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## A PROPOSED NEW CONTEMPORARY VERNACULAR ARCHITECTURE AS AN EXPRESSION OF THE SPIRIT OF AGE-DESIGN PRINCIPLES: A CASE STUDY OF AJLOUN, JORDAN

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## Abstract

The development in technology and economy has led to rapid changes in architectural products. This development has effects, not only on the modern countries, but also on the developing countries, which are historically and culturally rich. Jordan is one of them. This paper investigates vernacular architecture and its approaches as conservative and interpretative attitude to explore the definition of vernacular architecture in contemporary architecture in Jordan. This was achieved by analyzing the 'Royal Academy for Nature Conservation' building, which has been designed by the architect, Ammar Khammash. Royal Academy for Nature Conservation project has been nominated for Aga Khan Award. Aga Khan Award is considered one of the most respected international awards in the field of architecture. The Research is conducted primarily by visiting the site of The Royal Academy for Nature Conservation Building in Ajloun a governorate in Jordan, to carry out the required analysis for the Project. The analysis will guide us through integrated and dynamic approaches to ensure that the vernacular architecture affect and enhance our world.

## Keywords

Vernacular architecture, Contemporary architecture, Royal Academy.



The humanistic desire to be culturally connected to one's surroundings is reflected in a harmonious architecture, a typology that can be identified with a specific region where geographical region defines many aspects of a society both culturally and environmentally.

Culture includes aspects of life and prevalent modes of expression. Natural environment includes climate and topography (Özkan, 1985). The sociologic aspect of architecture is presented in material, color scheme, architectural style, spatial language or form that carries through the urban framework (Glassie, 1990).

Increasingly, during the 1950s, modern architecture was criticized for its futility, its institutional anonymity, and its disregard for regional building traditions. This caused architectural writers to tend to admire what they regarded as traditional buildings for the immediate relationship between form and function.

In the latter part of the twentieth century, architectural writers extended our understanding of the cultural impact upon buildings. The totality of human values, activities and artifacts affect the formation of a building and give meaning and direction to the lives that occupy it (Oliver 2006). Buildings have also been interpreted as artefacts of human culture.

Recently, there has been a large shift and attention starting from the phenomena that we can see in many countries, this phenomenon is that many people think that vernacular buildings are similar to the ancient traditional buildings designs.

Therefore, we will try to figure out the reason and the change (of definition, form, and value) of vernacular in contemporary, based on the new interest in the development of culture and its entire component in the modern era. (Enrique Browne, 1988).

As a concept, vernacular architecture is not as new as it might sound. Although the interest in the vernacular has just grown in relatively recent times, it has been latent for a long time. "American Vernacular" is a major field of study. There is also a long-standing tradition of vernacular architecture theory in the United Kingdom, which started in the early 1800s attempting to search for a national architectural language as indicated in Table 1.

**Table 1. The concept of vernacular architecture in time line source (Enrique Browne, 1988)**

When	What	How	Why
1600s	Hinted in the English language	The idea of vernacularism in relation to building	
18 00s		-Vernacular architecture has been explicitly in use since as early as 1818. -the vernacular was a subject of exploration from different disciplines, and with different biases	*it was already mentioned, in the search of national architectural languages. * vernacular buildings in the Southern hemisphere were seen by travelers narrated stories about the places they visited, and these often included descriptions of the typical buildings of each place. *the vernacular was used as an element to advance the colonial agenda
the end of the 19 <sup>th</sup>			tried to prove that indigenous vernacular buildings ***
first quarter of the twentieth century		Architects bringing the vernacular to the theory of high architecture by Adolf Loos, Frank Lloyd Wright, and Le Corbusier is well known.	high design theory of the vernacular was Architecture Without Architects
1960s		Studies began to emphasize less the beauty of the vernacular types and more the environmental, technological, and social contexts in which they were built.	Paul Oliver's Shelter and Society& and Amos Rapoport's House Form and Culture (1969)
1964	elevating vernacular buildings worldwide to the category of beaux-arts		*at (MOMA) the New York Museum of Modern Art by Bernard Rudofsky.
In 1976			(ICOMOS)the International Council on Monuments and Sites. Formed a special committee to promote international co-operation in identifying, studying and protecting vernacular architecture
in 1989			that was in Dwellings, Settlements and Tradition, book edited by Nezar AlSayyad and Paul Bourdier published, [6]
in 1997	vernacular reached a milestone	British folklorist Paul Oliver "the Encyclopedia of Vernacular Architecture of the World" the most important reference work publication	has entries by more than 750 specialists, writings from more than 80 countries [4]. * research focus changed, from pure documentation of vernacular types, to focusing instead on the analysis of broad issues affecting the theory and practice of vernacular architecture

## 2. DESIGN STRATEGIES AND PRINCIPLE OF VERNACULAR ARCHITECTURE

By merging local architectural traditions with universal architectural realities, vernacular architecture can be created by reducing the tension between "spirit of Place" and "Spirit of Time" as shown as Fig. 1. Enrique Browne emphasizes in his book "Otra Arquitectura en America Latina" (Enrique Browne, Otra Arquitectura en America Latina) that Vernacular Architecture has evolved within a permanent tension between its location and time and its location in space. "Spirit of time" which means that nature as reaction against dead classic discourse should be emulated. Hegel expresses it as if it is a conceived art, "the sensual representation of the idea and the absolute." (Enrique Browne, 1988).

This means that the study of architecture must be executed from within the cultural context of a given civilization because architecture is a representation of that civilization's vision of the world.

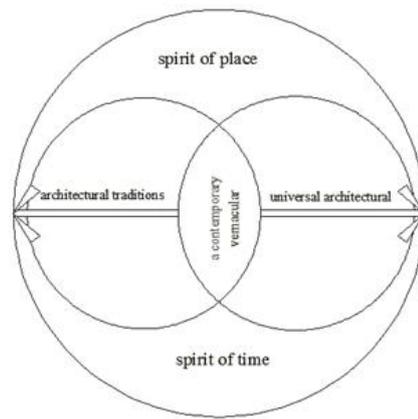


Fig. 1 Creation of vernacular architecture by merging local with universal architectural source by authors

### 2.1 Motivation of Contemporary Interest in the Vernacular

Our understanding of the local context has also changed to recognize that spatial constructs of culture are shifting as the phenomena of globalization and the formation of new global networks, both physical and virtual, impact upon our perception of both place and identity (Castells 1996b; Mathews 2000).

Nowadays, vernacular architecture studies are considered important due to many reasons. The most important reason is the cultural and economic globalization phenomenon which is manifested in at least three ways: global communication technologies, the global environmental crisis, and global politics. Each one of these phenomena has decisively increased the general interest in the world's vernacular architectures since they help to formulate solutions to the environment, disaster management and housing challenges facing the global community today; not as a study of past traditions, but also as a contribution to new methods, solutions and achievements for the future built environment (Willia- H. Sewell Jr, 1999).

Amos Rapoport suggests that it is time that vernacular studies move from 'describing and documenting buildings' to 'the next "problem-oriented", comparative, integrative and more conceptual/theoretical stage. He says that we must learn from vernacular design, and that 'is best done by looking at vernacular design as a model systems'. He discussed that this discipline connects the gap between real building and theory. Rapoport discourages the copying of 'certain formal qualities (shapes, massing, details, etc....), and often depends on romanticized version of vernacular. However, he suggests that a more 'Valid approach is to derive more or less general lessons and principles by analyzing vernacular environments using models and applying these lessons to design' (Rapoport, 2006).

Vernacularism claims that there is a relationship and adaptability between the built forms and the social, economic, ecological, and climatic environment. Table 2 A more unadventurous approach to vernacularism, and conservative vernacularism, inherits traditional construction technology and the use of local materials, linking both of them to the natural environment.

**Table 2 Two attitudes toward vernacularism, conservative and interpretative done by author**

Attitudes	Environmental	Socio-cultural	Materials and conservation techniques	Architecture Applicability
Conservative	Uses natural ventilation instead of modern mechanical system.	Revives building tradition based on a specific culture and society. Is indifferent to community.	Uses inherited traditional construction technology and the use of local materials.	Is often limited to residential buildings.
Interpretative Neo-vernacularism	Innovative with utilization of different level of technology.	Expresses local forms in which culture is reduced to souvenirs and folklore.	Primarily uses traditional materials and construction techniques, but incorporates modern ones as well.	Distinction between scenographic design and genuine architectural experience, mostly applied to tourism development

## 2.2 Contemporary Vernacular Definition

The term Vernacular was introduced in the early 17th century from Latin term vernaculus meaning 'domestic, native' (from verna 'home-born slave'). Architecturally, it means that the design is concerned with domestic and functional building rather than monumental buildings and it is an indigenous building style method using local materials and traditional methods of construction and ornamentation, usually "architecture without architects (Rudofsky, 1970).

In light of limited development in research, this type of architecture is not only the most widespread way to build, but it is also where most of us have been raised. Indeed, most of us were likely raised in vernacular homes, given that, 90 percent of the world's architecture is vernacular. The Centre for Vernacular Architecture Studies (established by famed folklorist Paul Oliver) says that only ten percent of the world's building stock has been designed by architects. (Oliver, Paul, 2003).

## 3. FIVE POINTS OF A CONTEMPORARY VERNACULAR ARCHITECTURE.

The vernacular architecture is the material embodiment to highlight the community architecture in all its historical stages; it was the focus of the attention of architects around the world. Through the literature review and the definitions of vernacular architecture, the research decided to assume five limitations can be seen through the vernacular architecture shown in fig. 2. Architects and users have these limitations by studying the concepts and definitions of vernacular architecture should be classified as the architect and the recipient are able to absorb and develop them All the best.

There is a special principal for green architecture as for example:

Leadership in Energy and Environmental Design (LEED), which has defined the basic requirements for an application to make the building green, (Sustainable site development, water saving , energy efficiency , material selection and indoor environmental quality ).there are attempts to learn about Islamic architecture by re-installed within the concepts of new containment, emergence, transformation, classes and repetition.

### - Nature:

Nature should be considered as a source of form that will respond harmoniously to the immediate natural context incorporating natural elements for people's enjoyment and comfort. We can achieve that not only by avoiding HVAC-like Frampton asserts, but also by connecting the user at a cognitive level with the natural context and with its sensorial perceptivities.

### - Place:

The structure of place comprises "space" and "character." Norberg-Schulz describes place as "a qualitative, 'total' phenomenon, which we cannot reduce to any of its properties without losing its concrete nature" (Norberg-Schulz, 1999). The Space indicates to the tri-dimensional organization of elements, which form places, and character indicates to the general "atmosphere," which is the most important attribute of any place. The character of place is defined by the level of "socialization" between man and place (Towards a contemporary vernacular architecture: the cost region of Ecuador, 2004, (116)). 104

### - Time:



ecotourism project, which is defined according to Chris Johnson, Wild Jordan's Director, in an interview, as "the responsible travel with direct benefits for nature and local communities which should preserve the sense of place and the heritage".



Fig. 3 Royal-academy-for-Nature-Conservation-Khammash-architects, Source <http://www.archdaily.com>

It extends over an area of 3500.0 square meters, and includes the following facilities:

- Training rooms, a conference hall, pavilion for the library with computer lab, a medical clinic, a repository of equipment, and housing for the academy's staff.
- Outdoor area for training in the disciplinary of search, rescue and climbing.
- Information tourist center about the forests and activities visitors can do.

Vernacular refers to buildings whose design is determined by an informal local tradition, rather than by a particular designer. In addition, neighborhoods and cityscapes created and maintained in a consistent common vernacular style sometimes exhibit the harmony of a family of repeating forms with consistency in adaptive variations, such as the many beautiful parts also represent a great beauty when these parts be together. It is an epitome of place to which it belongs. It cannot be imported from elsewhere ([www.greatbuildings.com](http://www.greatbuildings.com)).

#### ***4.1 The AGA Khan (AKAA) As Expression of Vernacular and Sprit of Age:***

Aga Khan is an award for Architecture established in 1977 by Aga Khan IV. It is one of the most important forums for international communication between architects. The award was a major turning point for many architects ([Architectureweek.com](http://Architectureweek.com), 2016). It always focused more on projects than the architects who built them. It does not differentiate between building types or scale, historic restoration, new construction, or urban surroundings. The award's emphasis shifts from aesthetics to identify and reward architectural concepts that address the spiritual needs to inspire societies in the context of, contemporary design ,social housing ,community development and improvement, restoration, reuse and area conservation, landscape design, and improvement of environmental contexts. It highlights the social and cultural impacts in designing project that subscribe for award.

The projects are nominated for the award based on two dimensions, first, the integration between materials, constructions technology, and the principles of Islamic Architecture. Second, the conservation of cultural root and Identity ([Akdn.org](http://Akdn.org), 2016)..

The level of Award is determined based on three primary factors, first, the building efficiency in achieving the functional requirements. Second, the contemporary image, and the construction technology used in the building. Third, the relationship between the building and the society, traditions, and Identity (Bozdogan, 1992).

The essential intention of the analysis is to show the characteristics of a project in details in terms of the previous five points: nature, place, time, architectonic, and identity of the project. By analyzing the project according to the five points, we try to determine whether the architectural design approach is effective or not to produce an appropriate structure. The analysis attempts to move from the design skills to the sensory aspects.

#### ***4.2 Why Vernacular Architecture of Royal Academy for Nature Conservation?***



#### 4.2.1 In Terms of Nature

When you visit the site, you will find that the building is part of the surrounding environment. The building will not fit anywhere else. You will also feel spiritual communion with nature because you will feel a strong bond between the inner space and the external natural environment as described in Fig. (4).



**Fig. 4 Project spiritual communication with nature,**  
Source <http://www.archdaily.com>

This is what he referred to in his lecture entitled “Architecture, Design and Nature: Landscape as a Source of Inspiration,” and “The site is the architect,” “In my designs, I respond to the site.” saying Khammash. He emphasized the aesthetic and environmental value of integrating architecture with nature. To find that the relationship between building and the topography is a strong relationship.

The organic outer walls that cover the interior holes and other internal walls allow those cracks to bring light into the vertical circulation areas and the hidden bathroom gardens, as show in Fig. (5).



**Fig. 5 Emphasized the aesthetic and environmental value of integrating architecture with nature through the organic outer walls.** Source <http://ohkconsultants.com>

Construction and arrangement of stones are designed in a way to give visitors an impression of the old houses and the castle at Ajloun, which lie not far away from the project.

Despite the sharp end of the building in the final segment, which cantilever tilts at 45 degrees above the forest floor, Khammash proposed the location of the project on a site to use an adjacent ignored quarry, which is outside the reserve. Instead of adding a new intervention on pure land, the Academy follows a quarry cliff cut-line creating a linear addition of constructed stone to the bedrock and base of a building elevation, which helped to solve the problem of soil erosion and landslides (Khammash.com, 2016).

In fact, winds and light are used as new components for the building to be combined with concrete, and stone. Natural ventilation is emphasized in spaces with ventilation between the south and north and vertical ventilation. Thus, ventilation and its sensory properties allow users to rest within the project spaces.

Mechanical ecosystems are prohibited in the project so that the user can feel spiritual contact with nature in every detail. In addition, the study of natural materials (wind and light) has become a source of the form that controls the structural elements of the project, as shown in Figures 6 &7.



**Figs. 6 &7 Winds and light are used as new materials into the building,  
Source by authors**

#### 4.2.2 *In Terms of Place*

The project has a very basic treatment of materials; it is made from Ajloun limestone from the site's quarry and other quarries that share the same strudel of rock. It is one of the strongest stones and it imparts stability to structures. It also can stand long "No site is empty," he says. "The wind, the sun, the flora, and the fauna belong there, and we have to take the permission of the elements to change the site."- Khammash. The boundaries of the spaces are considered through the walls and the roof, which extend toward the natural environment which is considered another natural landscape elements for the project. The boundaries of spaces allow true communication with the traditions of construction as part of the social and cultural development of the Ajloun community as shown in Figure 8.



**Fig. 8 Socio-cultural in Ajloun.  
Source by authors**

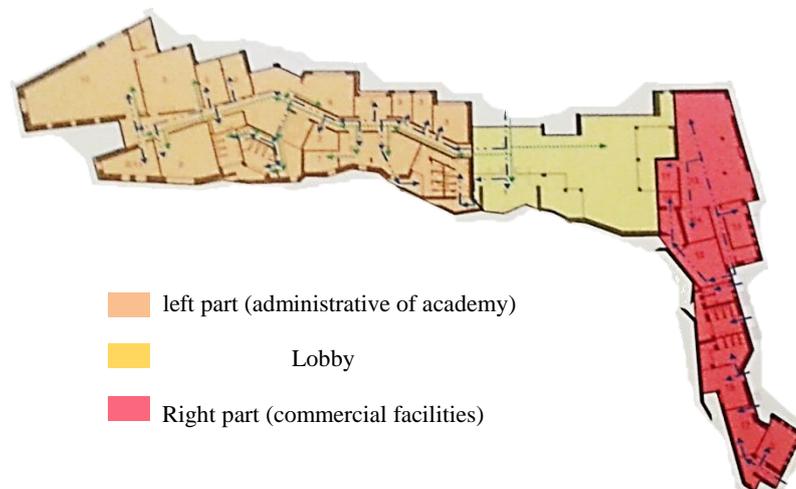
The roof system is mainly constructed with reinforced concrete beam. Concrete as material and construction method is also expressed honestly in the project. The shearing cement in the walls thins down to zero in width, causing the knife-edges to crack and act upon their material character as shown in Fig. (9).



Structurally, the house uses reinforced concrete load bearing walls with stonewall thickness of 90cm, and minimal footprint as the foundation columns cantilever tilts at 45 degrees above the forest floor.

The architect gave it an additional aesthetic value by manipulating the framework to develop texture on the exposed stone. The texture is not random; it represents geometrical patterns produced by Ajloun limestone which is often found in vernacular architecture in Ajloun. Based on these characteristics, socialization and identification should be perceived between the boundaries and character of the spaces and the users in order to determine the real existence of place, which was challenged by using natural features and identifiable patterns.

Another characteristic that implies the intention of territoriality is also expressed in the entrance which shows a strict separation between the left part and the right one ( fig.10). This separation is more than a compositional intention since it is an architectural response to urban delinquency.



**Fig. 10 Functionality scheme based on the use and spatial relationship,  
Done by authors**

#### 4.2.3 In Terms of Time:

It is divided into two parts. The first reflects the social nature of the people of Ajloun and keeps social relationships as a priority in their lives above time efficiency. That is the reason why space and money are mostly spent on the configuration of social spaces. The second part reflects the natural function of the project as a center in the Arab world, which offers training on nature conservation, and as a business model.

On the other hand, Khammash adopts sustainability criteria in the vernacular architecture as a vital requirement for the spirit of the times in light of current environmental crises. It also takes into consideration the climatic and macroclimatic conditions like temperature, precipitation and wind speed. Factors highly influence vernacular architecture, the area in which the building is constructed, culture, environment and materials.

The building will demonstrate eco-system for users and visitors through:

- The building is built in the old quarry site to address environmental problems at the site, as was the use of stone in the construction site.
- It uses thermal isolation through isolated walls and glass by using straw filling within thick walls for savings energy in winter and summer
- It uses the (Geothermal) technology for heating and cooling the academic building.
- It uses solar energy to heat water, and eventually the third area of the project contains water tank for water harvesting.

The benefit from good orientation and passive cooling provided by the shape and details of the structure itself will be described as follows:

Ajloun city climate enjoys a Mediterranean climate mild, with relatively hot summer and the cold winter. The highest temperature is around 30 C and it is usually between June and September, while rain and snow are common between December and February with a rainfall of (750) mm. Ajloun's altitude varies from 1240 m to 590 m above sea level ( www.arabiaweather.com). Based on Ajloun climate, Khammash adapts the following design decisions; first: due to the cold climate, southern slopes are preferred. The orientation of the project is to maximize the penetration of sunrays as shown in Fig. 11. The path of the sun controls the height of building, as the sun is needed for each project unit. Small window size and low ceiling height as shown in Fig. 12, prevent heat loss and keep the interiors warmer in addition to the use of the (Geothermal) technology. Second, to avoid strong winds and landslides the project is constructed on the bedrock. Third, at proper slope for efficient drainage in heavy rain fall and snow fall areas. Terrace is all around the project, and finally we can see the available and the suitable orientation on the hill slopes.



**Fig. 11 The Southern Orientation of the Project to Maximize the Penetration of the Sun Rays**



Fig12 Small window size and low ceiling height to prevent heat loss

#### 4.2.4 In terms of Architectonic

The project provides various architectural connotations. The manipulation of natural construction elements in the project complement with phenomenological aspects of the project.

Upon crossing the bridge, where it is spanning 30 meters over the gap (the longest masonry arch in Jordan) we arrive to the building. It is the first thing that welcomes you at the middle point. It connects between the restaurant's dining on the right side, and the academy to your left side and it organizes the movement within the building.

The main building feature is the monumental and unity that resulted primarily from using stones in the building. That will affect the functionality and spatial organization of the building. The building is embodied in the saying of Lewis as (1951-1946)"every building must have its own soul". Other features that the building has are brutality, and contrast. The building has these features through using the stones outside and inside the building in which the stones were used randomly outside the building, and regularly within the building. The stones were also used throughout the building to maintain both the balance and the dynamics of the Cantilever at the end of the north side of the building.

#### 4.2.5 In terms of Identity

The Royal Academy, considered an interpretative vernacularism approach (Ozkan's categorization of vernacularism), lies beyond a deep interpretation. Various elements of the building evoke symbols that can be perceived tactilely rather than visually. These elements can only be identified through an experiential interaction.

Khammash research and experiences about vernacular architecture, cultural and environmental preservation work, in which He uses local and natural materials and the findings from local architectural case studies where technological innovations and environmental perception and knowledge are remarkably modern. This relates it to the local culture and isolate universal influences in his architectural production. Moreover, his commitment as an architect, as this project demonstrates, is with the regional socio-cultural context by reviving local cultural conditions over universal influences. Hence, through critical analysis, reinterpretation, synthesis, and linkage between nature, place, time, and architectural aspects of the project, even then the architectural identity will be present. These standards have been applied to the Royal Academy of Nature Conservation building but this does not mean that this building has other features that can be referred to. The study is concerned with applying the five criteria to the study case.

## 5. DISUSSION

Vernacular architecture is spread throughout the world to reflect the architectural identity of each country according to the culture and resources of this country.

The research aims to highlight the concept of vernacular architecture to make this concept more clearly to the architects. The research assumes that the vernacular architecture is renewable and not only related to the heritage architecture but is a reflection of the culture, resources and experiences of the community. The research shows that the vernacular architecture is renewable and not related to a certain time. After the literary reviews five concepts were applied the place, identity and as indicators and a measure of the concept of vernacular architecture and through these determinants can be judged on any architecture is compatible with the so-called vernacular architecture.

These five limitations have been applied to the Royal Academy of Nature Conservation project as a case study where research found it very appropriate for its hypothesis

After analyzing the case study and applying the five determinants, the study found that its hypothesis is theoretically applicable, the research idea can be the key to the idea of determinants in vernacular architecture, and studies must be applied to focus on the concept of vernacular architecture. The vernacular architecture school remains one of the most important international architecture schools.

These criteria have been chosen to classify the vernacular architecture in general. However, but each building having a particular building characteristic of another building. This distinction increases the classification of the building and emphasizes that this building is a vernacular building or a green building. Sometimes buildings have two classifications local and green building, following the green building standards and vernacular architecture standards.

## 6. CONCLUSION

The term 'vernacular' raises real difficulties, but it will serve as an introduction for the time being. Despite all of the individual definition of contemporary and vernacular, we find something new and different in today's architectural phenomena.

The application is not like the same old local architecture, but rather relates to the basic definition of vernacular architecture. However, in this contemporary architecture, people are already introduced to advanced techniques and other theories as a basis for architecture in the manufacturing process. The debate revolves around the importance of contemporary architectural studies through the 21st century, not as a study of past traditions but as a contribution to the new methods, solutions and achievements of the environment built in the future. If this is achieved, it will determine what is required at the beginning of the new millennium, the required is an architectural perspective in which valuable local knowledge is integrated with a modern knowledge of similar value.

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