

THE BENEFITS OF THE HOUSE-FORM OF EARTH BUILDING IN NIGERIA. SURVEYING OF ORIGBO IN IFE-NORTH OF OSUN STATE

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ABSTRACT: *Cultural heritage produces its own pattern of house-form, which is a reflection of history, chosen style and culture of its people. This paper focused on the pattern and the underlying factors of house-forms of rural development in the region of south western of Nigeria. Rural communities of Origbo in Ife-North Local Government were surveyed, scores on selected traditional building were used to ascertain pattern of house-form. More specifically the relationship between house-form and socio-cultural heritage were investigated to establish the significance of house-form pattern and cultural value. The potential benefits derived from the house-form pattern were identified. They include reliance on local materials for building construction, provision of affordable housing at reduced cost and simple construction techniques. The quest of this paper was what kind of traditional house-form value that should be preserved to enrich current new housing development.*

KEYWORDS: House-Form, Culture, Traditional Material, Affordable Housing, Cost Reduction

INTRODUCTION

The pattern of traditional house-form is formed by cultural believes, this pattern are kept by traditional community, even when they moved elsewhere or when they are regenerated and improved on by newer generation. The house-form of rural environment in any area is historically a product of past, present, economics, cultural and ecological factors. There are house-form variations in rural environment all over the world developing or developed countries. Susan Denya, (1975) substantiate it further that there are three types of identified house-form based on regional area of Nigeria these include, the round dwelling which is peculiar with Igbos; rectangular are common with Hausas and impulvial which are known with Yorubas. More importantly the growth, development and characteristics of rural area in developing countries are controlled by different social, economic and cultural factors. This can be seen from effort of traditional communities in modifying their cultural heritage; the house-form pattern may not be exact duplicate of the original due to different role of physical element of house-form to their current culture. There is no doubt however that housing remain basic need, its quality, cost and availability are crucial, also location, planning, layout and design make up an important contribution to community identity. In many parts of the world, particularly in the western part of sub-Sahara Africa where Nigeria lies, the traditional house-form pattern reflects the traditions of various tribes, the life style and significance of the national environment of the people in context (Bascom, 1955; Osasona *et al.*, 2007). Furthermore Yoruba people are architecturally peculiar, since 16th century they have lived in rather large communities many of which contained more than 50,000 residents. Until the 20th century, the building includes the palace of the King, the residents of the chiefs and important families, and shrines for major and minor deities as well as houses of other people. These

houses were all courtyard or compound houses composed of courtyards varied with number of specific function performed in the building or number of its residence (Ojo 1966 B: 147). (Adedokun, 1999) Substantiate further that the courtyard compound house-form of the Yoruba's is a typical examples of traditional architecture which reflect the life style and adaptation of the people to their natural environment.

Considering the importance of the house-form in African traditional architecture, the relevant input in reduction of construction cost and intervention for provision of affordable housing that is reliable in local material is necessary. The traditional domestic house-form constitute major factor in promoting socio-cultural integration among its users. It is therefore required to justify the basis upon which relevant aspect of indigenous architecture are articulated into contemporary and future house-form pattern and development

THEORETICAL CONSIDERATION

The house-form patterns are complex; however there are evidences from different literatures that rural housing is more than shelter. The concept of house-form is related to cultural and characteristics of users, it reflects the social and economic value of a society as it is the best physical and historical expression by what society valued (Gans, 1962; Raven. 1967). Historical analysis has proven that man has tried to reshape his environment to persuade himself with suitable habitation. Rapport corroborate further in his writing that house-form is not simply the result of physical forces but a consequence of a range of socio-cultural consideration, specific characteristics of culture itself with the accepted ways of doing things and socially unaccepted ways altogether affected house-form patterns. The human dwelling according to Osasona *et al.* (2007) revealed that house-form is the one tangible thing that combined with cultural identity. Traditionally, house-form has always evolved based on both physical and cultural considerations. Thus every civilization produces its own house-form pattern which is highly reflective of historically prevalent.

Background of the study area

Origbo communities in Ife North Local Government area of Osun State comprise of seven sister towns with the headquarters being Ipetumodu and its geographical coordinates are 7°22'N, 4° 28'E, 7.367° N and 4.467° E, (fig 1).The seven sister towns are collectively known as Origbo meje, they are: Ipetumodu, Eduabon, Moro, Asipa, Yakoyo, Akinlalu and Isope. The morphological characteristics of the area exhibits features of typical traditional Yoruba towns which are king's palace (afin) and traditional king market (Oja Oba) in the front of the palace. The traditional market is to promote the cultural heritage of specific town for instance, at Ipetumodu they are known for poetry works of various kinds. Surrounding the king's palace is the high concentration of traditional residential houses for the indigenous occupants and intermediate zone of contemporary face-me-i-face-you vernacular earth dwelling, whereas the outskirts consist of sparsely distributed modern single family dwelling intercepted with few traditional and vernacular houses. Origbo rural communities have undergone considerable growth in the recent time as influxes of people were necessitate by spontaneous development such as advent of permanent site of distance learning programme by Obafemi Awolowo University as well as corresponding increase of commercial activities. House-form pattern commonly featured at Origbo community are typical courtyard housed and vernacular dwelling built from local materials. Many of those houses are still in their

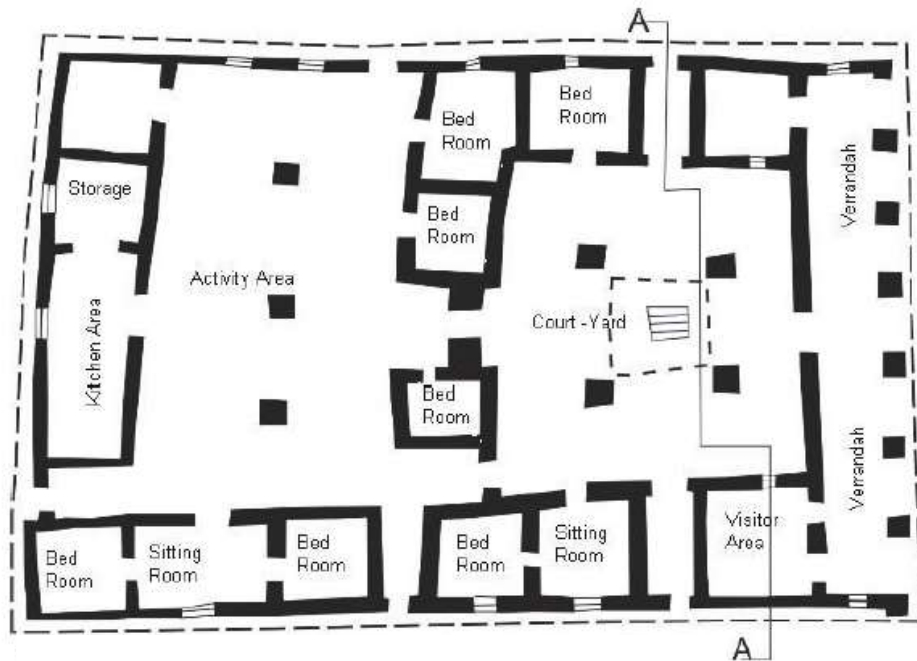
normal natural form while some of them have been plastered with cement, either total plastering or lower part of the building, the roofing element is corrugated sheet, indigenous thatched system of roofing has been substituted with corrugated due to technological innovation and improvement over the thatch. Figure 2 shows the typical plan and sketched elevation from the study area.

Figure 1: Showing geographical location of study area (Origbo communities)



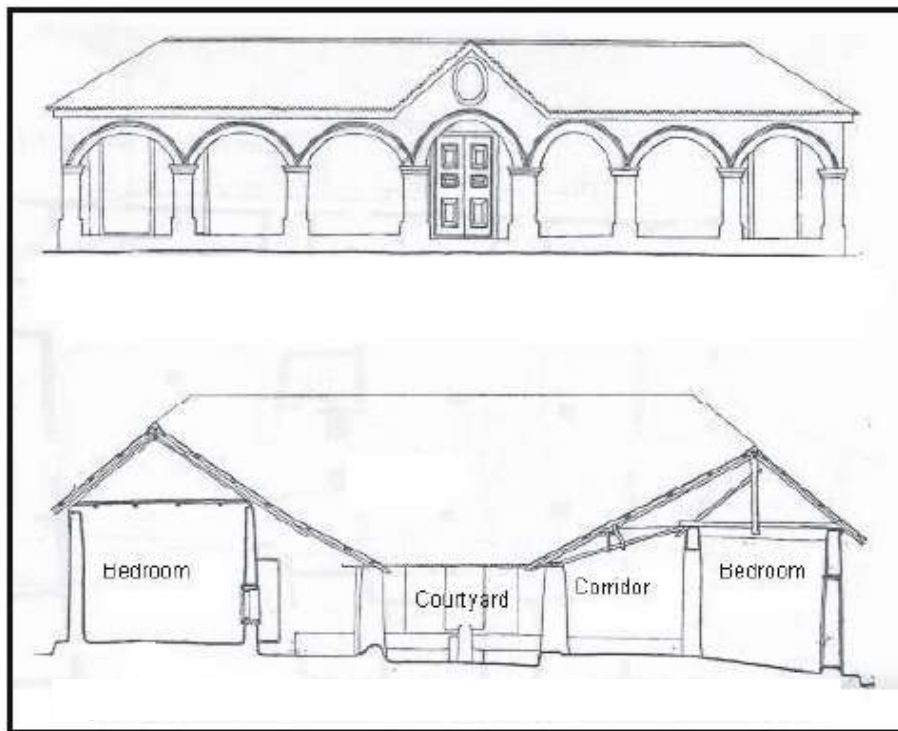
Source: Image on 2015 Google earth.

Figure 2 showing the plan of a typical traditional earth building.



Author: Field Survey, 2015

Figure 3 showing the sketch of the sections and elevations of a typical traditional earth building.



Author: Field Survey, 2015

METHODOLOGY

Data for this study were obtained from both primary and secondary sources. Primary data were obtained through the stratification of the study area which comprises of seven communities of Origbo in Ife North Local Government area of Osun state, Nigeria. The stratification were into three zones of residential house-form distribution in each of the communities, Namely; Central Traditional Residential zone (Zone A), Intermediate Section of vernacular earth dwelling (Zone B) and newer modern residential at outskirts area of the town (Zone C) Ojo, 1966; Egbunjobi, 1999, Jiboye 2014. Table1: Shows the Origbo community with approximate residential unit's analysis which are stratified into house-form zones.

Table 1: Residential Unit at the rural communities

S/N	Community	Zone A	Zone B	Zone C
1	Ipetumodu	1562	418	167
2	Edunabon	1340	396	112
3	Yakoyo	995	264	141
4	Moro	1021	345	183
5	Akinlalu	591	268	02
6	Isope	-	-	-
7	Asipa	826	294	20
	Total	6335	1985	580

Author: Field Survey, 2015

Table 2 shows house-form distribution classification this includes: Zone A has 6335 unit of residential distribution, zone B has 1985 units, whereas Zone C has 580 units, using stratified systematic sampling methods (Dixon and Leach, 1977). Table 3 shows 10% samples retrieved that were administered with questionnaires, total number of 890 questionnaires was administered at the study area. Pertinent structured question pertaining to house-form patterns, cultural value, and practices, preferred building materials, suitability of traditional approach to workmanship that matched with standard, cost benefit of earth as building material Vis-a-Vis foreign material were asked. Data were analyzed using descriptive statistics and one-way analysis of variance (ANOVA) to determine the relationship of house-form pattern and potential benefits that associated with it which include cost, affordability and cultural significance.

Table 2: Classification of house-form in Origbo communities

	Categorization	Numbers
a.	Typical Traditional Residential	6335
b.	Vernacular Dwelling	1985
c.	Single Family Bungalow	580

Author: Field Survey, 2015

Table 3: No of samples retrieved per zone 10% in the study area.

	Total Residential Unit Per Zone	Sample Retrieved 10%
A	6335	634
B	1985	199
C	580	58
Total	8900	890

Author: Field Survey, 2015

Table 4: House-form classification

Classification	Number	Percentages %
Typical Traditional Building	682	76.6
Vernacular Dwelling	157	17.6
Modern Flat Apartment	51	5.8

Author: Field Survey, 2015

RESULT AND DISCUSSION

Table 4 shows the data on existing and identifiable house-form in seven Origbo communities. The Result shows that 76.6% of the respondents live in typical Yoruba courtyard traditional residential house-form while 17.6 occupy vernacular dwelling and 5.8% indicated that their dwelling were modern flat dwelling. The result suggests that the traditional Yoruba house-form were the major dwelling of the Origbo communities. These findings substantiate (Bascom, 1955; Denya, 1975; Osasona2007) that in Yoruba town traditional compound house-form usually dominates the central core. Further expatiate that the compounds were divided into numerous forms unified by central courtyard which draw members of the extended family into prolonged daily contact (fig. 2 and 3). The following factors were derived from the significance of house-form pattern of traditional earth building.

Significance of house-form pattern to cultural value

Table 5 shows a list of assessed house dwelling in relation to cultural use and value of the respondents. A three- point rating scale was employed; the indicators were rated accordingly as very adequate, inadequate and very inadequate.89.2% of the respondent indicated that traditional house-form were culturally relevant in utility performance, while 9.2, and 1.7% of the respondent claimed that vernacular dwelling and modern flat were not adequate for cultural use. The Traditional Yoruba compound (Agbole) comprises individual units (Ojule) brought together by cohesive whole, guaranteeing appropriate spatial relations. A major feature of this aggregation of space is that courtyard is an essential component for environmental control and socio-cultural context. According to Osasona, (2007) typical activities that take place at courtyard include cooking, laundry, livestock rearing and storage, eating among others. The courtyard is occasionally used for meeting and traditional worship (Adeokun 1999), (fig 2 and 3). The vernacular dwelling and modern flat do not have activities zone that can accommodate the above listed activities within the dwelling except the courtyard house-form pattern.

Table 5: Significance of house-form pattern to cultural value scale

	Rating	Frequency	Percentages %
Traditional	Very Adequate	794	89.2
Vernacular	Inadequate	81	9.1
Flat Apartment	Very Inadequate	15	1.7
Total		890	100

Author: Field Survey, 2015

Advantage of house-form pattern and the use of indigenous materials.

Table 6 shows that 90% of the respondents have signified that the house-form pattern for Yoruba traditional building have reflected architectural simplicity at the design stage that enable indigenous material especially earth to be used in its natural state without any special modification. The implication of this is that construction of earth building is usually users friendly. Most earthen building techniques require very local skill or indigenous technology for construction process. The roofing system is simple enough to allow woody stem of trees to be used in natural form without any processing. According to Osasona (2007), thatch are normally used for roof covering but has been replaced with corrugated iron sheet. Table 6 indicated further that 9.0% and 1.0% of the respondent claimed that vernacular dwelling are fairly for use of indigenous material and modern flat is not conformed to the use of indigenous material. The traditional building house-form is not complex in its architectural articulation which makes it possible for indigenous knowledge and skill to be used alongside with readily available local materials. This is not readily possible with other house-form dwelling. According to Stulz and Mukerji (1993), traditional building exploited indigenous resources which include natural occurring raw material deposit, agricultural products and residue, in addition low skilled techniques has been adopted for construction and maintenance.

Table 6: Advantage of house-form to indigenous material scale

	Rating	Frequency	Percentage %
Traditional Building	Very good	800	90
Vernacular Dwelling	Fairly good	89	9
Flat Apartment	Very Low	1	1
		890	100

Author: Field Survey, 2015

Relationship of house-form pattern and cost affordability

The conformity of house-form in Yoruba traditional building with the use of indigenous building material has made traditional building affordable, comfortable and sustainable. Table 7 shows that the construction cost for traditional earth building is very low compare to other modern building. This is because local material is readily available and leads to elimination of transportation cost. Earth to be used for construction usually derived from the site of construction at no cost, no huge mine or clear-cut forest is required. A hole dug to extract clay-rich soil can be used as water tank during the raining season, creating a pool of water for construction work; furthermore it can be stabilized to become septic tank for waste

disposal. Several surviving heritage of house-form of earth structures shows that earth has potential to produce high quality building products.

Table7: Relationship of house-form pattern and cost affordability

	Rating	Frequency	Percentage
Traditional Building	Very Low	806	90.9
Vernacular Dwelling	Low	75	8.4
Flat Apartment	Very High	09	0.7
		890	100

Author: Field Survey, 2015

Benefits of house-form of traditional earth building

The study carried out has revealed that the Yoruba traditional earth architecture has adopted a house-form pattern that allowed the use of indigenous building material in its natural form. The house-form process is very simple, articulate and culturally relevant, the benefits include:

Reliance on local material

The Availability of indigenous material such as clay, thatch leaves, bamboo, grasses, stone, timber and others is an advantage for housing provision. It has been confirmed that locally produced building material can replace the expensive imported materials. Also it has been reported that those locally produced materials also exhibits, functionality, aesthetic, durability and structural stability that enhance sustainable buildings (Un-Habitat 1986, Akinkunmi 2012). Olugbenga and Olaluwoye 2007; Akinkunmi 2010), further buttressed that local alternatives materials provide safe, comfortable, and durable dwellings for rural communities

Provision of affordable building

Cost of building with local materials cost less, than using conventional material, also local building material are affordable and cheap According to (Akinkunmi, 2012; Heathcare,1995). Arumala and Gondal (2007) reported that earth is one of the oldest building materials readily available and very cheap among others. Normally local building materials are not bought, the cost incurred in obtaining them are for only those who will fetch the material e.g. hiring people to cut palm font, dig earth and cut bamboo. This makes it cheap and affordable for obtaining local material for building purpose

Reliance on local skill and Technology

Indigenous building technologies are the skills or methods in building constructions that are local in its origin. The advantage of the building technology is that it is within the reach of the masses. The cost is very cheap and affordable. The tools to carry out the construction process are equally available and very cheap.

Simple construction

Traditional building practices means making use of local available materials in other words making use of construction materials that nature yields. The construction process is to arrange the load bearing and non-load bearing structural element in such a way that the available resources are use as efficiently as possible. The technical solutions applied in traditional

construction methods are consistent with the available material, skills and climate. According to Christian (2005), the construction methods match the materials properties, addition of water to earth make it to be reworked and molded, small sign of wear and tear can be made good and material can be recycled over and over again.

Simple form

Buildings in traditional architecture are based on clear geometrics which appeared to be embedded in the surrounding landscape; it is highly symbolic and has cultural value. In southern Nigeria where simplicity is based on central courtyard, these find expression not on numerous object of everyday life, but also in traditional architecture it has simple floor plan and shape which reflect focus on the impact of space. Clear structure without protrusions, a straight forward layout not only simplifies orientation but also facilitates the design of a clearly aligned load bearing structure, which can be based on low cost structural components.

Upkeep and maintenance

Upkeep and maintenance cost are very important aspect when it comes to earth buildings, cost of necessary refurbishment are minimally reduced because materials, skills and the techniques to be employed are locally available (Akinkunmi J. O 2014).

Ecological benefits

Earth consists of re-new able material that consumes little energy. It moderates the impacts of extreme outdoor temperatures so that the interior remain relatively constant. Earthen material is recyclable once remixed with water it can be remolded and reused, it has low environmental impact earth does not generate pollutant or toxic bye product when used as building material.

RECOMMENDATION

The following recommendations will scale down the cost of building if appropriately adopted and thus increase the rate of housing provisions. This includes;

- a) Adopting traditional house-form that is simple enough to allow the use of local materials
- b) The country should set goals to make the nation a self-sufficient in area of housing material not depend on high expensive, imported materials.
- c) Indigenous material should be advocated and recommended for use as a way of cutting cost of housing construction.
- d) More research is needed in low-cost, local materials and component to improve commonly used local building materials.

CONCLUSION

This study has revealed the significance of house-form of traditional earth building in determination of cultural value, and housing affordability with the use of local material in Ife-North Local Government area of Osun State. The main objectives were to identify and examine different residential house-form, access its cultural relevance, and determine the relationship between the house-form pattern and the use of Local building materials, also to establish the relationship of house-form with building affordability. The studies revealed that compound house-form were predominant at the study area. Comparisons with other house-forms were made in terms of cultural acceptability. The findings also indicated that indigenous earth buildings were acceptable to most of the occupants. Considering housing affordability, the study shows that the traditional house-form has enable the use of Local building materials in its natural form without any special processing or modification. The finding of this study has showed that cultural relevance aspect of building occupant, this include their quest for adequate house-form that promote cultural acceptability and building affordability, when conceptualizing housing design and development. According to Jiboye (2014), rather than designing building based on planning and standards, attention should also be focused on how the building will be used in practice as well as culturally fitted. Also, what must be considered in this regard is the relevance of design approaches to particular culture. This should include user's acceptability of dwellings, satisfaction of habits and life style with respect to cultural functionalism. This study also suggests that house-form of traditional building should be adopted in building construction process that enables the use of local material in its natural form. The reliance on local building material, make building affordable in its entire ramification. The local building material should be advocated for so as to enhance affordable housing provision, policies should embrace the use of indigenous material as powerful tools to facilitate programme and positive control to make participatory and more equitable for local and private housing intervention that provide a more appropriate and flexible framework for easy accessibility to affordable housing (UN-Habitat, 1986).

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