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African Traditional Architecture- A way to sustain our cultural heritage

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Abstract:
Africa as a continent is home to several tribes, cultures, and religions. The diversity of this region makes it the second largest and second most populated continent in the world which covers about 6% of the earth's total surface area and 20% of itsland area according to World Atlas (2018).Also, the continent alone accounts for about 16% of the world population. This is irrespective of the recent migration of people towards western cultures in search of greener pastures.This movement of Africans to foreign nations aside the era of colonialism clearly portrays the nomadic nature of the pre-colonial African and this had a great influence on their choice of buildings as well as building materials, hence it was not uncommon to see significant similarity of housing structure among ancient African architectural designs. This study aims to investigate the African traditional Architecture in line with sustainability of the African cultural heritage. Literatures were reviewed and used to identify the various features of African which were critically examined in the light of cultural sustainability and its concept. The result showcased the various features of African Traditional Architecture (ATA) and also discussed the factors hindering the sustainable endeavours of ATA with respect to such features. Data collected for this study was through articles, journals books and online sources.
Key Words:
African Traditional Architecture (ATA), Cultural Heritage, Sustainability.

I. Introduction

Sloppy hills of the British-America new road construction at Jos city brought a flood of memories as I recalled how as a child, whenever we went home to visit granny, I would race down slopes with tyres, kites and whatever meansof joy that came to a boys mind. Going home after a sunny afternoon of play was always a relish because the coolness of the mud house remained a wonder I didn't bother to explore until as an adult in the construction industry, I discovered the significant difference in traditional African buildings, that were built with the least financial resources which was in abundance-clay, compared to the modern, western home I currently live in which was built with the most financial resource, which was still not in abundance, yet unfit for the climes of the Nigerian weather and economy. The high walls and concrete slabs haveseemed to not only erode the Nigerian occupants of social interaction, but it has also set a partition between people and cultures. Indeed, this system of western housing was resultant of the planned effort by the governments in Lagos and the regions to introduce tall and modern buildings in the years after the end of World War II (Immerwahr and Daniel, 2007). At the same time, European architects working in West Africa had begun to think of innovative ways to create modern designs that takes into consideration the tropical climateand this spread throughout the country (Immerwahr& Daniel, 2007).

This paper presents the implementation of sustainable cultural heritage of the African traditional architecture.

II. Background and Motivation

J.B Hess, (2014) describes African architecture as the reflection of the interaction of environmental factors, such as natural resources, climate and vegetation-with the economies and population density of the continents various regions. This reflection further describes the materials primarily used in the continents building construction, with the likes of stones being the most durable material. Eglash andRonn, (1999) proposed that there was a common theme in traditional African architecture which was the use of fractal scaling, and rightly so. This scaling comprises of small parts of the structure that tend to look similar to larger parts, such as a circular village made of circular houses (Eglash&Ronn, 1999). Some notable achievement in African architecture includes the Ancient Egyptian pyramids, temples, enclosed cities, canals, and dams. The architecture of this age was not one style, but a set of styles differing over time but with some commonalities. The most famous examples of ancient Egyptian architecture include the Great Pyramids and the Sphinx at Giza, the Temple of Karnak, and the Temple of Abu Simbel. Most buildings were built of locally available mud brick and limestone by levied workers. Columns were typically adorned with capitals decorated to resemble plants important to Egyptian civilization, such as the papyrus plant (*Britannica,* retrieved, 2021).Great

Zimbabwe also, is one of the African nations that boast of unique African architectural designs.Its most formidable edifice, commonly referred to as the Great Enclosure, has dressed stone walls as high as 36 feet (11 m) extending for approximately 820 feet (250 m) according to Ireland & Jeannie, (2009) making it the largest ancient structure south of the Sahara. Houses within the enclosure were circular and constructed of wattle and daub, with conical thatched roofs. TheAksumite architecture also flourished in the Ethiopian region, as attested by the numerous Aksumite influences in and around the medieval churches of Lalibela, where stelae (*hawilt*s) and, later, entire churches were carved out of single blocks of rock.The Ghana Empire, also known as Wagadou or Awkar, was a West African empire based in the modern-day southeast of Mauritania and western Mali that existed from c. 300 until c. 1100. The Empire was founded by the Soninke people, and was based in the capital city of Koumbi Saleh.Munson & Patrick J.,(1980*)* in their journal wrote about the geography land topology, climate and culture which were a heavy influence in the African architecture from the Nok cultural architectural design in plateau state Nigeria, to the Djenné Mosque in Mali West Africa (Munson & Patrick, 1980) and indeed the entire African continent has honed fortified buildings that sadly is now regarded as world heritage sites (Munson & Patrick, 1980) instead of its utilization for proper housing, hence its replacement with European standard of housing during the postcolonial era (Munson & Patrick, 1980). Due to the emergence of this western housing system,attention is being drawn from the rich quality of the African architectural system which was built to meet the needs of the people while accommodating the environment and not fighting It as we have it with the unsustainable tall structures we have in the modern African climes.

III. Method of Ancient African Architectural Construction:

According to*Coquery-Vidrovitch, Catherine, (2005*)when designing buildings, the architectural, engineering and technical application of the design of the building greatly affects the outcome of the building. Emeagwali, et al. (2016), describes Building design to be the broadly based architectural, engineering and technical applications to the design of buildings.In Nigeria for instance, Traditional Yoruba architectural forms can be seen as hollow squares or circles and a unit can be viewed as a compound consisting of various sub units arranged in a quad shape that surrounds an open courtyard, the open space serves as the point of social contact and also used for cooking and craft making (Shaker & R.R., 2015). The open spaces or courtyards are designed to be much larger so as to encourage communication between family members while the intimate spaces are much smaller and darker and mostly used for sleeping (Vlach& John Michael, 1976). Materialsused for building the houses are moulded mud, obtained from laterite soils. These are the main material for building walls and the houses are built without windows (Shaker & R.R., 2015). Roofing materials are influenced by environmental conditions, in areas close to the Atlantic coast, raffia palm leaves are the main materials for roofing while in the northern regions, and wood is substituted for palm fronds (Ojo, G. J. Afolabi, 1968).

Several societies in pre-colonial Nigeria built structures from earth and stone. In general, these structures were primarily defensive, repelling invaders from other tribes, but many settlements put spiritual elements into their construction. These defensive structures were primarily constructed from earth and occasionally plastered.

Tubali walls in northern Nigeria have two components: sun-dried mud bricks held together with mud mortar. Walls in this style have a tendency to deteriorate in hotter climates (Emeagwali, et al.,2016).These mud constructions were usually plastered with mud mixed with other materials. The defensive purpose of this was to create a smoother, unsalable surface to help repel attackers. However, some of these materials were functional, adding strength, while others had spiritual meanings, possibly to defend against evil spirits

3.1Cultural Architectural Preservation in Africa:

Our culture provides us with an ethos we must honor in both thought and practice. By ethos, we mean a people's self-understanding as well as its self-presentation in the world through its thought and practice in the other six areas of culture. It is, above all, a cultural challenge. For culture is here defined as the totality of thought and practice by which a people creates itself, celebrates, sustains and develops itself and introduces itself to history and humanity — *MaulanaKarenga, African Culture and the On-going Quest for Excellence.*

Below are some propositions in which some parts of indigenous Nigeria preserves her cultural heritages:

- Yoruba architecture uses cured earth walls to support roof timbers, over which leaf or woven grass roofing is applied. These walls are usually homogeneous mud structures, though wattle-and-daub techniques can be found in certain locations. Space is divided into individual units which are then connected by proximity and walls into a compound with courtyards and private spaces. Multiple entrances and exits allow access to accessory facilities such as kitchens.

- Hausa architecture uses plastered adobe to create monolithic walls. Roofing is provided by shallow domes and vaults made from structural timber beams covered by laterite and earth. Homesteads are bounded by perimeter walls with both circular and linear interior divisions with one clearly defined entrance.
- Igbo architecture uses similar construction techniques and materials as Yoruba architecture, but varies significantly in spatial arrangement. No unified compound walls exist in these constructions. Instead, individual units are related to a central leader's hut, with significance attached to relative position and size.

Images of ancient buildings in western Africa

Fig. 1. Sukur in Adamawa state Nigeria

Photo credit 1: Wikipedia

Fig.2Takienta Tower Houses of Koutammakou in Togo

Photo credit 2: Shutterstack

3.2Sustaining the African Culture:

"The term 'sustainability' should be viewed as humanity's target goal of human-ecosystem equilibrium (homeostasis), while 'sustainable development' refers to the holistic approach and temporal processes that lead us to the end point of sustainability" according to Shaker & R.R. (2015). However, it is defined as: the endurance of systems and processes covering various domains such as ecology, economics, politics and culture (James et al., 2015). Sustainable development consists of balancing local and global efforts to meet basic human needs without destroying or degrading the natural environment (Kates, et al., 2005). It is something that improves "the quality of human life while living within the carrying capacity of supporting eco-systems" this is according to IUCN/UNEP/WWF (1991**)** whichpresumes that resources are finite, and should be used conservatively and wisely with a view to longterm priorities and consequences of the ways in which resources are used." **(**www.sustain.ucla.edu, 2016**).**

Moving towards sustainability is also a social challenge that entails international and national law, urban planning and transport, local and individual lifestyles and ethical consumerism. Ways of living more sustainably can take many forms from reorganizing living conditions (e.g., eco-villages, Eco municipalities and sustainable cities), reappraising economic sectors (permaculture, green building, sustainable agriculture), or work practices (sustainable architecture), using science to develop new technologies (green technologies, renewable energy and sustainable fission and fusion power), or designing systems in a flexible and reversible manner.

IV. Statement of problem:

African architecture in some areas has been influenced by external cultures for centuries, according to available evidence. Western architecture has influenced coastal areas since the late 15th century and is now an important source of inspiration for many larger buildings, particularly in major cities, James et al. (2015)and the African Traditional Architecture has suffered a great deal, be it from human negligence, socio-economic conditions, weather and climatic factors or modernization. According to Oneh and Ati, (2010) the present day traditional architecture of a place usually results from solutions to climatic problems through reasoning, countless experiments, experiences, and accidents as well. This usually takes the effort and generation of builders who make use of whatever works for them while discarding what did not **(**Anselm E.O, &O.F Ati., 2010**).**Furthermore, Fatty H., (2006) also states that in the tropics, only scientific evaluation of new ideas will save its traditional architecture (Fatty H., 2006). In Nigeria, the relics of earth buildings are seen in our traditional city centres as reminiscences of history, the old earth buildings are being replaced by modern structures (C. Egenti, J.M. Khatib, & D. Oloke., 2014). Mud buildings always suffer from common defects such as surface erosion, partial crumbling, humidity, and hallowed bases (Heathcote& K.A., 1995). It is apparent that the state of quality control for earth construction hangs in critical balance with very limited tolerance for satisfactory performance; that is why people use sand-cement wall system because they have been very useful in term of durability and wider tolerance in tropical environment and performs satisfactorily (C. Egenti et al., 2014). The combination of these challenges further compound the sustainable practices within the African architecture, hence the need to examine sustainable measures and practices regarding preserving the African cultural heritage.

V. Objectives:

The aim of this research paper is to examine African Traditional Architecture in the light of sustaining the African cultural heritage.

VI. Methodology

The main sources of data were journals, conference / seminar / workshop papers, text books, newspapers, magazines and the internet sources, which were used to help in identifying and narrowing some features of the African Traditional Architecture. These features were examined and the factors impeding their sustainable cultural preservation within the African Traditional Architecture were identified and discussed.

VII. Factors Hindering Sustainability of African Traditional Architecture

Some well-known factors hindering the African Architectural Sustainability and culture are; human and resource neglect such as neglect of heritage buildings, forgetting and ignoring of traditional architectural element, artefacts, tools(C.O Osasona& .F.O.Ewemade, 2009),also some socio-economic conditions such asinability to maintain social class factor, and high cost of maintenance of traditional buildings (O. Ejiga, O. Paul & O.O. Cordelia, 2012); modernization such as replacement of the old buildings with new ones using modern building materials, poor social acceptability of traditional buildings, and societal advancement somehow had downgraded these practices of using traditional building materials in favouring the machine intensive (Khalil, N., 1999) discontinuity such as lack of qualified artisans and master builders, disappearance of traditional buildings in the cities, and many of the traditionally significant buildings of earth have weathered badly (Egenti, et.al., 2014), weather and climatic conditions such as surface erosion, partial crumbling, unhealthy conditions due to constant humidity and hollowed bases and wear and tear of the buildings, constant humidity, and moisture from underground (Egenti, et al., 2014).

TABLE 1: LIMITATIONS TO SUSTAINIG CULTURAL HERITAGE, EFFECTS AND SOURCES

S/N	LIMITATIONS TO SUSTAINING CULTURAL HERITAGE	EFFECTS	SOURCES
1	Human and Resource Neglect	Neglect of heritage buildings, forgetting and ignoring of traditional architectural elements, artefacts, tools	Osasona et al. (2009)
2	Socio-Economic Conditions	Inability to maintain social class and high cost of maintenance of traditional buildings	Ejiga etal. (2012)
3	Modernization	Replacement of old buildings with new ones using modern building materials, poor social acceptability of traditional buildings, and societal advancement somehow had downgraded these practices of using traditional building materials in favouring the machine intensive method	Khalil (1999)
4	Discontinuity	Lack of qualified artisans and master builders, disappearance of traditional buildings in the cities	Egenti et al.(2014)
5	Weather and Climatic Conditions	Surface erosion, partial crumbling, unhealthy conditions due to constant humidity and hollowed bases and wear and tear of the	Egenti et al.(2014)

		buildings, constant humidity, and moisture from underground.	

VIII. Discussion, Summary and Conclusion

This study discusses the African Traditional Architecture in the light of cultural heritage sustainability; some desirable features and characteristics were identified and the factors hindering the sustainability of African Traditional Architecture with respect to such features were identified (in table 1 above) and discussed. Thus, the following conclusions were made:

- The main features of African Traditional Architecture are identified as: use of building materials such as mud, clay, laterite, thatch, grass, stones and timbers etc., which are unique to the African Traditional Architecture.
- Clay and Mudare the prominent building material used in African Traditional Architecture because it is easy to use; it is the easiest available and abundant material, needing little or no financial commitment and therefore became the most utilized building material.
- The main factors hindering "the sustainability of the African cultural heritage throughAfrican Traditional Architecture" were identified as: Human neglect, Socio-economic conditions, Modernization, Discontinuity and Weather and climatic conditions.
- The use of modern building materials such as Cements, steel, Zinc and Aluminium roof covering sheets, glass and other composite materials etc., has really dissuade the continuity of African construction processes used in African Traditional Architecture while also diminishing its conservation, preservation and socio-cultural relevance within the African communities.

References

[1]. African culture and the on-going quest for excellence: dialog, principles, practice.: An article from The Black Collegian : MaulanaKarenga
[2]. Akinsemoyin, 'Kunle (1977). Building lagos. F.& A. Services : Pengrail Ltd., Jersey. OCLC 26014518.Anselm E.O, &O.F Ati., 2010,. The influence of rainfall on Hausa traditional architecture. Research journal of applied science, engineering and technology. Maxwell Scientific organization 2010.
[3]. Ancient Egyptian architecture | Types, History, & Facts". Encyclopedia Britannica.Retrieved 2021-07-22
[4]. Ojo, G.j. Afolabi (1968). "Traditional Yoruba Architecture". African Arts. 1 (3) 14-72.doi:10.2307/3334339.JSTOR 3334339.
[5]. Coquery-Vidrovitch, Catherine (2005). The History of African Cities South of the Sahara From the Origins to Colonization. Markus Wiener Pub. pp. 44–45. ISBN 978-1-55876-303-6.
[6]. C. Egenti, J.M. Khatib, & D. Oloke., Conceptualization and Pilot Study of Shelled CompressedEarth Block for Sustainable Housing in Nigeria, 2014. Publication source, 2212-6090/c 2014 the gulf Organization for research and development.
[7]. C.O Osasona,. F.O. Ewemade. Upgrading Ille-Ife's vernacular architecture heritage. WIT Transactions on the Built environment, V109, 2009 WIT Press, ISSN 1743-3509.
[8]. Eglash, Ron (1999). African Fractals Modern Computing and Indigenous Design. ISBN 978-0-8135-2613-3.
[9]. Emeagwali, Gloeia T.; Shizha, Edward, eds. (2016-07-08). African indigenous knowledge and the sciences : journeys into the past and present.Rotterdam. ISBN 9789463005159. OCLC953458729.
[10]. Fatty H., 2006. Natural energy and Vernacular Architecture. In: Jencks, C. and K. Kroopf, (Eds.),Theories and Manifestoes of Contemporary Architecture. 2nd Edn., John Wiley and Sons Ltd., Sussex, pp: 144-145.
[11]. Fawcett, William; Hughes, Martin; Krieg, Hannes; Albrecht, Stefan; Vennström, Anders (2012). "Flexible strategies for long-term sustainability under uncertainty". Building Research. 40 (5): 545–557. doi:10.1080/09613218.2012.702565.
[12]. Glassie, H. (1990), Architects, Vernacular Traditions and Society, Traditional Dwellings and Settlement Review Vol, 1, No 2 (spring), 9-21. Retrieved in August 17 from; http//www.jstor.org/stable/23566248.
[13]. Heathcote, K.A., 1995. Durability of earth wall buildings. Constr, Build. Mater. 9 (3), 185-18931. kano chronicle, 1970-72 accessed 10/29/16.
[14]. Holl, Augustin F.C. (2009). "Coping with uncertainty: Neolithic life in the DharTichitt_Walata, Mauritania, (ca.4000-2300 BP)". ComptesRendus Geoscience. **341** (8-9): 703-712.Bibcode:2009CRGeo.341..703H.doi:10.1016/j.crte.2009.04.005.
[15]. https://archafrica.com/2021/01/24/traditional-african-architecture-designs/
[16]. https://artsandculture.google.com/entity/africa/m0dg3n1?hl=en
[17]. https://en.wikipedia.org/wiki/Architecture_of_Africa#cite_note-1
[18]. https://en.wikipedia.org/wiki/Architecture_of_Africa#cite_ref-2
[19]. https://en.wikipedia.org/wiki/Building_design
[20]. https://www.britannica.com/art/African-architecture
[21]. https://www.shutterstock.com/image-photo/etowah-indian-mounds-historic-site- cartersville-53174209
[22]. Immerwahr, Daniel (2007-12-01), "The politics of architecture and urbanism in postcolonial Lagos, 1960- 1986", Journal of AfricanCultural Studies. **19** (2): 165-186. doi:10.1080/13696810701760450. ISSN 1369-6815.
[23]. Ireland, Jeannie (2009). History of interior Design. Fairchild Books& Visuals. P. 65. ISBN 978-1-56367-462-4.
[24]. IUCN/UNEP/WWF (1991). "Caring for the Earth: A Strategy for Sustainable Living." Gland, Switzerland. Retrieved on: 2009-03-29.
[25]. James, Paul; Magee, Liam; Scerri, Andy; Steger, Manfred B. (2015). Urban Sustainability inTheory and Practice:. London: Routledge.; Liam Magee; Andy Scerri; Paul James;Jaes A. Thom; Lin Padgham; Sarah Hickmott; Hepu Deng; Felicity Cahill (2013). "Reframing social sustainability reporting: Towards an engagedapproach". Environment, Development and Sustainability. Springer
[26]. Kates, R., Parris, T. &Leiserowitz, A. Harvard (2005). "What is Sustainable Development? Goals, Indicators, Values, and practice" Environment 47(3): 8–21.
[27]. Khalil, N. (1999) Ceramic houses and earth architecture, how to build your own, california: cal Earth press.
[28]. Kirbas and Hizli, 2016., Learning from Vernacular Architecture: Ecological solutions in traditional Erzurum Houses., available online at www.Sciencedirect.com., Elsevier Ltd. 2016.

[29]. Munson, Patrick J. (1980). "Archaeology and the prehistoric origins of the Ghana empire". The Journal of African History. **21** (4):457466. doi:10.1017/S0021853700018685. S2CID 161981607.
[30]. O. Ejiga, O. Paul, O.O. Cordelia. Sustainability in traditional African architecture: a springboard for sustainable urban cities. June 2012. Sustainable futures: architecture and urbanism in global south Kampala, Uganda 27-30 June 2012.
[31]. Osasona, Cordelia O., From traditional residential architecture to the vernacular: the Nigeria experience (PDF), Ile-Ife, Nigeria: ObafemiAwolowo University, retrieved 3 December 2019
[32]. Shaker, R.R. (2015). The spatial distribution of development in Europe and its underlying sustainability correlations. Applied Geography, 63, 304-314. doi.org/10.1016/j.apgeog.2015.07.009.
[33]. URL:https://www.sustain.ucla.edu/about-us/what-is-sustainability/ accessed 28/11/2016
[34]. URL:Wikipedia.org accessed 10/29/16
[35]. Vlach, John Michael (1976). "Affecting Architecture of the Yoruba". African Arts. **10** (1): 48–99. doi:10.2307/3335257. JSTOR 3335257