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To cite this article: Omar K Akram *et al* 2018 *IOP Conf. Ser.: Mater. Sci. Eng.* **401** 012030

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# The importance of the heritage values of Al-Ukhaidhir palace, Karbala city, Iraq

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**Abstract.** Karbala is distinguished by its rich architectural heritage. Deterioration of historic buildings can affect the city itself as well as the country as general. This research highlights the issue that Al-Ukhaidhir palace, located in Karbala city, is facing. There is no attention from local population, neither experts to protect the architectural heritage values of Al-Ukhaidhir palace. Therefore, there is a dire need for an action to protect the historical palace, aiming to save it for next generations and to increase tourism not just in the city, but for the country in general. After the introduction of the background problem, this study presents a literature review on Al-Ukhaidhir Palace, highlighting their significant heritage values and then summarizing the issues that are presently putting Al-Ukhaidhir Palace into danger. The methodology of this research is based in a case study, which follows a Qualitative method. This study contributes in identification of the significant values of the palace, proposing a theory on the protection of Islamic Architecture Heritage, from the issues that Al-Ukhaidhir Palace in Karbala City is facing and highlights the important role of experts and local population in the preservation process of heritage sites with its recommendations. It helps on the protection and documentation of heritage values in Al-Ukhaidhir Palace, having a global impact towards humanity issues.

## 1. Introduction

Al-Ukhaidhir Palace is considered an ancient defense building with unique architectural values. It is a distinctive feature of military architecture in the Islamic terms of design and engineering, not only for Iraq, but also for the entire Islamic world. It is still an imposing building, however, with large visual damages [7][15]. Al-Ukhaidhir was built in around 750-892AD. The palace represents different civilizations from the past and was built by the ancestor specialists. Its features, in specific its construction materials, are referred by most archaeologists as dating back to Islamic times, especially to the first Abbasid period [9]. A good study driven on the palace was performed by the British Orientalist KA, focusing the existing architectural and historical evidences [18] [22]. The most important of the existing studies about the place was conducted by him, where it was concluded that the palace was built in 161 AH (778 AD), and is considered one of the most important opinions on this subject [24]. According to many scholars



who specialize in Islamic architecture and art, the architectural elements of the fortress of Al-Ukhaidhir are fully in line with the development of Islamic architecture on that era [2]. The city of Samarra was built in the year 221 AH (836 AD), the second Abbasid capital built in Iraq after Baghdad. It was found that there is a great similarity between the architecture of the fort and Samarra archaeological buildings [10]. It is confirmed that the fortress of Al-Ukhaidhir was built in Islamic style, through the excavations that took place. The mosque's mihrab in its southern wall was also built. This mosque has the same characteristics as the Islamic mosques [12]. The destruction of Al-Ukhaidhir Palace results in the loss of this wealth forever, being impossible to recover it in the future. It was built in ancient times, representing different ancient civilizations [6]. Its level of destruction comes mainly from the lack of awareness about its important heritage values and it is also possible to identify absent regulation for revival and restoration processes, as a main factor for its ruins [4]. So, the main research question is: What are the significant Heritage Values of AL- Ukhaidhir Palace, Karbala City, Iraq to be protected? Where its objectives are: To identify the significant heritage values of Al-Ukhaidhir palace; To summarize the issues that Al-Ukhaidhir Palace in Karbala City is facing; To highlight the role of experts and local population on protecting Al-Ukhaidhir Palace [14].

## 2. Literature Review

### 2.1. Karbala City

The city of Karbala is located southwest of Baghdad city, at a distance of (105) km, and is linked to the province of Baghdad, Babylon, Najaf and Qadisiyah by different roads (29 km) [8]. The location of the city of Karbala is of a great importance to other cities in Iraq, not just because of its similar climatic conditions but also by being located within the most intensive regions [5]. The city of Karbala has emerged greatly after the martyrdom of Hossain PBUH and his companions in the year 61 AH. Karbala consists of three districts and five administrative units between a district center [8] The elimination of Karbala and Husayniyah; Indian district; The district of Ain al-Tamar.

### 2.2. Al-Ukhaidhir Palace (750-892AD)

Al-Ukhaidhir Palace ruins geographically located in western sahara after the 48km to the south – west of the city of Karbala, 150 km south of Baghdad and 20 km from the town of Ain Al Tammer called Statha. It was an important stop on regional trade routes [1]. Historically, it possible to find relevant architectural styles and features in Mesopotamia's ancient time [16]. The world has witnessed for thousands of years, even before the Iraqi construction activity had taken place, that creativity and construction, despite the lack of material, had already drawn the attention of different scholars. Being clear that it deserves all admiration and appreciation. From historic figures, Al-Ukhaidhir Palace, which will be highlighted, is considered a unique ancient defense building [17].

Al-Ukhaidhir is a large, rectangular fortress with a unique defensive style (Figures 1 and 2). It consists of a main hall, large Iwan, reception hall and servants quarter [19]. The Al-Ukhaidhir was regarded as an important workshop, where many elements, of what was to become known as Muslim architecture, were elaborated and developed [22].

### 2.3. The Significant Heritage Values of the Palace

The architects of Al-Ukhaidhir first introduced a new elaborate technique based on the construction of elliptical (pointed) barrel vaults, with bricks in similar technique to building a wall and, therefore, considerably eased the way vaults were built [24]. The old tradition of building, using mixture of mortar and small stones and debris, laid out on wooden base. Such method need a lot of wood, not available in this arid region, where building took considerable time to be finish, as workers had to wait for the vault to dry, to move the scaffolding form



**Figure 1.** Pointed barrel vault and arches of the great hall of Al-Ukhaidhir Palace – Source: <https://www.cemml.colostate.edu>  
**Figure 2.** The Northern side of the court of honor and the upper floor of Al-Ukhaidhir Palace – Source: <https://www.cemml.colostate.edu>

to another part of the building. This new technique, likely to have been introduced through Persian and Mesopotamian works and methods, provided adequate solutions to these issues [23]. Another elaboration of the vault construction technique was seen in the palace's mosque, the use of flattened arches, to upholding the brick vault, was a technique that became later known as the ribbed vaulting. According to Marcais, this method was also used in Medinat Al-Zahra (10th century) in Andalusia. So, such methods, later provided the foundation for the rise of Gothic architecture in Europe [25]. Blind arcades are also found in Al-Ukhaidhir place, being them another original element introduced in Al-Ukhaidhir as a decorative form in the Northern façade of the Honor Court. This feature became an essential element in Muslim architectural decoration and later this method was transmitted to Europe [24]. Here, one has to point to the attitude of Western scholars which connected the use of blind arcading, as well as the origin of ribbed vaulting and a number of other features, to Lombard architects, who are considered (by them) to be the main builders of Dark ages Europe, especially in the 10th and 11th centuries [21]. Fluted dome was another innovation that appeared crossing beyond the main entrance in Al-Ukhaidhir Palace [2]. Al-Ukhaidhir elaborated the defensive technique by introducing what's known as "chemin de ronde" along the ramparts. Another elaboration of the four gates, consisting each of a chamber with an inner wall and an outer portcullis, which could be lowered in case of assault, trapping the attackers inside, provided another defensive architectural technique that was also transmitted to Europe through the crusaders [19]. The palace consists of two fortified enclosures. On the outer enclosure, there is a 17 meters high robust rampart made of limestone slabs and mortar strengthened by corner and intermediary towers, alternating with pairs of blind arches on pilasters [14]. A series of portcullises, or cataracta, are usually suspended by iron rings to be dropped behind the enemy, imprisoning him, were fitted along it and even on the supporting towers, adding extra protection [11]. These defensive arrangements have added extra protection. Another defensive scheme employed in Al-Ukhaidhir was the use of arrow-slits, which were served by the wall walk (once vaulted). From these slits defenders of the palace it was possible to fire arrows without being exposed to the enemy. The gateways were also fitted with slits in their vaults for dropping flaming missiles, as well as lateral grooves for letting down the portcullis [21].

*2.3.1. Internal Facilities* The facilities are confined to a rectangular building adjacent to the northern wall, 112 meters long and 80 meters wide and has the following internal facilities:

*The official Diwan (large lobby):*

It is a rectangular hall shape length 15.50 meters and width of 9 meters. In its eastern and western sides are four semi-cylindrical arches. The entrance on the eastern side leads to the upper floor, while the three entrances lead to rooms. In the last Iwan there are two entrances, the first leading to the upper floor, the second leading to the mosque and the third consisting on a group of overlapping rooms [17].

*Central Section:*

This section surrounds the hall of the ceiling, separated from the rest of the palace. Accessed through an entrance in the middle of the southern side of the official Diwan (Large lobby), offset by another entrance that leads to a grand spacious. It is a rectangular, 33-meter-long, 27-meter-wide courtyard with four doors open by the grand gallery. The northern entrance is connected to the Great Iwan. The eastern and western entrances lead to the surrounding area of this section, including the Haram section. The southern entrance is directly connected to the so-called "mabin", and the northern rib of the sediment is higher than the rest of the ribs. The eastern and western sides consist on cavities of a single pattern. The southern side consists on a large opening, which is a facade of the large Iwan [20].

*The Large Iwan:*

It is a rectangular hall with a length of 10.75 meters, and 6 meters wide, topped by a semi-cylindrical built of brick, surrounded by a number of halls for the reception of guests [15]. The façade presents a beauty design, as if it was designed in the style of a throne room. The Iwan has two halls on its eastern side and two others on its western side. These halls are rectangular, 10 meters long and 4.65 meters wide each. They are characterized by a series of various castles and decorations. The Iwan has also a rectangular courtyard that is surrounded by a number of halls. In the middle of the southern side of this courtyard, there is an entrance leading to the large gallery that surrounds the central section and opens in this gallery several doors [16].

*The Mosque:*

It is a rectangular building, 24 meters long, 1550 meters wide, with an entrance in the lobby and another in the western facade, which separates the fort wall from the northern section of the palace and its facilities. Surrounding the mosque from its sides, the front, eastern and western corridors, it is based on a row of columns in each hand, on which the arches are consecutive and complexly decorated with beautiful geometric forms. The shape of the mihrab is concave [7]. Archaeological investigations have shown that its construction is an integral part of the construction of the Al-Ukhaidhir fort and not modern or added to in a later time [22]. The mosque has three entrances: two of them are led by the northern passage and are located on the northern side of the mosque's courtyard. The third entrance is located in the south-eastern corner of the mosque and leads to the lobby [24].

*Guard Section:*

Located on the east part of the lobby, and adhered to the outer wall to the north, it leads to an entrance located in the long passage [17]. There is also another entrance in the form of a sloping surface leading to the first floor, by the entrance to the branch on the right, and to the second floor after turning south, up to the second floor. This section consists of one floor, except the western side, which consists of two floors to connect rooms and facilities for the guards. It is located at the top of the main entrance [23].

*2.3.2. Residential Houses* They are four houses that are separated from one another. Two are located to the east of the central section. The other two are located to the west of this section. In

each house, there is an entrance located in the grand gallery. These houses are almost identical in terms of design, symmetry and location [19]. Each house consists on a rectangular dish, and its sides are slender. These arches are topped with arches based on columns and the entrance of the house is in the central courtyard. The northern and southern facades are often similar in design, number of halls and facilities. These houses are characterized by the Awawin system, a model attributed to the architectural style of Al-Heiri (relative to the city of Al-Hira) near the city of Kufa [8].

*2.3.3. Servant Section* It is a large building consisting on a rectangle, with eight rooms with vaulted ceilings, isolated from the family houses and located behind the central section and the reception rooms [21].

*2.3.4. The Bathroom* A rectangular building is located between the south house of residential houses and between the servants' section. It is 9.90 meters long and 9.30 meters wide and its entrance is located in the south-eastern corner of the Grand Gallery [19]. The bathroom is surrounded by an internal wall and, at the same time, by the main wall of the palace. This bathroom is special for the palace, where its interior walls are built of brick and stone and its floor is tiled with white marble. It has an internal main entrance located in the south-eastern corner of the Grand Corridor apart from other available ones. The shower section consists of three interconnected rooms, leading to an entrance in the western side. The overall design of the bathroom is similar to the ones built in the Islamic ages [22].

#### *2.4. External Buildings*

There are buildings outside the fort. The first is located on the right of the interior north (main) entrance. It is rectangular with 76 meters long and 12 meters wide, consisting of a series of 14 rooms with vaulted ceilings. A door to a ladder leads to the roof of the building [15]. There is a 33.20-meter-long rectangular courtyard with a width of 24.70 meters between the rectangular building on the northern side and the wall on the western side [17]. There is also a small building on the north-eastern side of the fort, similar to the design of the bathroom [19].

#### *2.5. Proposition Theory*

Protection of Islamic Architectural heritage in Al-Ukhaidhir palace, increases the impact of heritage tourism to the city, gives opportunity to improve the country's economic values, while keeping it to next generations [14].

### **3. Methodology**

The qualitative method is effective on this research in the way that it is used to obtain information about Al-Ukhaidhir, like the historical background about the palace, such as significant architectural heritage, internal facilities, among others. In order to have better understanding on the needs of protecting the significant heritage palace the exploratory case study adopts the most common qualitative approaches, based on main research question of this research and the study's nature. This approach aims to identify their problems and to find sensitize experts and local population for the need to protect them from possible loss [14].

### **4. The Main Problems Facing to Protect the Historic Place**

The preservation of the architecture heritage faces a large number of problems that can be attributed to social and economic development [2] Lack of awareness of the importance of urban heritage; lack of funds for conservation; absence of legal protection; absence of community

and private sector participation and failure on the development of appropriate mechanisms to increase community and private sectors' participation in the conservation process.

### **5. The Role of Experts and Local Population in the Heritage Sites' Preservation Process**

The involvement of the local community and the expert group have the greatest impact on the support, development and revitalization of Al-Ukhaidhir Palace. Therefore, it is necessary to document and create clear policies for communication between the local community and authorities in order to develop marketing plans, whether at the local or global level, and to provide services that can help on attracting tourism in its various aspects [3][?]. The country should seek to develop laws on investment, protection, restoration and revitalization, in order to encourage the local community to participate and not only to give them possibilities to be part of preservations processes, but also to give them opportunities to have jobs and to prevent crime and vandalisms in that place [12, 14]. The preservation must work under control of authorities and specialists, and the local population should follow the regulations of government to be unified in all state. With this, the preservations process may be fulfilled [15].

### **6. Conclusions and Contributions to Existing Knowledge**

- It is recommended to prevent the demolition or alteration of archaeological heritage areas except through clear studies and plans that take into account the values, importance and optimal methods of dealing with them;
- It is recommended to prevent infringements and structural irregularities and random elements that distort areas and heritage palace;
- The importance of media and awareness to the local populations about heritage sites.
- The conservation management projects in a manner that ensures continuity and maintenance after the completion of conservation work;
- The development of laws and regulations governing the treatment of the palace;
- Predicting all causes of deterioration and taking appropriate measures to stop them in a timely manner;
- Determine the levels of impact and treatment methods in order to preserve the architecture heritage for Al-Ukhaidhir Palace.

Based on the three different objectives, the aim of this research is to identify, summarize and highlight the role of experts and local population on protecting Al-Ukhaidhir Palace, located in Karbala City, Iraq, in a way to help their protection and provide reliable information for future generations and future studies on the area. Documenting the significant heritage values in Al-Ukhaidhir is a vital factor for its identification, protection and interpretation:

- Identification: identification of the significant heritage values of Al-Ukhaidhir palace, provided good and reliable documentation for future generations and studies;
- Protection: The lack of security on the country and a possible unexpected attack by other terrorist groups, can ruin all heritage values in palace and its Islamic Architecture styles, which made it urgent to properly document them;
- Interpretation: Documenting the significant heritage values of Al-Ukhaidhir palace, provided an overview and assessment of the current state of the physical and cultural aspects of the properties.

The obtained results, namely about the significant values of Al-Ukhaidhir palace, deliver important information for students, researchers, planners and even to visitors, providing them a better knowledge and understanding of the place and the importance of its protection. This

study may be used on foundation to conservation, rehabilitation and reconstruction of the heritage present in Al-Ukhaidhir palace.

## References

- [1] Lima M G 2011 Islamic art and architecture an introduction to the architecture and the arts of the civilizations of islam
- [2] Akram, O K 2017 Identification of cultural properties of arab district, erbil, iraq *University Putra Malaysia*
- [3] Akram O K, Franco D and Ismail S 2016 Smart buildings – a bew environment ( theoretical approach) *International Journal of ENgineering Technology, Management and Applied Sciences* **4(4)** 1–5
- [4] Akram O K, Franco D J and Ismail S 2016 The cultural significant of erbil city: case of traditional kurdistan houses *International Journal of Engineering Technology, Management and Applied Sciences* **4(2)** 102–106
- [5] Akram O K, Franco D J, Ismail S, Muhammed A and Graça A. 2016 Promoting heritage management in new smart cities: évora city, portugal as a case study *International Journal of Engineering Technology, Management and Applied Sciences* **4(9)** 148–155
- [6] Akram O K, Ismail S and Franco D J 2016 The heritage values of arab district, erbil city, iraq *International Journal of Engineering Technology, Management and Applied Sciences* **4(2)** 129–135
- [7] Akram O K, Ismail S and Franco D J 2016 The significant of islamic architecture heritage at baghdad city, iraq – case studies of shrine of lady zumurrud khatun *International Journal of Engineering Technology, Management and Applied Sciences* **4(4)** 133–138
- [8] Akram O K, Ismail S and Franco D J 2016 The significant of tourism heritage of najaf city in iraq *International Journal of Engineering Technology, Management and Applied Sciences* **4(4)** 14–19
- [9] Akram O K, Ismail S and Franco D J 2016 The significant of urban form of erbil city, iraq *International Journal of Engineering Technology, Management and Applied Sciences* **4(2)**, 96–101
- [10] Akram O K, Ismail S and Franco D J 2016 Urban and tourism development projects for cities citadels (aleppo and erbil) *International Journal of Engineering Technology, Management and Applied Sciences* **4(3)** 60–68
- [11] Akram O K, Ismail S, Utaberta N, Mohd Yunos M Y, Ismail N A and Arifin N F 2015 The important values of architectural baghdadi heritage *Advances in Environment Biology* **9(24)** 46–52
- [12] Franco D J, Akram O K, Ismail S, MohammedJamil N F and Graça A 2017 Adopting the smart buildings system to heritage buildings In melaka, malaysia *11th ASEAN Postgraduate Seminar* 01–09
- [13] Akram O K, Franco D J and Ismail S 2016 Development phases from heritage buildings to smart buildings *International Journal of Engineering Technology, Management and Applied Sciences* **4(4)** 6–13
- [14] Akram O K, MohammedJamil N F, Franco D J, Graça A and Ismail S 2018 How to guide your research using ondas framework
- [15] Creswell K A 1958 *A short account of early muslim architecture* (Middlesex Baltimore: Penguin Books)
- [16] Hattstein and Delius 2000 *Islam Art and Architecture* (Cologne, Konemann)
- [17] Reimer D, Vohsen E 1923 *Forschungenzur islamischen kunst* (Berlin)
- [18] Jairazbhoy R A 1972 *An outline of islamic architecture* (Bombay and London, Asia Publishing House)
- [19] ] Kritzeck J 1959 *The world of islam: studies in honour of Philip K. Hitti* (London, Macmillan)
- [20] Lethaby W R 1904 *Medieval art: from the peace of the church to the eve of the renaissance* (New York, Duckworth and Co London) IV 100-111
- [21] Marçais G 1954 *L'architecturemusulmaned'occident: tunisie, algérie, maroc, espagne et sicily* (Paris, Arts et métiers graphiques)
- [22] Porter K A 1909 *Medieval architecture, its origin and development* (New York, Baker and Taylor Company) 1
- [23] Rice D T 1979 *Islamic art* (Norwich, Thames and Hudson)
- [24] Richmond E T 1926 *Moslem architecture 623-1516 some causes and consequences* (London, The Royal Asiatic Society)
- [25] Rivoira G T 1918 *Moslem architecture: its origin and development* (G. Oxford University Press)