

## **Vernacular Architecture Approach to achieve sustainability In Informal Settlements**

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**Abstract:** *The extension of informal settlements in urban regions all over Egypt is one of the most crucial threats to the quality of life on social, economic and environmental levels. Of particular concern are the current alarms caused by informal extensions of residential communities in several arid areas such as Siwa and El-Dakhleh Oases in Egypt. In most cases intrusive reinforced concrete unfinished blocks are condensed to shape informal spots throughout the built up environment. However, the characteristics of the local architecture, imbedded in such areas are shaped by local citizens to mirror their social, culture and aesthetic values. Meanwhile, primitive environmental concerns are explicitly reflected through the use of natural resources, local materials and building technologies. This study highlights the potential benefits of adopting aspects of vernacular architecture in allowing a higher and more sustainable quality of life in the residential communities of arid regions in Egypt. The study discourses how to achieve sustainable development of informal communities in accordance with the indigenous features of the local architecture of the arid region. The study aims to employ values of vernacular architecture in developing agendas for dealing with the informal settlements to provide sustainable communities.*

*Finally, the study will give some recommendations to help maintain the value of the vernacular architecture of these regions and distinctive social values, culture and their own aesthetic and sustainable development of those communities.*

**Keywords:** *Vernacular Architecture, arid regions, sustainable development*

### **1-Introduction:**

The extension of informal settlements in urban regions all over Egypt is on the rise and continues to deteriorate despite some attempts to stop this extension. This is due to the disability of understanding these communities and thus the way to development them culturally, socially and economically. These communities represented by the customs and traditions inherited in them can be understood through their cultural assets and social values inherent in the Egyptian society in general. This can be clear when noticing how these values appear in the arid desert communities and thus reflected in their environment.

Since the informal settlements in Egypt consist of a group of individuals displaced from regions such as arid desert and rural areas- in pursuit of higher incomes and higher education in urban cities- these families have different customs and traditions, but the nature of Egyptian social genes helps in melting those differences and this is quite evident in old informal settlements that has been formed in a period of not less than thirty years. Sustainable development may represent the best solution to upgrade those settlements and preserve the vernacular architecture in Egypt.

### **2-Vernacular architecture in Egypt:**

To derive the main items of the practical part of the research, the study will describe and analyze the vernacular Architecture in Egypt through three different categories; rural regions, arid regions and informal settlements. In each category elements and composition of forms of the vernacular houses would be studied.

### **2-1-Vernacular architecture in rural regions of Egypt:**

Vernacular architecture in rural Egypt stretches on the banks of the River Nile, it used to mainly consist of one to two floor buildings made of clay, those buildings were houses for the poor peasants as shown in fig (1). After the 1952 revolution, changes occurred due to the nationalization which led to the acquisition of land from the original owners and its division into five acres for each farmer, after generations areas of land were distributed among those who inherited them into smaller plots- depending on the number of family members which were 6 in average- and with the new policy of free education then, most of the youth sought education and thus neglected working in agriculture and eventually sold their share of the land. Fragmentation of agricultural land and lost identity of rural Egypt, in addition to the absence of censorship and encroachment on agricultural land turned a lot of agricultural land to random residential areas and buildings of concrete and red bricks, this had an impact on poorest areas which were far from any urban areas, especially in Upper Egypt, such as the Nubian region, which was once the area that took the attention of the famous Egyptian architect Hassan Fathy, and through years of his study gained his unique architectural experience.



Fig (1). Form rural region of Egypt.

[www.aawsat.com](http://www.aawsat.com)

Hassan Fathy, despite his knowledge of new architectural trends in the fifties, he preferred to focus on his country Egypt through authentic thoughts and approaches. With his statements Sayings that he assesses the heritage and it is connected to the present 1, saw that the Nubian region in Upper Egypt by virtue of geographic isolation, has been able to maintain its character and authenticity. On the other side such originality have been lost in major cities and in rural areas in Lower Egypt and on its way to the desert areas of heritage value. The values can be clearly distinguished in those Nubian isolated communities due to the lack of any imported cultures. Hassan Fathy believes that the architect must be familiar with all the values and cultural traditions of this community, he does not imagine that there is a separation between the architect and the man who builds it, the architect only helps in the architectural culture within the provided means.<sup>1</sup>



Fig (2).Nubian region in southern Upper Egypt. (www.shutterstock.com)

## 2-2 Vernacular Architecture in arid communities

Western Desert of Egypt is in fact part of the arid Sahara and in relative to the area of Egypt which is one million km<sup>2</sup>, it represents more than two-thirds of the total area. The western desert although barren, but it comprises a number of oases containing lakes and fertile areas resulting in the fruits of Egypt's best and greatest wealth and these emerging areas are : El-Dakhla, El-Farafra, El-Baharia and Siwa Oasis, as shown in Figure (3).



Fig (3).Siwa Oasis Arid región in Egypt.<sup>2</sup>

It can be deduced that there is environmental similarities between both El-Kharga and El-Dakhla regions and also between Sohag and Qena, but as for Nubia in upper Egypt, it is different with a unique character due to its geographical isolation and its direct location on the Nile. As for El-Farafra and El-Baharia they are quite similar to Fayoum, Minya, Assiut regions, and thus Siwa Oasis may be regarded as an independent region different in natural and man-made environment, resulting in a unique planning and urban pattern from all Egyptian oases, as it shows us how spontaneous these patterns with the natural environment, such as using natural building materials as Karshef which is a soil used mixed with gypsum and salt (sand and silt and salts). Today, the existing and remaining desert vernacular architecture in remote communities and settlements in Egypt is about to vanish. There is limited documentation and listing efforts by local authorities. Traditional desert vernacular settlements are being abandoned, and are deteriorating and/or are being demolished intentionally or unintentionally.<sup>3</sup>

One cause of this dilemma lies in a currently adopted norm by some dwellers, especially youth who have an overwhelming desire to adopt a modern lifestyle that reflects their need to attain a better living condition with better facilities where the majority of their vernacular dwellings sometimes do not currently fulfill such demands in the way these young people want. However, by entering the stream of urbanization and absorbing westernized concepts, people greatly endanger the continued existence of ethnic desert vernacular architecture in the desert oases in Egypt. There is a change in the appreciation of traditional values which is

reflected in new views among people in desert areas about how they want to live. It might be argued that these changes are now harming the desert vernacular architecture and traditional structures in Egypt .<sup>4</sup>



Fig (5).<sup>6</sup>

Desert vernacular settlements in the Western Desert of Egypt were facing dramatic problems. Inhabitants in desert vernacular dwellings, for example, are leaving their houses to deteriorate and moving away from their old towns and villages. Others demolish their vernacular dwellings and replace them with houses made from artificial building material. In some parts of the Western Desert, a tendency has been noted for inhabitants to change their lifestyle—moving into concrete houses or demolishing their traditional ones without a keen sense of adaptation to change or respect for the inherited values of the traditional Egyptian dwellings.<sup>6</sup>

### 2-3 Vernacular architecture slums Egypt's urban:

The phenomenon of informal settlements started to appear in Egypt mid-1950s as a result of different policies that Nasser's government , till the fall of Mubarak –25th January 2011 adopted and caused informal housing phenomenon. The different policies laws and legislations that were passed over the past 60 years greatly affected the housing sector. Starting in 1980, the government launched a programmer to improve informal or slum areas throughout Egypt. In Greater Cairo a total of 81 slum areas were identified, of which 63 upgradable, others slated for demolition and resettlement of their inhabitants.<sup>7</sup>

There have been negative changes in the development of buildings against their environment. With the increase in the accumulation of those concrete housing units and their vertical extension and lack of control, not only in cities but in villages, especially those adjacent to the cities, a far cry from the concept of sustainability and lost many of the general principles of the concept of vernacular .Building became not just erratic but lost their Egyptian Architecture identity and their social and cultural character as well.

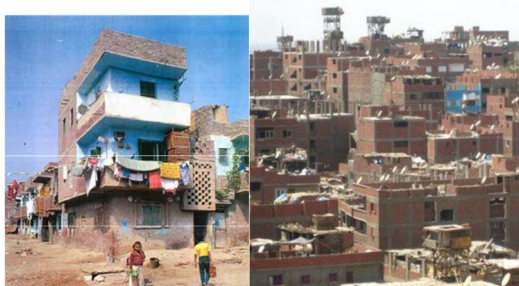


Fig (6). Ministry of Local Development 2001.



These regions may not provide the minimum basic needs for an acceptable standard of life for people, especially in the aspect of social behavior that is the concept of sustainable development. Hence, it is not acceptable to refer to those informal settlements /slums in Egypt as vernacular. The definition of "vernacular" according to the views of specialists, such as Paul Oliver who defines the term as follows: “Vernacular architecture comprises the dwellings and other buildings of the people. Related to their environmental contexts and available resources they are customarily owner- or community-built, utilizing traditional technologies. All forms of vernacular architecture are built to meet specific needs, accommodating the values, economies and ways of life of the cultures that produce them” or Baker who say’s that the folk tradition is much more closely related to the culture of the majority and life as it is really which represents the culture of the elite. The folk tradition also represents the bulk of the built environment. Rapoport. Vernacular architecture is congenial to people and sympathetic to environment. Bruce Allsopp.<sup>5</sup> According to table 1, the research finds that the most agreed items are discussed in the following: The regional forms, materials and technology- Forms that reply to specific needs of human- Forms that reply to the values, economics, and way of life of certain culture- Dwelling buildings as the major representation of vernacular architecture.<sup>5</sup>

The items of vernacular architecture form that the definitions concentrate on them

The definition of vernacular architecture by	The regional forms, materials, technology	Forms that reply specific needs of humans	Vernacular as a culture of the majority of people	Forms that reply the values, economics, way of life of certain culture (people)	Vernacular forms as norms that have been accepted by people	Variation in models and few types	Vernacular architecture with no theoretical background	Vernacular dwellings
Oliver								
Rapoport								
Baker								
Porter								
Allsopp								

Table (1). 5

### 3- Vernacular architecture and its relation to sustainability

The sustainability of Vernacular Architecture is also about managing the balance between preservation and use. Arid and rural vernacular dwellers show multi-layers of wisdom in their use of the limited local materials, the minimum waste of such resources and an ability to be inspired by forms from nature. In addition, from an economical point of view, such local building materials are almost cost-free, as locals use wood trees and palm trees grown on their farmlands, and cast mud bricks using earth from their surroundings. People build their own dwellings, so there is almost zero labor cost. The possibility of re-using the earth material is another aspect of sustainable desert vernacular. Almost no waste product is produced from desert vernacular buildings.

According to the issue of sustainability, with two different attitude to technology to achieve this ultimate aim, Le Corbusier refers that the harmony could be created by using the modern technologic advances which at the same time had socially corrective potential. Thus he was apt to realize the harmony through the combination of indigenous architecture and the modern

technology. HassanFathy felt that technology should be subservient to social values, and appropriate to popular needs. He found the truest expression of technology in vernacular architecture as he believed that it had solved the function problems with the available material and least energy consumption. The vernacular technology stood for the hundred years' test and was fundamentally suitable for the climate and local economy and social conditions. Although Fathy used traditional elements in his work, he did not intent to just make copy of the work of the past. His new forms were the adaptations of the prototypes. The sustainability can only consist in the utilization of appropriate technology.<sup>8</sup>

#### **4-Balat the Vernacular desert town-Western Desert oases, Egypt:**

This chapter presents the analysis of the case study carried out in the town of Balat. Balat vernacular will be described in terms of architecture and of urban and building technology. Some factors are relevant to social, cultural and economic analysis will be introduced as well. Balat still maintains its cultural and historical identity, and its potential for future development. From the point of view of aesthetics and form, Balat can be considered a distinctive piece of sculpture, characterized by a highly distinctive aesthetic architecture appearance. Hassan Fathy has considered Balat to be the bride of the desert. Buildings there are like carvings done by sensitive thinking hands that curve every piece to function in a certain way.<sup>6</sup>



Fig (7). Typological architectural formation of dwellings in Balat. Inhabitants adjusted local materials to the purpose of connecting houses.<sup>6</sup>

The design and construction process in itself is simple and clear, although the final result might be complex when built in a vernacular fashion. The process begins with a mason builder being called in. His experience and detailed knowledge of building rules is needed to start the work. Since everyone has a general knowledge of these rules and steps, the family and the builder discuss together issues such as the size of the house, the layout, the relation between the house and the street, together with the site. Inhabitants participate not only in the design of their house but in the building process as well.<sup>6</sup>



Fig (8). Semi shaded road & House facade in Balat.<sup>6</sup>

In Balat, as in all desert societies, the basic social unit is the extended nuclear family. Balat inhabitants tend to live in extended-family compounds. Families may comprise married couples and their children, and may also include grand-parents, as well as brothers and sisters of successive generations. Family members live with separate sleeping, kitchen, and leisure spaces facing a common open area.<sup>6</sup>

### 5- Conclusion:

Arid areas - authentic by past values - must be developed and returned to the philosophy of the ancient Egyptian home which provides privacy, reflects awareness of thermal environmental design, respects family ties within the house along social ties within the community and uses local building materials which commensurate with the nature and atmosphere of the place, and preserves the future of the desert vernacular architecture on a collaborative basis with the residents. Re-thinking in the context of contemporary architecture is still related to low environmental costs and benefits, as well as the picturesque exterior vernacular architecture of the desert.

Sustainable design balances human needs (rather than human wants) with the carrying capacity of the natural and cultural environments. It minimizes environmental impacts, and thus minimizes the import of goods and energy as well as the generation of waste. Besides the environmental response to the local climate and geography, vernacular also enhances a feeling of community. The desert vernacular buildings should not only be seen as charming reminders of an era that is gone but that they are a record of a lifestyle, tradition and culture.

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