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Conservation of Earth Vernacular Settlements

A Case Study of El-Dakhla Oasis, Egypt

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Abstract

The significance of urban vernacular heritage is manifested in being a pillar in the preservation of the native culture and identity; besides, it is a touristic, economic resource and a foundation for the local community development. However, a myriad of earth vernacular settlements suffers from negligence and deterioration. Hence, the need to conserve such areas arises. The research tackles the study of El-Dakhla oasis as a case where the earth vernacular settlements suffer from negligence and incoherence of policies; hence, the region decays and gradually vanishes. The research aims at studying the reasons which lead to the deterioration of earth vernacular settlements, in addition to studying and listing the factors which lead to achieving the optimal sustainable preservation of these areas. The research targets the elicitation of benefits of previous experiences so as to preserve earth vernacular settlements in the oasis. Nevertheless, in order to achieve the objectives of the research, the inductive approach is adopted. Literature review is conducted as well as the basic concepts and theories relevant to the topic of conservation and vernacular architectural heritage. Furthermore, the comparative analytical approach is adopted through the analysis and evaluation of the factors of conserving the architectural heritage in an experiment which targets At-Turaif District in the historical area of Ad-Dir'iyah in Saudi Arabia and Kasr of Ait-Ben-Haddou in Morocco; whose circumstances are very similar to the circumstances of El-Dakhla oasis. The research concludes that the dedication to provide the factors which contribute to the conservation of the vernacular architectural heritage ensures the success of such places. It is also necessary to avoid the errors which occurred during the analysis of the examples. The research, also, recommended the importance of implementing the plans of training the native inhabitants to master the various crafts which are part and parcel of the conservation process besides enabling the inhabitants' participation and activating the role of the civil community institutions in the conservation of vernacular heritage areas, as well as developing and promoting them, whether in the stage of planning or implementing the projects of conservation.

Keywords: *earth vernacular settlements, heritage, conservation, El-Dakhla oasis*

الملخص



تتجلى أهمية التراث العمراني العامي في كونه ركيزة في الحفاظ على الثقافة والهوية الوطنية إلى جانب كونه مصدرًا سياحيًا واقتصاديًا وأساسًا لتنمية المجتمع المحلي، ومع ذلك يعاني عدد كبير من التجمعات الصحراوية المحلية من قدر كبير من الإهمال والتدهور، ومن هنا تأتي أهمية الحفاظ على هذه المناطق، وقد تناول البحث دراسة واحة الداخلة في مصر كحالة، حيث تعاني التجمعات السكنية المحلية من الإهمال وعدم اتساق السياسات، ومن ثم، فإن هذه التجمعات تتحلل وتختفي تدريجيًا. يهدف البحث إلى دراسة الأسباب التي أدت إلى تدهور التجمعات الصحراوية التقليدية، بالإضافة إلى دراسة وحصر العوامل التي تؤدي إلى تحقيق الحفاظ الأمثل المستدام على هذه المناطق، كما يهدف البحث إلى استنباط فوائد التجارب المختلفة للحفاظ على تلك التجمعات، ومن أجل تحقيق أهداف البحث، تم استخدام المنهج الاستقرائي، حيث تم مراجعة الأدبيات والمفاهيم والنظريات الأساسية ذات الصلة بموضوع الحفاظ على التراث المعماري المحلي، كما تم استخدام المنهج التحليلي المقارن من خلال تحليل وتقييم عوامل الحفاظ على التراث المعماري في منطقتي حي الطريف في الدرعية التاريخية بالمملكة العربية السعودية ومنطقة قصر آيت بن حدو في المغرب، والتي تتشابه ظروفهما بشكل كبير مع واحة الداخلة بمصر. وخلص البحث إلى أن الحرص على توفير العوامل التي تساهم في الحفاظ على التجمعات الصحراوية التقليدية مع تجنب الأخطاء التي تم استنتاجها من خلال تحليل الأمثلة، كما أوصى البحث بأهمية تنفيذ خطط تدريب السكان الأصليين على إتقان الحرف المختلفة التي هي جزء لا يتجزأ من عملية الحفاظ، إلى جانب تمكين السكان من المشاركة وتفعيل دور مؤسسات المجتمع المدني في الحفاظ على مناطق التراث العامي وتطويرها والترويج لها سواء في مرحلة التخطيط أو تنفيذ مشاريع الحفاظ.

الكلمات المفتاحية: التجمعات الصحراوية المحلية، التراث، الحفاظ، واحة الداخلة

Introduction:



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The term “vernacular” has different meanings, and implications depending on the context of its use. This term has been used by architects, historians, archaeologists, folklorists and others. The word derives from the Latin vernaculus, which means "native". Given that architecture is defined as the science of building (Oliver, 2006), we can simply say that the definition of vernacular architecture is the "native science of building".

The vernacular architectural heritage occupies a crown-gem position that is considered the inspiration, the affection and pride of all peoples. It has been accepted as a characteristic and attractive product of its society. It appears informal, but nevertheless orderly. The vernacular architectural heritage is important; it is the fundamental expression of the culture of a community, of its relationship with its territory and, meanwhile, the expression of the world's cultural diversity.

Examples of the vernacular architectural heritage may be recognized by: a) A manner of building shared by the community; b) A recognizable local or regional character responsive to the environment; c) Coherence of style, form and appearance, or the use of traditionally established building types; d) Traditional expertise in design and construction which is transmitted informally; e) An effective response to functional, social and environmental constraints; and f) The effective application of traditional construction systems and crafts (Petzet & Ziesemer, 2001).

Although earth vernacular settlement is the work of man, it is also the creation of time. It is the pure response to a particular person's or society's building needs. It fulfills these needs because it is crafted by the individual and society in which it exists. In addition, the building methods are tested through trial-and-error by the society in which they are built until their building methods approach perfection (over time) and are tailored to the climatic, aesthetic, functional, and sociological needs of their given society. Because the individual constructing the structure tends to be the person who will be using it, the architecture will be perfectly tailored to that individual's particular wants and needs.

The existing earth vernacular settlements around the world are sometimes endangered facing either the threat of deterioration or risk dilemma. They may even vanish for good in other times.



1. Causes Leading to the Deterioration of Earth Vernacular Settlements

Many academics and architects have noted that between one third and a half of the population of the world lives or works in earth construction buildings (Rael, 2009). In nearly all hot-arid climates, earth has always been the most prevalent building material (Minke, 2006).

It is a matter of fact that earth vernacular settlements are often related to urban decay, socio-economic degradation and poor living conditions, being exposed to endangering essential historical, cultural, as well as social and economic resources. These settlements often house disadvantaged population and present jeopardy situations from the point of view of structures and services; besides, social security and economic conditions, with evident adverse consequences on the quality of life (De Filippi, 2005). However, the etiologies could be classified into:

- a. Natural causes such as the impact of rain water, variation in temperature and humidity degrees which negatively affect the organic substances used in vernacular heritage buildings, wind which leads to the corrosion of buildings and natural disasters such as earthquakes, tornados and floods which causes immediate and profound damage to buildings, in addition to vegetation and root damage, and rodent activity.
- b. Human causes like quarrying, or 'robbing' from ruins, mistreatment of structural segments, vandalism and wars.

Listed under these causes, there are many social factors such as the absence of the inhabitants' cultural awareness concerning the areas of vernacular heritage; resulting in the misuse of these buildings in addition to the absence of the feeling of affiliation whose existence increase the care about the area and cooperation with the conservation and maintenance programs. Also, there is the increasing population growth in such areas.

There are also many economic factors; the most important of which are the unavailability of development financial funds and neglecting the maintenance which is necessary for the



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conservation of these areas. There are also a number of vernacular factors. For example, there is the extensive spread of activities and those uses which are contradictory to the nature of the heritage area, besides the uncalculated or haphazard maintenance work. In addition, there is the deformation of the architectural identity through changing the character of the buildings via the varying modifications. Further, there are the vibrations which result from the extensive automated traffic with its different types and sizes which adversely impact these vulnerable areas. There is also the rise of the level of underground water due to the increase in the magnitude of using the sewage networks; thus, negatively affecting the foundations of buildings.

There is, however, a plethora of administrative factors which affect the heritage areas, of which the nonexistence of regulations to conserve those areas within the priority of civic planning work. There is also the multiplicity of entities responsible for heritage areas; along with lack of coordination among them. Moreover, the conservation policies may deal with vernacular heritage areas as separate units apart from the social and vernacular environment surrounding them. There are a number of technical issues in regard to the vernacular heritage: lack of understanding of their methods of construction due to lack of research or poor survival rates; lack of suitable skills for repairs; lack of suitable re-use alternatives (Bridgwood & Lennie, 2013). In addition to the aforementioned factors, the nonexistence of an integrated plan to conserve the vernacular areas and protect them from deterioration and extensive spread of urbanization leads to subjecting those areas to grave dangers due to the destruction, decay and devastation of many significant heritage buildings on both local and international levels (The National Organization for Urban Harmony, 2010).

2. The Concept of Conservation of Heritage Sites and Levels of Intervention

This is the concept which deals with the processes of conservation conducted on vernacular heritage areas along with its contents such as the urban milieu with its unique vernacular fabric as



well as the unique style buildings. Moreover, this concept extends to comprise the environmental, economic, cultural and social aspects. Despite of the multiplicity of definitions, one can say that the concept of conservation is: “To conserve vernacular architectural heritage means to deal with “living” environments, not merely built-up sites. Therefore, as much as possible of the cultural significance of the vernacular architectural heritage is passed on to future generations” (De Filippi, 2005). The heritage areas are dealt with through the variable levels of intervention; however, selection is done according to the conditions and nature of the region and the buildings to be preserved. These levels include the following:

- a. Preservation** is used for areas of high historic significance that are in relatively good condition. The purpose of such policy is to conserve the vernacular fabric as well as the buildings as a historic symbol and a scientific value which must be preserved in its original form and stop its deterioration.
- b. Rehabilitation** is concerned with the vernacular heritage area regarding its re-use, improving its urban milieu such as improving its roads, providing it with infrastructure, basic facilities and necessary services, hence, such policy ensures the sustainability of the life of the historic elements through the improvement of the area at large.
- c. Restoration** is used for vernacular areas whose historic significance is associated with a particular period in history, referred to as the interpretive period. The goal of restoration is to return the area to the way it appeared during the interpretive period without the introduction of new materials.
- d. Reconstruction** is the most drastic level of intervention because it involves using new materials to replicate a structure that no longer exists. Reconstruction must be based on reliable evidence, such as archeological findings, photographs, drawings, and descriptions from the time period. Reconstruction is rarely used and must be justified.
- e. Conservation** means all the processes of looking after a place so as to retain its cultural significance (Rodwell, 2007).



3. Principles of Heritage Sites Conservation

Three key international charters, the Venice Charter, Mexico, and the Australian Burra Charter revised version of 1999, embody a myriad of the major principles of conservation. Through the ICOMOS International Scientific Committees, a series of more specific subject-based charters, especially the vernacular architectural heritage, have emerged. Another doctrine that has come to influence conservation practice is the UNESCO World Heritage Center, the Operational Guidelines of which stipulate how the cultural heritage is managed. The convention is also supported by the 1995 Nara Document on Authenticity.

The purpose of this section is to explain the basic principles that constitute conservation philosophy. The first part is concerned with ethics in conservation and discusses the concepts of authenticity and integrity in conservation, whilst the second part focuses on the fundamental principles.

3.1. Ethics in Heritage Sites Conservation

Integrity: Returning vernacular buildings through restoration or reconstruction to how they are assumed to have appeared in the past, for purposes of presentation or actual authenticity, defies integrity (Orbasli, 2007). The vernacular architectural heritage is an integral part of the cultural landscape. Therefore, integrity can be referred to visual, structural and functional aspects of this cultural landscape. Consequently, Integrity includes: aesthetic integrity (of architectural character and landscape integrity); physical integrity (of the building materials and their relation to one another and structural integrity); in addition to integrity of the building function within its context and setting.

Authenticity: The Oxford English Dictionary defines authentic as 'genuine, of undisputed origin'. According to Jokilehto (2007), authenticity means that an historic building should be seen as a true testimony of the culture or traditions that it represents. There are many facets of truth or authenticity where a conservation of vernacular heritage project is concerned, from the use of authentic



materials to maintaining the truth in original form within its context and setting. Authenticity does not, however, mean original in the sense of returning a building to its original form. The continuity of traditional building systems and craft skills associated with the vernacular heritage is fundamental for authenticity expression, and essential for the repair and restoration of these structures. Such skills should be retained, recorded and passed on to new generations of craftsmen and builders in education and training. Therefore, authenticity relates to: context and setting, design and form, materials, techniques, traditions and processes. (Jokilehto, 2007).

3.2. Fundamental Principles of Conservation of Heritage Sites

The following principles apply to the overall approach as well as individual interventions. They have been grouped under the three headings of understanding, implementation and evaluation as explained in (Figure 1).

Research and Documentation: The vernacular does not only embrace the physical form and fabric of buildings, structures and spaces, but also the ways in which they are used and understood. Therefore, any physical work on a vernacular structure should be cautious and should be preceded by a full analysis of its form and structure. This document should be lodged in a publicly accessible archive.

Context and Setting: Interventions to vernacular structures should be carried out in a manner which will respect and maintain the integrity of the setting, the relationship to the physical and cultural landscape, and of one structure to another. Approaches and decisions concerning conservation should not isolate a building from its setting.

Collective Conservation: The vernacular is seldom represented by single structures, and it is best conserved by maintaining and preserving groups and settlements of a representative character, region by region (ICOMOS, 1999).

Adaptation: Adaptation and reuse of vernacular structures should be carried out in a manner which will respect the integrity of the structure, its character and form while being compatible with



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acceptable standards of living. Where there is no break in the continuous utilization of vernacular forms, a code of ethics within the community can serve as a tool of intervention.

Inevitability of Change and Alteration: Vernacular architecture is a dynamic cultural heritage and it is not 'frozen in time' like a historical heritage. Therefore, Changes over time should be appreciated and understood. The conservation of the vernacular architectural heritage must be carried out by multidisciplinary expertise while recognizing the inevitability of change and alteration, and the need to respect the community's established cultural identity (Petzet & Ziesemer, 2001). Alterations which legitimately respond to the demands of contemporary use should be effected by the introduction of materials which maintain a consistency of expression, appearance, texture and form throughout the structure and a consistency of building materials. However, any physical work on a vernacular structure should be cautious and should be preceded by a full analysis of its form and structure.

Tradition and Technology: Wherever possible, repairs should be carried out following original building techniques, except where these are found to be the cause of decay or failure. Using traditional methods should be the first option especially where it is apparent that the continuation of traditional methods is also maintaining the tradition of the building and its link to the local community.

Legibility: Architectural deceits where materials were made to appear different from what they actually were should be rejected. However, this also extends to not making new work look as though it is old as this might be considered a dishonest repair. The guiding principle here is being that intervention work should be obvious to the trained eye without detracting from the overall impression of completeness to a lay observer (Bridgwood & Lennie, 2013).



Training: In order to conserve the cultural values of vernacular expression, responsible authorities, groups and organizations must place emphasis on the following: a) Education programs for conservators in the principles of the vernacular; b) Training programs to assist communities in maintaining traditional building systems, materials and craft skills; c) Information programs which improve public awareness of the vernacular especially amongst the younger generation; and d) Regional networks on vernacular architecture to exchange expertise and experiences.

Community Participation: Carsjens (2009) argued that community participation in any conservation project is necessary for obtaining appropriate solutions. Planning for the people is obviously no longer acceptable and planning with the people proved to be too complex, so planning by the people has become the rallying cry of many planners (Carsjens, 2009). Moreover, community members know the area and their problems better than practitioners as outsiders will never know. Getting their input and having them help decide the nature of a conservation proposal will develop a sense of 'ownership' and increase the proposal chances for success. Literature that supports the idea of community participation makes four major claims. First, community participation leads to better results in project delivery because of a better chance of knowing inhabitant's preference. Second, it leads to easier acceptance of results by inhabitants. Third, it leads to better economy because of participation directly reducing costs and enhanced willingness to help. Finally, community participation is a worthwhile end in itself. In conclusion the action planning with the community is one of the most important assets that encourage identifying problems and enables future expectations and suggestions for vernacular heritage protection and conservation (Dabaieh, 2010).

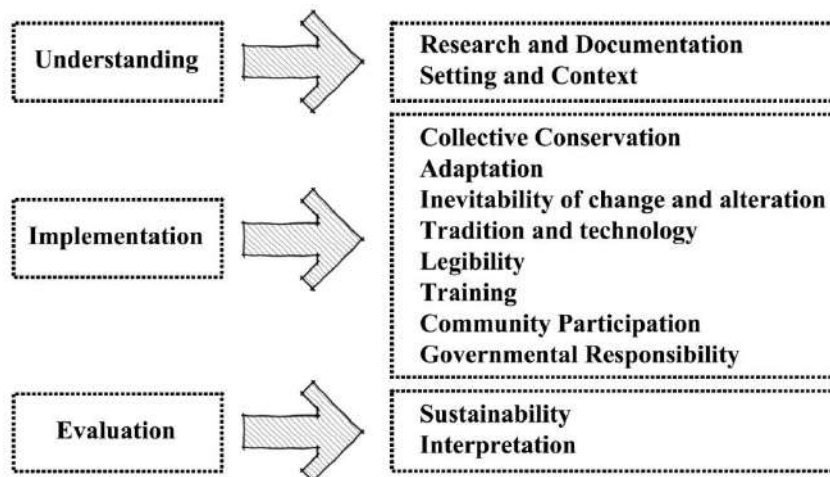
Governmental Responsibility: Governments and responsible authorities must recognize the right of all communities to maintain their living traditions, and to protect them through all available legislative, administrative and financial means and to hand them down to future generations.

Sustainability: Conserving and reusing an existing building is in itself a more sustainable approach than complete renewal or replacement with a new building. The choice of minimum intervention



and regular maintenance of historic buildings is an ecological and environmentally sensitive approach to building conservation. Conservation decisions also need to consider sustainability in terms of selecting conservation materials and avoidance of using harmful chemical substances for cleaning and conservation. On the other hand, the economic sustainability of a community is achieved through providing income resources via establishing small projects, supply locations for production, presentation and marketing; in addition to ensuring that these locations would cover for the cost of their future maintenance. Further, social sustainability is achieved through encouraging the implementation of various human development projects along with the promotion of social awareness concerning the significance of the cultural heritage and the propagation of relevant ideas.

Interpretation and Conservation: Interpretation is the art of presenting the cultural significance of a building or place to its users, visitors and wider community. Although the interpretation of built heritage might be seen as the domain of tourism and visitor attractions, the methodologies and approaches adopted for the conservation of these buildings and sites will play an important role in how they are interpreted and understood by visitors (Orbasli, 2007).





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Figure 1: The Fundamental Principles of Conservation of the Vernacular Architectural Heritage (The authors). (Date of Inscription on the World Heritage List: 2010)

4. Examples of Conservation Projects of Earth Vernacular Settlements in Arab Region

Over the past decade, concern for the cultural identity of the earth vernacular heritage has found its way to the agenda of development work in many countries. However, this concern has recently increased in the Arab countries manifested in the revival of genuine native traditions through care for heritage architecture, preserving it and using it in development. Such a tendency is due to the fact that vernacular heritage of countries can provide many didactic, economic and touristic opportunities for nations. In this section, nevertheless, two projects are to be displayed; the former is the development of At-Turaif District, in Ad-Dir'iyah, of Kingdom of Saudi Arabia and the latter is Ksar of Ait-Ben-Haddou in the kingdom of Morocco, both being registered in the list of World Heritage Convention of UNISCO.

4.1. Conservation Project of At-Turaif District in Ad-Dir'iyah, Saudi Arabia

The At-Turaif District in Ad-Dir'iyah, founded in the 15th century, was the first capital of the Saudi Dynasty, in the heart of the Arabian Peninsula, north-west of Riyadh. In the 18th and early 19th century, its political and religious role increased, and the citadel at At-Turaif became the centre of the temporal power of the House of Saud and the spread of the Wahhabi reform inside the Muslim

religion (El Ghabban et al. 2010). The citadel of At-Turaif is representative of a diversified and fortified urban ensemble within an oasis. It comprises many palaces and is an outstanding example of the Najdi architectural and decorative style characteristic of the centre of the Arabian Peninsula. It bears witness to a building method that is well adapted to its environment, to the use of adobe in major palatial complexes, along with a remarkable sense of geometrical decoration. During the Ottoman-Saudi War of 1811–1818, the leader of the invading force ordered the destruction of Ad-Dir'iyah. Therefore, the Saudis made their capital further south in Riyadh, which has remained their capital ever since (Robert, 1982).



Figure 2: Location of At-Turaif District in Ad-Dir'iyah, KSA.



Figure 3: Urban and architectural character of At-Turaif District in Ad-Dir'iyah (High Commission for the Development of Ar-Riyadh, 2008).

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Integrity: The property comprises the remains of a relatively comprehensive urban ensemble of which the vast majority of the components are still in place, although many buildings are in ruins. The initial planning is well preserved and can be clearly observed in its road network. The structural integrity of the property is thus acceptable. The property has not been subject to excessively



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aggressive modern development, as it was abandoned for a long time, and the integrity of the landscape appears to be satisfactory, although fragile.

Authenticity: The urban and architectural components of the property that have not been altered or reconstructed during 20th century is authentic. The buildings are generally in a state of ruins or vestiges. A major program of restoration work is in place, which respects the original locations, plans and techniques. It must take particular care to preserve the attributes of the authenticity of its buildings and the road network. Vigilance must be ongoing and reinforced by a conservation program which takes priority over other considerations (World Heritage Centre, 2012).

In relation to the fundamental properties, a program for the development of the district has been set up by a governmental body: "The Supreme Authority for Riyadh City Development". An integrated development program, conformed to the laws and legislations of the conservation of cultural and natural heritage, is set up. The development program has succeeded in achieving the sustainable development through devising a plan to increase the level of inhabitants' awareness, along with encouraging the participation of individuals and native inhabitants in the process of development. However, there is an insufficient interest in sustainability in the conservation plan. A comprehensive study is conducted on the existing condition of the old Ad-Dir'iyah. This study includes the scanning of the field, collecting information about the inhabitants, farms, urbanization and existent economy. There is also complete care for the application of the criteria of preserving the heritage in the projects of restoration, qualification and utilization. Moreover, the development activities should conform to the international stipulations of the UNESCO to conserve the cultural heritage locations. An independent administration responsible for supervising the historical heritage of Ad-Dir'iyah and the development projects there is established, specialized studies are prepared and training programs for the labor force working in the field of heritage conservation; in order to ensure the conservation of vernacular heritage. In addition, the participation of the private sector in the finance and implementation of some specific investment projects is encouraged by the authority so as to conserve the natural and vernacular heritage of the historic district of Ad-Dir'iyah.



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The role of the civil community institutions in the development process set up by the authority is not neglected (Esmail, 2019). The vernacular heritage is utilized through its re-qualification in order to be used in hoteling services and museum activities.

The project is yet to carry out the training and qualification of native cadre of workers pursuing the implementation of mechanisms characterized by scientifically-studied, special technical regulations that conform to the work of conservation which match the activities of conservation required for these historic locations, in accordance with whatever that is suitable to its originality and internationally endorsed criteria.

4.2. Ksar of Ait-Ben-Haddou, Morocco (Date of Inscription on the World Heritage List: 1987)

Located in the foothills on the southern slopes of the High Atlas in the Province of Ouarzazate, the site of Ait-Ben-Haddou is the most famous ksar in the Ounila Valley. The Ksar of Ait-Ben-Haddou is a striking example of southern Moroccan architecture. The ksar is mainly a collective grouping of dwellings. Inside the defensive walls, which are reinforced by angle towers and pierced with a baffle gate, houses crowd together - some modest - others resembling small urban castles with their high angle towers and upper sections decorated with motifs in clay brick - but there are also buildings and community areas. It is an extraordinary ensemble of buildings offering a complete panorama of pre-Saharan earthen construction techniques. The oldest constructions do not appear to be earlier than the 17th century, although their structure and technique were propagated from a very early period in the valleys of southern Morocco. The site was also one of the many trading posts on the commercial route linking ancient Sudan to Marrakesh by the Dra Valley and the Tizi-n-Telouet Pass. Architecturally, the living quarters form a compact grouping, closed and suspended. The community areas of the ksar include a mosque, a public square, grain threshing areas outside the ramparts, a fortification and a loft at the top of the village, a caravanserai, two cemeteries (Muslim and Jewish) and the Sanctuary of the Saint Sidi Ali or Amer.





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The ethics properties of the property are as follows:

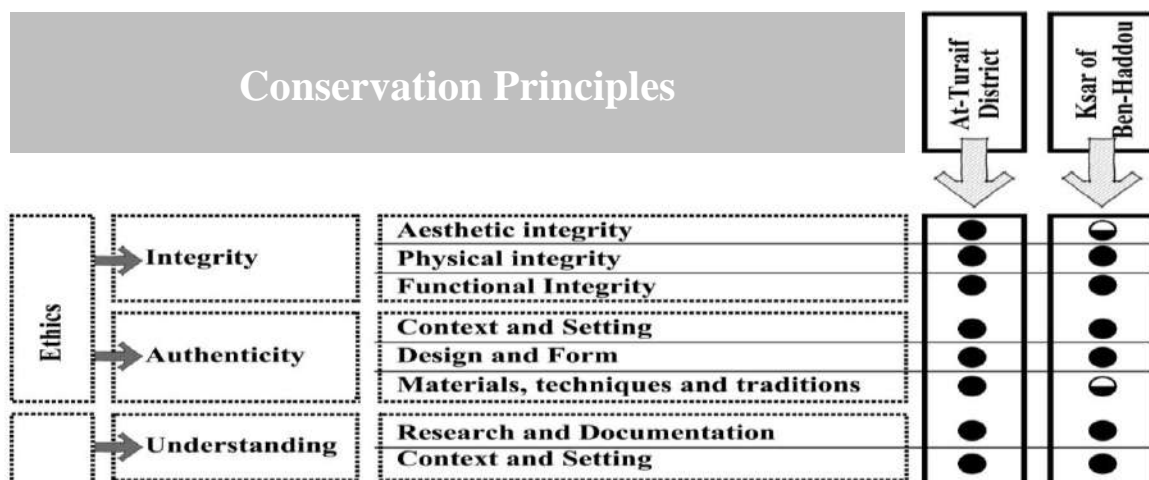
Integrity: All the structures comprising the ksar are located within the boundaries of the property and the buffer zone protects its environment. The earthen buildings are very vulnerable due to lack of maintenance and regular repair resulting from the abandonment of the ksar by its inhabitants. The centre for the conservation and rehabilitation of the architectural heritage of atlas and sub-atlas zones (CERKAS) monitors, with difficulty, respect for the visual integrity of the property.

Authenticity: In comparison to other ksour of the region, the Ksar of Ait-Ben-Haddou has preserved its architectural authenticity with regard to configuration and materials. The architectural style is well preserved and the earthen constructions are perfectly adapted to the climatic conditions and are in harmony with the natural and social environment. The large houses in the lower part of the village, with well conserved decorative motifs, are regularly maintained. The construction materials used still remain earth and wood. However, the inclination to introduce cement has so far



been unsuccessful. Only a few lintels and reinforced concrete escaped its vigilance, but they have been hidden by earthen rendering.

In relation to the fundamental properties, the Ksar of Ait-Ben-Haddou currently has a five-year management plan (2007-2012). This management plan is the result of two years of reflection and workshops involving all the persons and institutions concerned with the future of the site, in particular the local populations. The recommendations of this plan are being implemented. Furthermore, two management committees have been established (a local committee and a national one) in which all the parties are represented and cooperate in decision-making. As well as managing the property, CERKAS ensures coordination in the implementation of this management plan. However, the following figure shows the comparison between the conservation principles concerning the two aforementioned examples:





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Figure 6: Comparison between the conservation principles concerning the two examples.

5. El-Dakhla Oasis, Egypt

El-Dakhla oasis represents one of the high priority regions for future development in Egypt. It is one of a chain of oases located in Western Desert of Egypt (Kipfer, 2021). It is about 120 km west of the Kharga oasis, about 300 km west of the Nile valley and about 300 km southeast of Farafra oasis, between longitudes 28° 15' - 29° 40' E and latitudes 25° 00' - 26° 00' N (Lwasaki et al., 2021). It covers an area of about 400 square km (Tawfik, 2016). El-Dakhla is a highly-populated region of over 80,000 inhabitants nowadays (Hammad, 2015). It consists of several settlements, along a string of sub-oases. These settlements are mainly Mut, El-Masara, Al-Qasr, Qalamoun, together with several other smaller villages. El-Dakhla has been inhabited since Prehistoric times as flint and bone tools have been found, dating from the Neolithic era. Furthermore, it seems to have been of great importance during the Old Kingdom and Middle Kingdom, with its capital at a site called Ain Asil, near Balat, at the eastern side of oasis (Bard & Shubert, 2014). During the New Kingdom its capital was moved to Mut, further to the west, which remains the main city of El-Dakhla nowadays. The old city of Mut, the consort of Amun, is now in ruins except for some of its dark

twisted alleyways and ancient wooden doors, as well as the ancient pharaonic temple area of the town, known as Mut el-Kharab, "Mut the Ruined".

During the Greco-Roman empire, the oasis flourished and reached its peak and several towns were erected. This explains why most of the remaining monuments in the oasis date back to the Roman period. When Islam spread in the oasis Islamic villages and mosques were built throughout the oasis. An example of which is Al-Qasr, a medieval Islamic village that dates back to the Ayubid era built over Roman foundations, on the northern edge of the oasis. This village is believed to be one of the oldest continuously inhabited villages in El-Dakhla oasis.



Figure 7: Location of El-Dakhla Oasis, Egypt.



Figure 8: Urban and architectural character of El-Dakhla Oasis.

The oasis lies in a hyper-arid region where relative sunshine duration is generally very high, and annual precipitation is close to 0 mm, with few exceptions. The annual average, average maximum, and average minimum temperatures in Dakhla are 24.4, 32.9, and 15.9 °C, respectively. The daily maximum and minimum temperatures are 42.5 and 4.4 °C, respectively. Wind speed is

comparatively calm under the effects of high pressure. The annual average relative humidity and vapor pressure are 33% and 11 hPa, respectively (Elbeih et al., 2021).

There are many elements that formed the culture of El-Dakhla Oasis, which could be identified as follows: Natural heritage components such as lakes, freshwater springs, palm fields, and sand formations, as well as cultural heritage components such as earth vernacular settlements, traditional handcrafts, historical trade route, and archaeological remains (Dabaieh, 2010).

The following figures illustrate urban fabric and some vernacular elements of the buildings in the oasis:

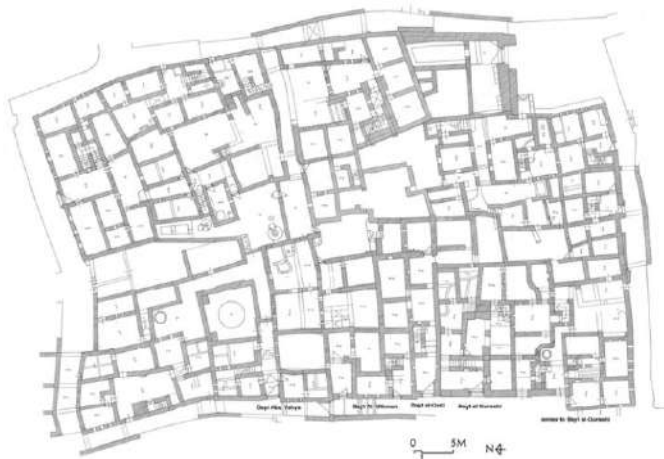


Figure 9: The compact urban fabric of the Shihabiyya quarter in the old town of Al-Qasr in El-Dakhla Oasis.



Figure 10: The compact urban fabric of the town of Balat in El-Dakhla Oasis.

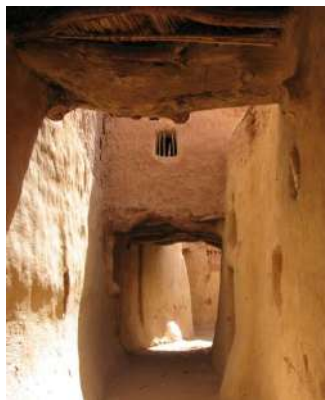


Figure 11: Hierarchy of streets patterns.

Figure 12: Shaded building facades.

Figure 13: Architectural Identity of the Shihabiyya quarter in the old town of Al-Qasr, El-Dakhla Oasis.

The main traditional construction materials in the oasis are clay, palm reeds, and acacia wood. Bearing-wall construction using sun-dried adobe mud bricks is the typical building technique. Such applications in building design and construction are based on cumulative previous experiences and tacit knowledge through trial and error (Dabaieh et al., 2021). Unfortunately, the transfer of this traditional building know-how is about to stop and not be continued by the present generation (Dabaieh, 2013).



Figure 14: The usage of adobe clay bricks, together with reeds and acacia wood, in construction at Balat Town in El-Dakhla Oasis.

5.1. Factors Affecting the Earth Vernacular Settlements in El-Dakhla

Although El-Dakhla oasis remains in a state of protection due to the nature factors along with being away from human grouping for a very long period of time, it is evidently noticed that the uncalculated interventions in this oasis could lead to numerous problems there. Other than the



environmental crises, the most important problems affecting the vernacular settlements in El-Dakhla are summed up in the following account:

5.1.1. Social and Cultural Problems

- a.** Lack of sufficient awareness among the native inhabitants of El-Dakhla oasis concerning the significance of distinct heritage of the oasis along with the importance of preserving it as a unique style of architecture with its originality and its beauty. Therefore, the materials used in new buildings are not suitable to the distinctiveness of the oasis and the originality of its architecture.
- b.** Lack of serious programs to revive El-Dakhla's heritage and allow the establishment of many buildings, some of which are governmental, which are not suitable for the vernacular nature and the general character of the oasis.
- c.** The traditional activities of the inhabitants of the oasis are not merged with the existing or proposed touristic programs.

5.1.2. Urban and Architectural Problems

- a.** Constant deterioration of the architectural and vernacular traditional style of the oasis villages represented in the decay of the old traditional buildings and the migration of the inhabitants from it. In addition, the use of doors, window frames and palm tree trunks by which the roofs of old houses have been built, has contributed to its destruction.
- b.** The random extensive spread of modern buildings which are not suitable to the environmental perimeters, which do not match the distinctiveness of the location, however, the construction has depended on the use of materials that are not suitable for the environment. Moreover, the human element is neglected and the notions and principles upon which such society is built over the years are not adopted (Rashed, 2004).
- c.** The laws and construction stipulations which are specialized for this environment so as not to lose the distinctive and unique character of the oasis are non-existent.

- d. Services such as restaurants, lounges and the inadequateness of the infrastructure which qualify the oasis so as to become a touristic attraction are very limited (Aref, 2004).
- e. The increase in the level of underground water in El-Dakhla oasis and the neighboring oases has resulted in some adverse impact on the buildings.

5.1.3. The Problems of Buildings Using Local Construction Materials

The native inhabitants of the oasis currently face some obstacles in the use of sun dried casted mud bricks and palm trees in construction. These obstacles are represented in: a) Construction using mud bricks requires constant maintenance work. b) The total cost of the building of mud bricks is equal to the modern system (concrete) or exceeds it in costs. c) The modern concrete buildings are cleaner and more appropriate to modern electronic equipment.



Figure 15: Rainwater effect.

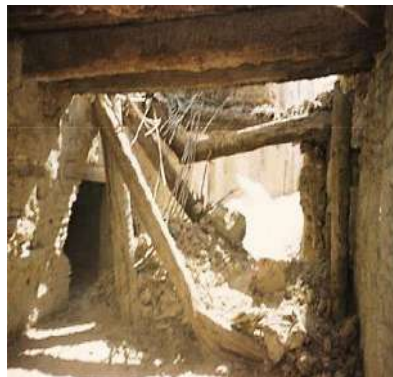


Figure 16: Collapse of some mud sheds due to termite insects.



Figure 17: Replacement of mud brick vernacular houses with concrete skeleton ones.

5.2. The Role of the Civil Community Institution in Conserving El-Dakhla's Heritage

Conservation, restoration and reconstruction of the Shihabiya quarter in Al-Qasr were conducted by an ongoing project since 1978 called “Dakhleh Oasis Project” which concerns with archaeological, environmental and architectural research and conservation projects. Since 2003,

Professor Fred Leemhuis of Groningen University has completed the restoration of Bayt el Qadi, and the neighboring building, Bayt el Gourashi, and other buildings in the quarter. Five houses were restored and reconstructed; electrical wiring and water pipes and sewage drains have been installed. However, no decision has been taken about the use of these houses which poses critical risks for the buildings as they will most probably slowly fall to pieces again and the entire restoration will have been in vain, as maintenance of these unique houses should be performed regularly (Khalil, 2017).



Figure 18: Conservation, restoration and reconstruction of the Shihabiyya quarter in Al-Qasr.

5.3. Reviving the Earth Vernacular Architectural Heritage in El-Dakhla Oasis

The resort of "Desert lodge" is one of the most prominent examples of resorts which consider the environmental dimension in its design, construction and operation. There are many techniques that are used in the project in order to implement the idea of reviving the vernacular architectural heritage:

- a. An integrated study was conducted on El-Dakhla Oases, its vital environment, its residents, their customs, traditions, methods of construction, and a study of environmental potentials and risks.



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- b.** The construction work was done with local people and no other workers were brought in from other locations to set up and operate the lodge.
- c.** Main buildings of the lodge are established using local construction materials which are suitable to the environment in El-Dakhla. This material serves the function of concrete and is characterized by high thermal resistance which leads to decreasing the thermal transfer between the external and internal medium. Moreover, the entire construction of the lodge has been carried out by local craftsmen.
- d.** Palm trees are used in roofs as well as the remnants of palm orchards; as it is cut, prepared, and treated so as to prevent infection with mite. Moreover, the heights of internal spaces are increased; resulting in reducing the temperature sensation inside the space.
- e.** All furniture, doors and windows are made of palm stalk and tree branches.
- f.** Some sustainable applications are adopted such as:
 - The entire construction of the lodge has been carried out by local craftsmen.
 - Only local and natural materials are used.
 - Waste is minimized and separated.
 - Tap water is filtered with Hi-tech-filters and offered to guests in glass bottles for drinking purposes to reduce the huge amount of waste of PET-bottles and minimize transportation cost.
 - Energy runs on hydro-electrical and solar systems.
 - Bed linen and all materials are made of 100% cotton, grown in Egypt.
 - All cleaning products are environmentally friendly.
 - Vegetables are grown for guests in a small garden.





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Figure 19: Reviving the vernacular architectural heritage in Desert Lodge.

6. Results and Recommendations

Over the past decade, interest in the cultural identity of heritage and historic settlements appears on the agenda of development in many countries. Recently, interest has increased in the Arab countries concerning the revival of genuine native values through interest in built vernacular, protecting it and utilizing it in development. Such tendency is due to the fact that vernacular heritage of countries can provide many didactic, economic and touristic opportunities for nations. However, there are many problems which threaten the vernacular architectural heritage, of which natural, vernacular, social, economic, administrative and technological problems and others.

Through the display of the principles of preserving the vernacular architectural heritage and the examples which are analyzed, the significance of conducting an integrated study of the prevalent situation which include the native inhabitants, their social and economic situation, along with the natural, cultural and vernacular heritage of the area concerned by the development.

The importance of social participation is stressed in addition to the importance of the role of civil community institutions. Social participation is considered one of the most important principles of conserving the vernacular heritage; hence, there is no conservation without the participation of the local community.

The participation of the local community members in the projects of conservation through soliciting their consultation in the stage of planning and implementation generates a sense of affiliation inside the inhabitants; resulting in motivating them to preserve the place which represents a source of income for them.



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It is essential to conduct training courses and raise the awareness of the local inhabitants concerning the cultural significance of their vernacular architectural heritage.

The existent vernacular architectural heritage is to be conserved; however, building any facilities or new buildings is done through the use of local construction materials and must be carried out using the traditional methods and the local labor force.

Conserving the earth vernacular settlements has to be done by the governmental sector and via which the government is concerned with raising awareness, propagation, setting laws, devising plans of conservation and project funding side by side next to the civil or nongovernmental sector. This role is represented in the deepening of the awareness concerning the significance of the vernacular architectural heritage of the local community, encouraging investment, attaining funding and necessary support.

Despite the success of the "Desert Lodge" project, it cannot be extended to the entire El-Dakhla oasis. Reliance on the private sector alone to develop the oasis cannot take place without the setting of stipulations and regulations which govern the development process. Nevertheless, benefit can be solicited from the two projects of developing At-Turaif District and Ksar of Ait-Ben-Haddou and applying them to El-Dakhla oasis after dealing with the drawbacks; besides making use of the powerful role of the civil community institutions in the oasis and inviting them to participate in the process of conservation and development; achieving sustainability.

7. References

Books

Aref, Y. (2004). Development Axes in the Desert Communities. In: *The 1st International Scientific Conference, ArchCairo 2004: Sustainable Architectural & Urban Development*. Cairo.



Journal of University Studies for inclusive Research (USRIJ)
مجلة الدراسات الجامعية للبحوث الشاملة

ISSN: 2707-7675

- Bard, K. & Shubert, S. (2014). *Encyclopedia of the Archaeology of Ancient Egypt*. Routledge.
- Bridgwood, B. & Lennie, L. (2013). *History, Performance and Conservation*. Taylor & Francis.
- Carsjens, G. (2009). *Supporting Strategic Spatial Planning: Planning Support Systems for the Spatial Planning of Metropolitan Landscapes*. The Netherlands: Wageningen University.
- Dabaieh, M. (2010). Back To The Future of Dying Vernacular Past: Conservation of Desert Vernacular in Egypt, Practical Study of Balat Village in Dakhla Oasis. In: *Vernacular Crossing Borders, CIAV Annual Meeting and Conference. PA in May 31st 2010*. Finnskogen.
- Dabaieh, M. (2013). Earth Vernacular Architecture in the Western Desert of Egypt. In: M. Markku (Ed.), *VERNADOC RWW 2002*.
- Dabaieh, M., Maguid, D., & El-Mahdy, D. (2021). Circularity in the New Gravity—Re-Thinking Vernacular Architecture and Circularity. *Sustainability*, 14(1). <https://doi.org/10.3390/su14010328>
- De Filippi, F. (2005). Sustainable “Living” Heritage Conservation through Community-Based Approaches. In: 10th International Seminar of forum UNESCO- University and Heritage “*Cultural Landscapes in the 21st Century: Laws, Management and Public Participation: Heritage as a Challenge of Citizenship*”. PA in April 11th 2005. Newcastle upon Tyne.
- El Ghabban, A. et al. (2010), *Historical City Centers in Saudi Arabia*. Riyadh: Saudi Commission for Tourism and antiques.
- Elbeih, S., Negm, A., & Lwasaki, E. (2021). *Sustainable Water Solutions in the Western Desert, Egypt: Dakhla Oasis*. Springer.
- Esmail, A. (2019). Sustainability between Urban Heritage and Tourism Development by Participation in Al-Qasr. *Journal of Engineering and Applied Science*, Vol. 66, No. 4.
- Hammad, M. (2015). The New Valley: An Unutilised Heritage. *HU-BTU First International Conference on Heritage Conservation and Site Management, Heritage Tourism: Prospects & Challenges*.
- High Commission for the Development of Ar-Riyadh. (2008). *Addiriyah: Authenticity of the past and brightness of the present, Historical Addiriyah development program*. Riyadh.
- ICOMOS. (1999). *Charter on the Vernacular architectural Heritage*, Ratified by the ICOMOS 12th General Assembly. Mexico: ICOMOS.



Journal of University Studies for inclusive Research (USRIJ)
مجلة الدراسات الجامعية للبحوث الشاملة

ISSN: 2707-7675

Jokilehto, J. (2007). Conservation concepts. In: Oddy, A. *Conservation of Ruins*. Oxford: Elsevier Limited.

Khalil, A. (2017). Conservation of Egyptian Vernacular Desert Architectural Heritage in Search for a Successful Conservation Model. *International Journal of Engineering Research & Technology*, 6(11).

Kipfer, B. (2021). *Encyclopedic dictionary of archaeology*. Springer.

Lwasaki et al. (2021). Sustainable Water Solutions in the Western Desert, Egypt: Dakhla Oasis, Earth and Environmental Sciences Library. Springer.

Minke, gernot (2000). *Earth construction handbook: the building material earth in modern architecture*. Southampton: WIT Press.

Oliver, Paul, (2006). *Built to meet needs: cultural issues in vernacular architecture*. Architectural Press.

Orbasli, A. (2007). *Architectural Conservation: Principles and Practice*. UK: Wiley-Blackwell.

Petzet, M. & Ziesemer, J. (2001). *Vernacular architecture: Monuments and sites*. ICOMOS Vol. V. München.

Rael, R. (2009). *Earth Architecture*. 1st ed. New York, N.Y.: Princeton Architectural Press

Rashed, E. (2004). Development of the Tourist Areas of the Desert: An Introduction to Compatibility and Sustainability. In: *The 1st International Scientific Conference, ArchCairo 2004: Sustainable Architectural & Urban Development. PA in February 26th 2004*. Cairo.

Rodwell, D. (2007). *Conservation and Sustainability in Historic Cities*, UK: Blackwell Publishing.

Roger S. Bagnall & Gaëlle Tallet, (2019). *The Great Oasis of Egypt*. Cambridge University Press.

Tawfik, M. (2016). The concept of sustainable architecture and urbanization in Dakhla and Kharga Oases in Egypt. 1st *International Conference on Islamic Heritage Architecture and Art (IHA 2016)*.

The National Organization for Urban Harmony. (2010). *Standards for buildings, cultural heritage and areas of outstanding value*. Cairo: NOUH.

References: Websites



Journal of University Studies for inclusive Research (USRIJ)
مجلة الدراسات الجامعية للبحوث الشاملة

ISSN: 2707-7675

Desert Lodge Hotel in the Oasis of Dakhla (New Valley), Egypt - Dakhla. Desertlodge.net. (2022). Retrieved 8 August 2022, from <http://www.desertlodge.net/dakh.html#:~:text=Desert%20Lodge%20Hotel%20in%20the,30%2C000%20acres%20of%20cultivated%20land>.

UNESCO. (2022). *At-Turaif District in ad-Dir'yah.* Retrieved 2 August 2022, from <https://whc.unesco.org/en/list/1329>.

UNESCO. (2022). *Ksar of Ait-Ben-Haddou.* Retrieved 2 August 2022, from <https://whc.unesco.org/en/list/444>.

Williams, C. (2010). *Grand Kasbah of Ait Benhaddou.* Flickr. Retrieved 9 August 2022, from <https://www.flickr.com/photos/20323094@N00/4658666204>.