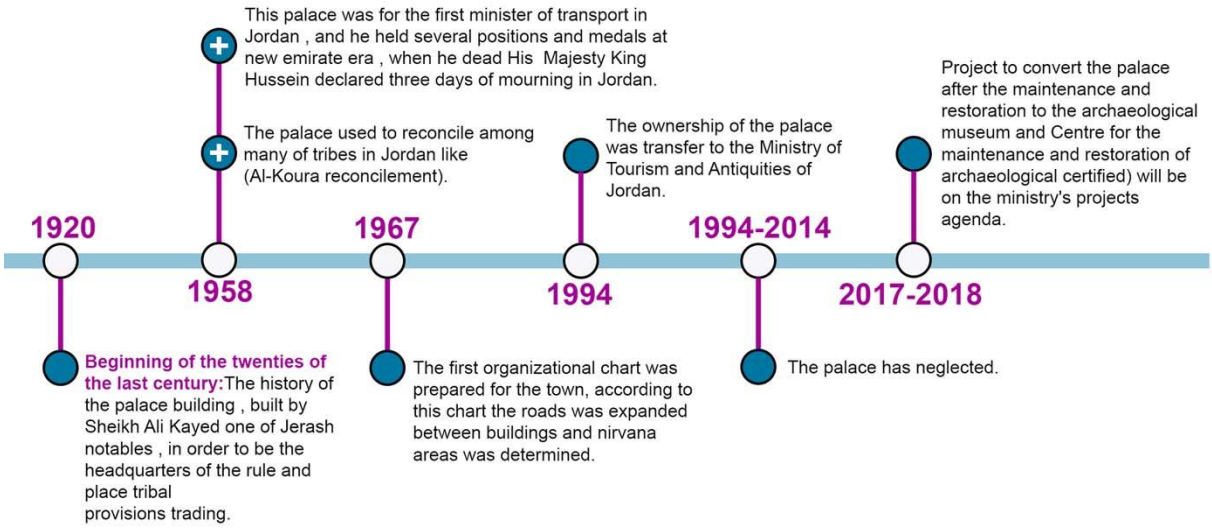


Fig. 3. Timeline of the historical events that took place at the Al-Basha Ali Al-Kayed Palace

The need for the strategy literature review and analysis of the case studies showed the importance of historic buildings and the need to develop a strategy to facilitate the use of adaptive reuse as a novel approach for generating sustainable values of historic buildings in developing countries. There are factors that influence the decision on the re-use of adaptive historic buildings such as cultural importance, life cycle assessment, heritage importance, meeting sustainable development benchmarks, economic sustainability, environmental sustainability, social sustainability, value to the local community, the orientation of building and influence on the local economy [19, 20].

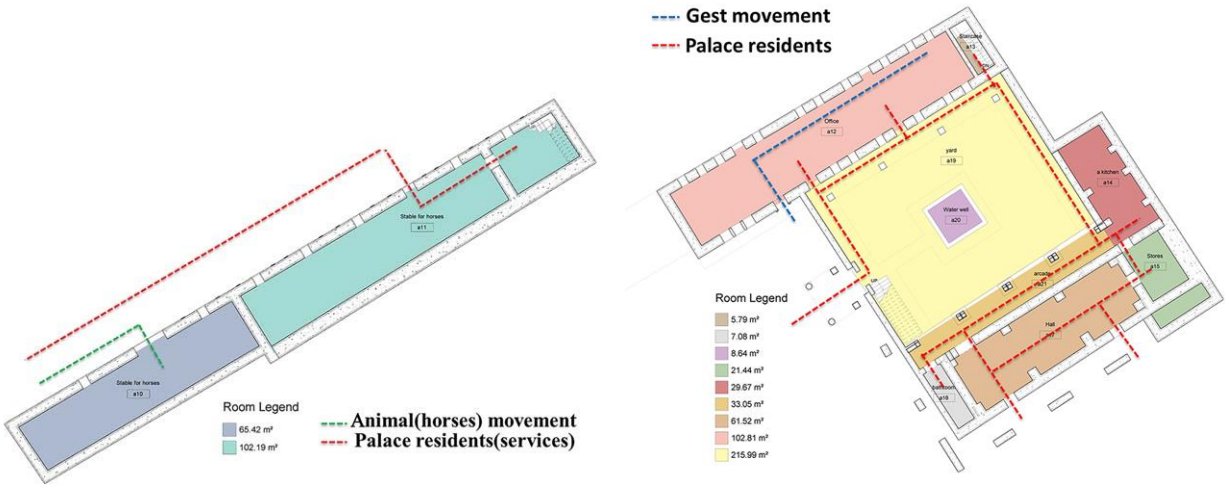
The Basha Ali Al-Kayed Palace is located in the village of Souf, which is located on the northwest side of the ancient city of Jerash and is 5 km away from it. Souf is distinguished by its buildings and architectural formations that cover the neighboring mountains in harmony (fig. 4). The Basha Ali Al Kayed AL otoom Palace is one of the oldest heritage buildings in Souf. The palace was built in the early twenties of the last century for its owner Sheikh Ali Al-Kayed, one of the administrative rulers, in order to be the headquarters of the rule.

The owner of the palace is Ali Pasha Al-Kayed Al-Atoum, who held many political positions, the most important of which were: Director of areas and lands department in Jerash, Mayor of Jerash, president of Souf Government "the northern government", first minister of transportation in Jordan (1939–1941), and president of Jerash Local Government that started at era of King Faisal. Also, he has many political participations, as he participated in the build up the parliament system in 1923 and participated in the National Congress of the Al-Tal Diwan. He died in 1958.

Fig. 4 .The front faзade of the Al-Basha Ali Al-Kayed Palace

6.1. Documentation the heritage house

The building consists of three main floors: the basement: it used as stables for horses and large kitchens to prepare banquets for guests at that time ,the ground floor: it consisted of a large office that was used to receive guests and tribal sheikhs from various governorates in order to conduct reconciliation between the clans and to conduct celebration at public events, the first floor: It consists of several rooms of different sizes and a large balcony overlooking the mountains and the areas surrounding the palace (fig. 5).



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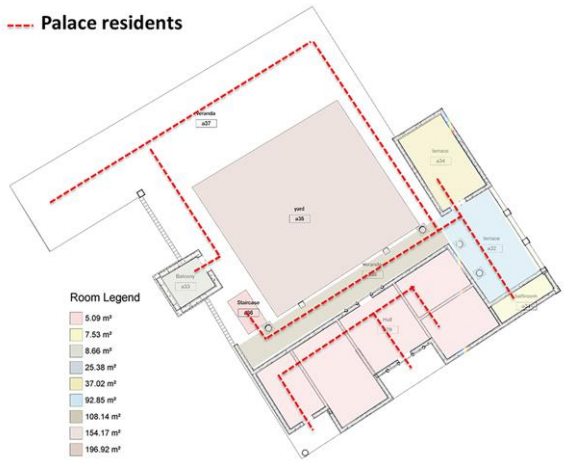


c)

Fig. 5. the plans as they were in the heritage building: a) The basement floor; b) The ground floor; c) The first floor

As shown in Figure no. 6, Ali Al Kayed Palace was built in several stages: In the first stage, the palace consisted of one block, which was built to receive guests with a small kitchen. Also, where arch's for Roofing were used. Moreover, there is no separation of services, they are all in the same space. In a second phase, the steep topography was exploited to add a mass for the building, and it linked by drawer were used for horses stables. In the third stage, the palace was expanded and a new block was added to it due to the increase in the administrative authority of Basha Ali Al-Kayed, thus an enclosed courtyard was formed on three sides. In the fourth stage, a block was added in front of the main entrance to the palace, linking two parts from the other side, with the addition of columns taken from the nearby archaeological sites in order to give privacy to the courtyard (as it became closed on four sides) and to provide a large area of the balconies.

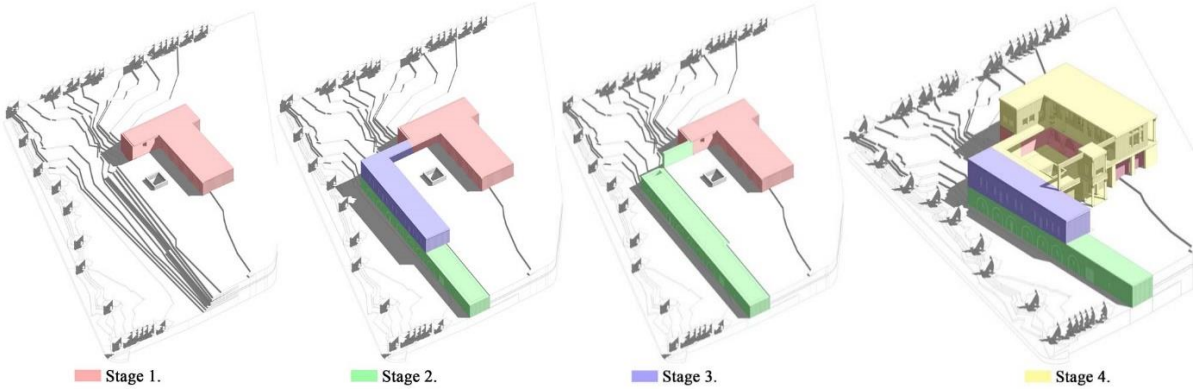


Fig. 6. Stages of the construction of the Al-Basha Ali Palace, Souf Jerash

The historical elements inside the palace: The yellow color represents the architectural elements that were brought in from the outside, and they are two columns of alabaster that are currently on the main gate of the palace.

The blue color represents the architectural elements created at that have been created in that time, which are the columns and the Guardrail. The green color represents the architectural elements (Segments) that have been made and used in the palace. The red color represents the

architectural elements that have been taken from the nearby archaeological sites, which are the Roman columns in the Corinthian style and the Tuscan style. The yellow color represents the architectural style that appeared in the Renaissance period, which is casting in concrete molds for architectural formations and elements (fig. 7).

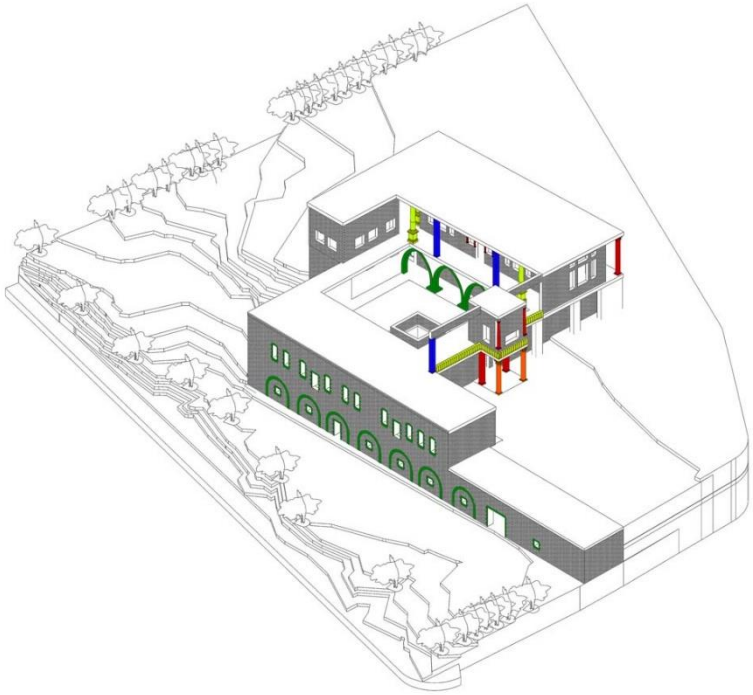


Fig. 7. Historical elements found in the Al-Basha Ali Al-Kayed Palace

The structural importance of the palace is considered in the building systems used, as three modes of construction systems were used in the palace: First, contracts crusader cross (roofed corridors around the inner courtyard) in the ground floor, and stone arches - under state vault (the passages between rooms) in the ground floor. Second, load-bearing walls and bridges (interior rooms of the palace) in the basement floor and ground floor, and load periling system in the first floor. Third, the wall foundation system compact a double skin work wall (two-layer of stones & mud) in the basement floor.

Moreover, there is a structural feature in the palace building, which is that the roof of the ground building is half-stilted-vault and has a balcony above it, and this structural formation is rarely found in heritage buildings in Jordan. The architectural significance of the palace is due to the construction way and stones, which most of them taken from the neighboring archaeological sites in Jerash.

Some of the determinants for suggested project:

– The level of the ground floor with the street level, because the palace was built before the organizational plan for Souf was drawn up;
– Lack of the main movement elements in construction and services due to the difference between the new and previous functions;
– The lack of the palace area in relation to the space needed by the center (the new function);

According to the classification of heritage buildings, the levels of intervention in the palace are according to the following:

– The basement and ground floor is a Class B heritage building, as it allows for a degree of flexibility in making some interior modifications;

– The first floor is considered a class C heritage building, as it allows a greater degree of flexibility, up to demolition while preserving the structure or the external fasade of the building only, and rehabilitating or rebuilding the building from the inside thoroughly.

6.2 Modifications to qualify the building

Building longevity can pose many technical problems, especially with regard to the durability of the outer fabric and finishes. When the outer fabric of a building starts to deteriorate, then big problems could arise when thinking about reusing it. Technical challenges, for example, may require a wide range of renewal [21]. According to previous determinants and future needs of the new function, the initial vision is to add a new block with three floors (fig. 8)

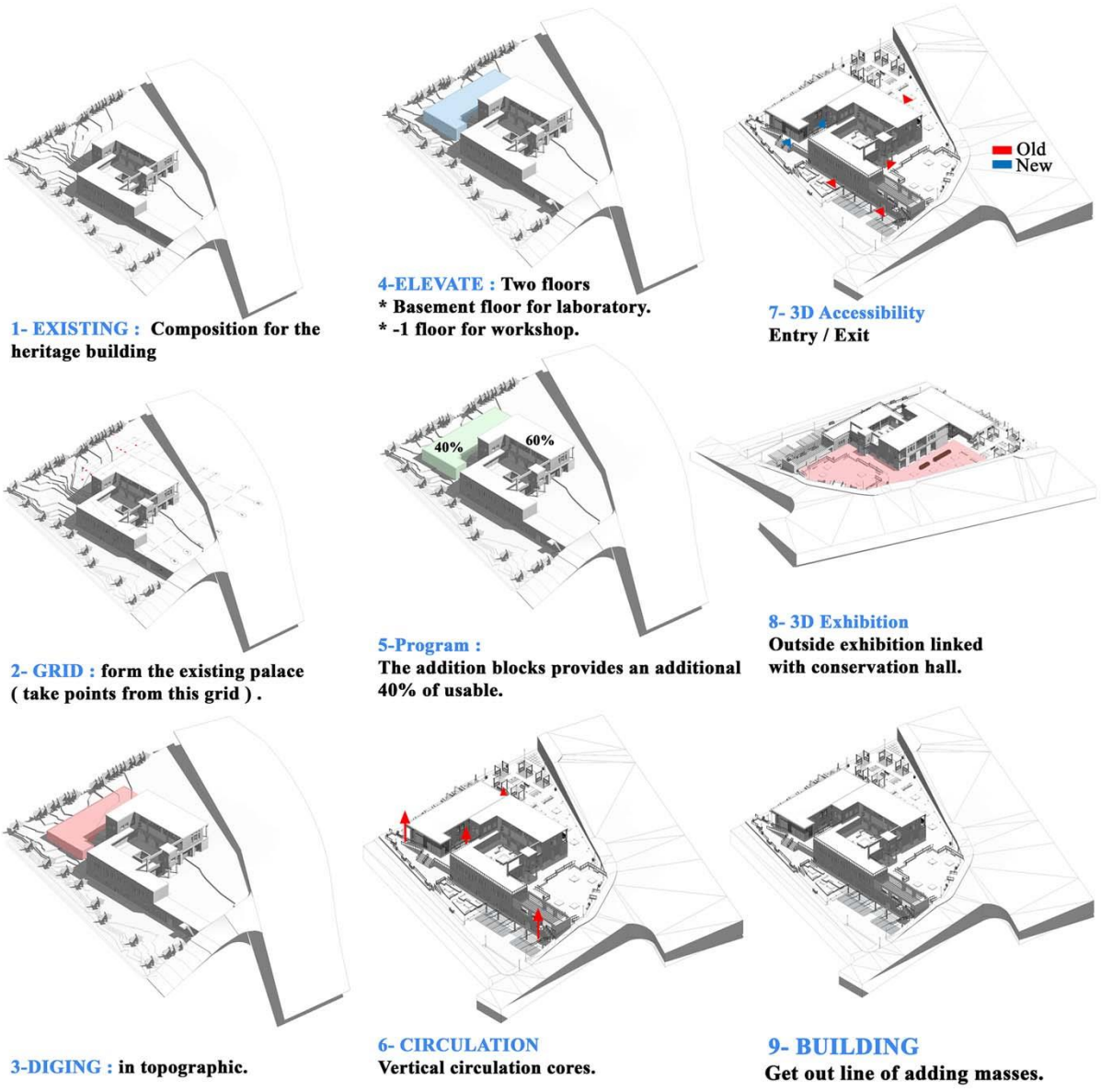
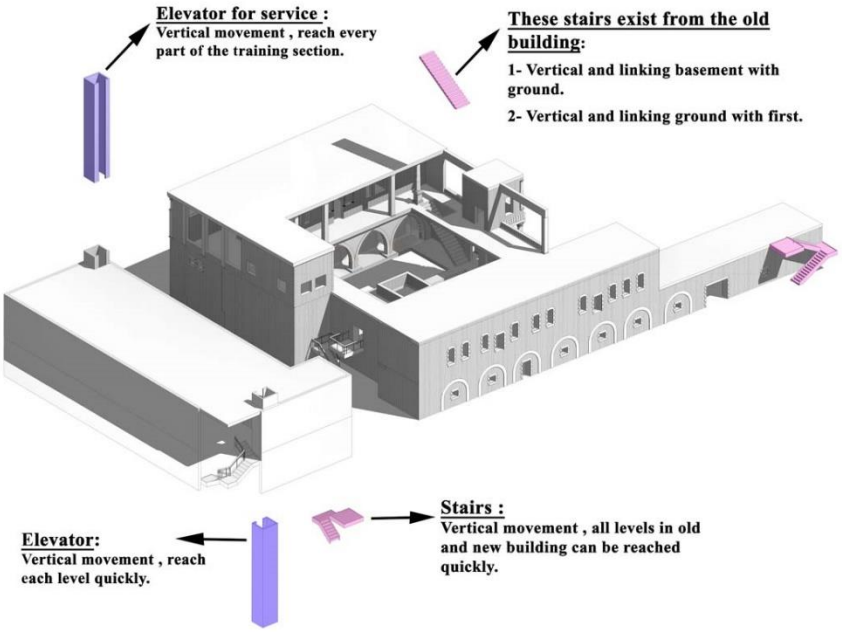


Fig. 8. Vision for the reuse of the Al-Basha Palace on Al-Kayed

Externally, the shape of the new building block was determined as an extension of the grid lines of the old building block. Also, its location and the number of its floors were determined so that part of the building is buried in the topography of the land, in order to match the mass of the old building so that it does not cover the heritage building (fig. 9). The two movement elements in the old block were renewed, and four main movement elements were added, the entrances in the

heritage building were exploited by using them to link the internal and external activities, for example, an entrance to connect the lecture hall with the external exhibition, link the cafeteria with the parking lot, etc.



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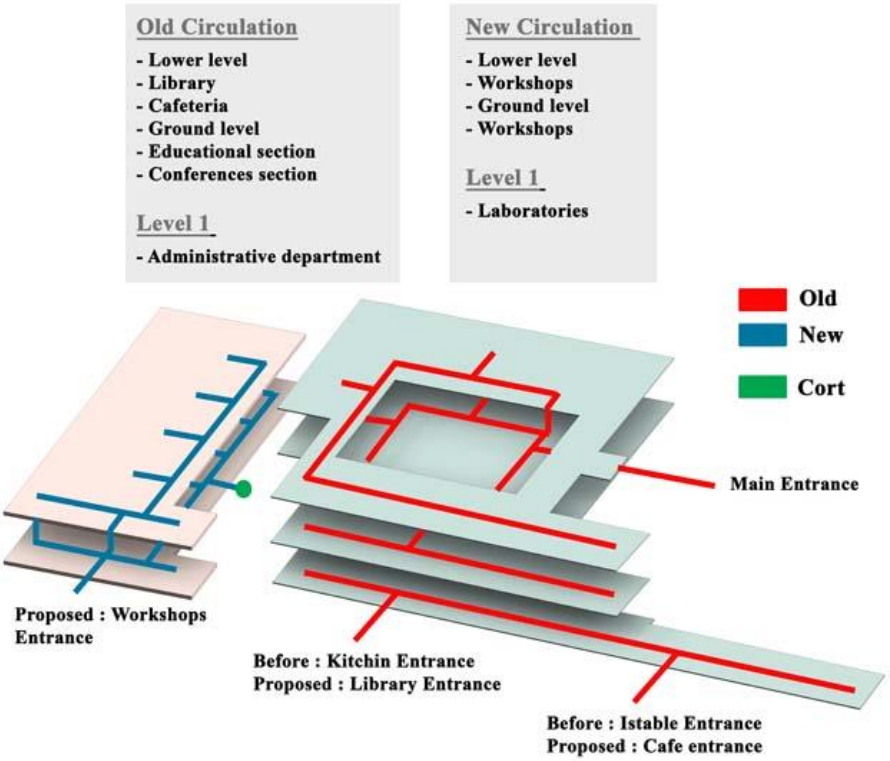

b)

Fig. 9. The suggested project that have been studied for the rehabilitation of the building:
a) Building functions in the old and new mass; b) Elements of vertical movement in the building

Internally, activities that required special conditions, equipment, and extensions, such as workshop laboratories, were placed in the new block, while educational and administrative activities were placed in the old block. According to the permitted intervention, the space of 102.81 was divided into three rows and a waiting hall on the ground floor, and two walls were removed to merge the spaces, and a door was opened to separate activities (functional goals) on the first floor (fig. 10). The building should be restored to the climatically appropriate, original design in terms of opening the verandas for natural light and ventilation, whilst adopting modern state of the art energy efficient mechanical and electrical standards [22].

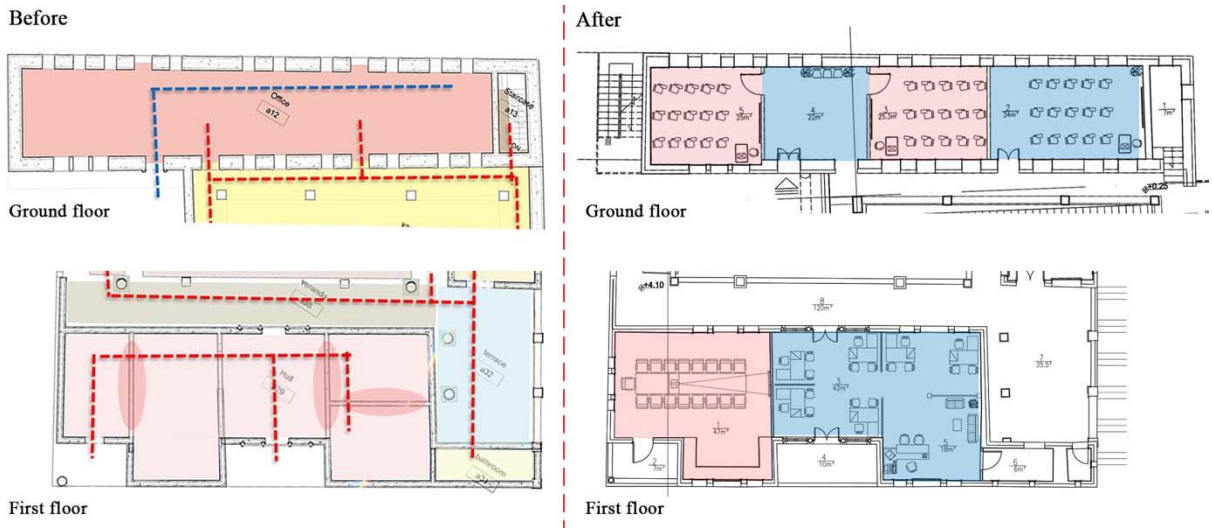

Fig.10. Interior modifications (removal and addition of walls) in the old building mass

The third section of the Burra Charter process flow chart includes the implementation phase of the project where the strategy is changed according to the circumstances and developments at the time of the strategic implementation that may be imposed by the site, the importance of the heritage building, or the nature of the project.

With regard to energy, the proposal was to rent land far from the site and install solar cells on it in order to generate energy for the benefit of the project, as the laws of the Ministry of Energy in Jordan allow. There are no rules, norms, and standards of public and international conditioning energy in heritage buildings and, therefore, each country's own rules relating to energy efficiency requirements that include not include buildings [23].

7. Results

The principles that were reached during the application of the reuse of the Basha Ali Al Kayed Palace:

– The most important things that must be taken into account when reusing any heritage building is the nature of the new use and its needs, as it does not require the deletion of any element of the building, and it does not require any addition except within the minimum limits or depending on what international conventions allow. In the beginning, the heritage building, its elements, and its surroundings must be studied to determine its data, then the requirements for the new use of the heritage building must be determined before the restoration work. Based on these data and requirements, a set of alternatives are made for the proposed uses, and then the most appropriate option for the building is determined.
– Taking into account the classification of the heritage building to determine the amount of interference allowed in the heritage building.
– Preserving all the architectural elements, details, and finishing materials that give the building a distinct character and other elements of the interior architecture.

– The new additions must have a different design and can be clearly distinguished from the old part and do not significantly affect the distinctive features of the heritage building nor distract attention from it.
– It is preferable not to change the location of the original stairs in the heritage building, and to maintain them in their location to perform their function of linking the different floors, and if the new job requires additional stairs, they are added so that it can be removed easily at any time.
– When it is necessary to make internal or external expansions or additions to the building, they must not lead to changing or destroying parts and spaces of it. Also, it must be compatible with the heritage building and not contradict or cover it.
– The new function for the heritage building must be carefully studied so that it matches the nature of the building and its spaces so that the building can perform the new function without obstacles.

8. Conclusion

The adaptive reuse process is subject to many requirements that differ between the historical requirements imposed by the historical and heritage character of the building and the architectural and construction requirements that are represented in respecting the structure of the building, the materials used in the building, the internal spaces, the architectural character and the basic movement elements such as stairs and corridors, as well as the expected loads in terms of the number of users and the nature of the proposed job. Also, it is subject to economic requirements directly related to the financial return provided by the new function and the extent of its ability to save the costs of its maintenance work. At the end of the research, we emphasize that the reuse of heritage buildings is an important process, but it should not be random and ill-considered. Therefore, there is a need to return to the international charters and recommendations that dealt with the reuse of heritage buildings, making changes in them, knowing their limits and permissible interference in order to preserve heritage buildings with all their values and keep them permanently protected.

9. Recommendation

This research recommends following the international conventions as Burra Charter for the reuse of heritage buildings in Jordan. Moreover, there is a need to prepare specialists at a high level in the field of preservation, restoration and adaptive reuse.

Recommendations for designers and project managers: Any heritage building must be documented in its current condition before it is stored and reused. Furthermore, additions and modifications to the new function must be removable in the future while preserving the building's basic shape and the integrity of its historic architectural elements and structural condition. The new function and financial return of the heritage building in Jordan has an important role in the success or failure of the building

Sources of illustrations
Figure 1,3,4,5,6,7,8,9,10. Created by the author.
Figure 2. Based on the. Available at: http://portal.iphan.gov.br/uploads/ckfinder/arquivos/The-Burra-Charter-2013-Adopted-31_10_2013.pdf

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ABOUT THE AUTHORS

Mohannad Tarrad
Associate Professor, Department of Architecture Engineering, Faculty of Engineering, Al-Bayt University, Mafraq, Jordan
e-mail: ms-tarrad@aabu.edu.jo

Salam Mtawea Husban
Master in Architecture and Engineering, Department of Architecture Engineering, Faculty of Engineering, Al-Bayt University, Mafraq, Jordan
e-mail: salam.arch94@gmail.com

ОБ АВТОРАХ

Моханнад Таррад
Доцент кафедры «Инженерная архитектура», Инженерный факультет,
Университет Аль-Байт, Мафрак, Иордания
e-mail: ms-tarrad@aabu.edu.jo

Салам Метавеа
Научный сотрудник Инженерного факультета Университета Аль-Байт, Мафрак, Иордания
e-mail: salam.arch94@gmail.com