

Architectural Narrative of the Dagara House in Northern Ghana

Anthony, Bangdome-Dery*¹ Genevieve, E. Dery¹ Rexford Assasie Oppong²
1. Building Technology & Estate Management Department, Wa Polytechnic, Ghana
2. Department of Architecture, College of Architecture and Planning, KNUST, Ghana
*Corresponding Email: tonybangdome@gmail.com

Abstract

The Dagara House is a heritage asset which is under the threat of extinction due to internal and external factors. The essence of this paper is to highlight the architectural integrity of the Dagara House and discuss the changing character and constraints affecting this cultural heritage. The research was conducted in the Lawra and Nandom districts of the Upper West region of Ghana through field surveys and interview of rural folks regarding the facing-off of the architecture. The research found that there is a growing disinterestedness for the Dagara House because of influences emanating from changing aspirations and taste. The study recommended the need to preserve the integrity of the Dagara House for posterity through the adoption of the open-museum concept backed by a vigorous stakeholder intervention with the necessary resource input for its sustainability.

Keywords: Architectural, Narrative, The Dagara House, Heritage, Northern Ghana

1. Introduction

Centuries past, cultures across the globe have developed and perfected the craft of creating dwellings which serve as the cardinal point of call physically, spiritually and emotionally. A house remains an identifiable sense of place for both young and old of the family conceptualized in their world view and memory no matter where they find themselves (Cross, 2001; Jorgensen and Stedman, 2006). Beyond a house being a symbolic epitome of relationship and identity, Anselm and Ojonigu (2010) asserted that traditionally, architecture of African cultures evolved out of the search for suitable solutions to climatic challenges against living conditions. Porphyrios (2006) and Fatty (2006) emphasized that, the process is not a simplistic approach as usually described but evolving through changing times and new knowledge. It has also been observed that most indigenous African architecture has evolved to a sedentary state of normalcy in tune with the environment and in concert with the users (Prussin, 1974; Porphyrios, 2006; and Fatty, 2006).

Traditional African architecture has been the vehicle that carried cultural expressions of shelter and spatial needs of African cultures. These spatial needs have catered for adults (male and female), children, animals, visitors, recreation, meeting and living spaces as well as storage spaces (Nnamdi, 1996). It is further observed that, the construction or creation of an African house involved the use of local material, technology and divine wisdom in managing climatic conditions (Nnamdi, 1996). A typical example is the Dogon rectangular houses of Mali built of earth, timber, equipped with ventilators and roof lights, and furnished with earthen pillars representing mythical ancestral lineages (Prussin, 1974; Nnamdi, 1996).

Heritage has been defined as a capital asset, a social construct within a social and economic practice and carries a meaning now and for the future (Throsby, 2001; Graham, 2002; Smith 2006). The Dagara House of north-western Ghana which is the focus of this paper remains a heritage over three to four centuries and has served the housing needs of Dagaabas especially in the rural settlements. However, the Dagara House has not seen any significant advancement regarding materials, technology and spatial morphology. However, it remains an identifiable heritage of the Dagara people. This paper presents an architectural narration of the Dagara House in the light of functional spaces, while describing the indigenous condition of the house in the past. The paper also highlights changes that have occurred to the Dagara House and concludes with suggestions regarding the way forward.

2. The Dagara People and their Land

The Dagara forms part of the Mole-Dagbane group who are believed to have descended from the Dagomba state (van der Geest, 2011). Though there are many terms such as Dagaaba, Dagaba, Dagarti, Lobi-Dagarti and Dagari (Lentz, 2006), the term Dagara is accepted by many people as the only correct ethnographic name to use for the people of Lawra, Nandom and some parts of south-western Burkina Faso (Kuba and Lentz, 2001). According to Lentz (2000), the current location of Dagara in both Ghana and Burkina Faso could be attributed to the search for fertile lands, escaping from conflicts and wars, oppressiveness from rulers and particularly slave raiders. The Dagara settlements presently occupy areas of southwest Burkina Faso and Northwest Ghana. It is important to note that the study was carried out in the north western part of Ghana as shown in *Figure 1*.

The Dagara land is situated in the Guinea Savannah region which is characterized by savannah vegetation and tropical climate conditions. According to Kuba and Lentz (2001), the annual average temperature of about 82°F and an annual rainfall of less than 45 inches are registered in the geographical zone. They observed that the vegetation is characterized by sparse trees, and relatively short grass which provide useful

resources for house building. Anselm and Ojonigu (2010) alluded that climate is a contributing determinant to traditional building form and characteristics.

The Dagara people were (and still are) organized into families of clans leaning towards a Dagara earth-shrine (*tengan*) or lineage head (Kuba and Lentz, 2001). The spoken and written language of the clans is characterized by slight internal dialects, which is however not a challenge among other Dagaare speaking people (Nakuma, 2002). Bodomo and Hiraiwa (2004) in their study of relativization in the Dagaare language acknowledged that the complexities in the language cannot be ignored. The Dagara people traditionally, also recognize the existence of the supreme God known as *Naagmwin*, and little gods or *Ngmime* (i.e. spiritual beings) as well as *tibe* (little gods) for personal protection, good health, success and the like, often led by diviners (*Bagre-bugre*) who act as the inter-phase between the physical world and the unseen world (Porekuu, 2001; Kuupuo, 2010). Kuupuo (2010) underscores the place of wisdom, though oral, in the world of the Dagara people in shaping their societies through dirge singing at ceremonies, objects used by diviners, handicrafts and elaborate clan families and their specificities. Wisdom is further demonstrated in the architecture of the people which has been discussed in subsequent sections.

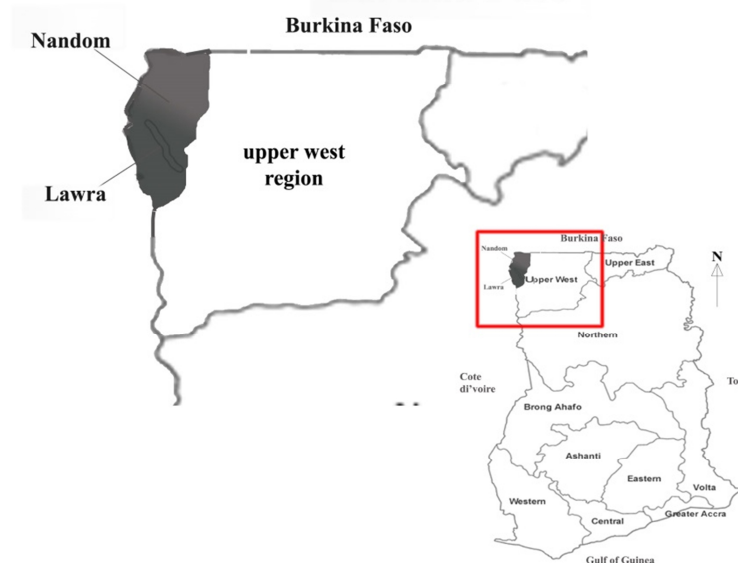


Figure 2: Map of Ghana showing Study area

The people are traditionally small-scale farmers engaged in subsistence crop cultivation and animal husbandry (Van der Geest, 2011) with a variety of cereals, root crops, groundnuts, vegetables, and a couple of domesticated animals such as poultry, goats, sheep, cattle, dogs for hunting and keeping security at home. Van der Geest (2011) also observed that other activities engaged in by the people include fishing, gathering (especially *shea* and other fruits), cloth weaving, smock making, vegetable gardening, pottery and wood carving as well as processing of *shea-butter* and brewing of *pito* (a local beer).

3. Research Approach and Methodology

The research used a qualitative methodology employing approaches such as case studies, on-site field observations and pictorial documentation of houses, and interviews of conveniently selected household heads or representatives using a uniform interview guide. Secondary data from earlier studies on the Dagara traditional architecture and cultural heritage supported the study. The study was conducted in the rural areas of Lawra and Nandom Districts of Upper West Region of Ghana between 2010 and 2013. The choice of rural villages as case studies for the study is based on the fact that, the typical traditional Dagara house in these villages is fairly intact in its indigenous characteristics. Arguably, it is interesting to note that Prussin (1969:1974) and Schreckrenbach, (1983) worked and published widely on the architecture of the savannah cultures in northern Ghana; however, the architecture of the Dagara has not received any particular attention from architectural historians and anthropologists alike.

4. Spatial Morphology of the Dagara House

4.1. Architectural form

The Dagara house is constructed by the household or the community using locally available materials and expertise to meet the familial spatial, spiritual, and social needs in a manner that is in concert with the micro and

macro environment and carries a cultural identity of the Dagara people. The Dagara house is represented horizontally by rectangular forms around a court or series of courts with a vertical arrangement of rectangular and conical forms (Figure 2). Prussin (1974) underscored the uniqueness of the savannah compound residence, recognizing its kinetic qualities and changing relationships with changing family cycles and growth.

A complete Dagara house is characterized mainly by *Dilɔbra* and *Kampili*. The *Dilɔbra* is usually a ground floor room(s) built of mud walls and roofed with mud and timber sticks. The *Kampili* or *Bɔɔpiɛ* is usually created as first floor room(s) built of mud and roofed with thatch and timber. The field survey revealed that, the typical Dagara house is formed literally as an extrusion of rectangular spaces off the earth moulded by hands (Figure 2). The corners of walls (built in courses or *dankyimie* measuring 300-450 mm using fermented and kneaded mud) are tapered to the top while some walls are further buttressed with tapered pillars in order to improve the stability of the walls. Even though the walls have heights between 2400-3000 mm and an average width of 450 mm, the structural support to the flat roof is carried by a framework of un-sawn (“bush-cut”) timber columns (*lugɛɛ*) and beams (*wɛgro*) with residual loads supported by exterior walls. Timber battens (*dasɛrɛ*) create a rigid platform to receive the freshly prepared mud layer as the roof covering which is compacted into place and finished with cow-dung and clay plaster. Access to the roof is by carved wooden ladders placed at strategic points and equipped with supporting logs as hand rails for people climbing or descending the ladder.

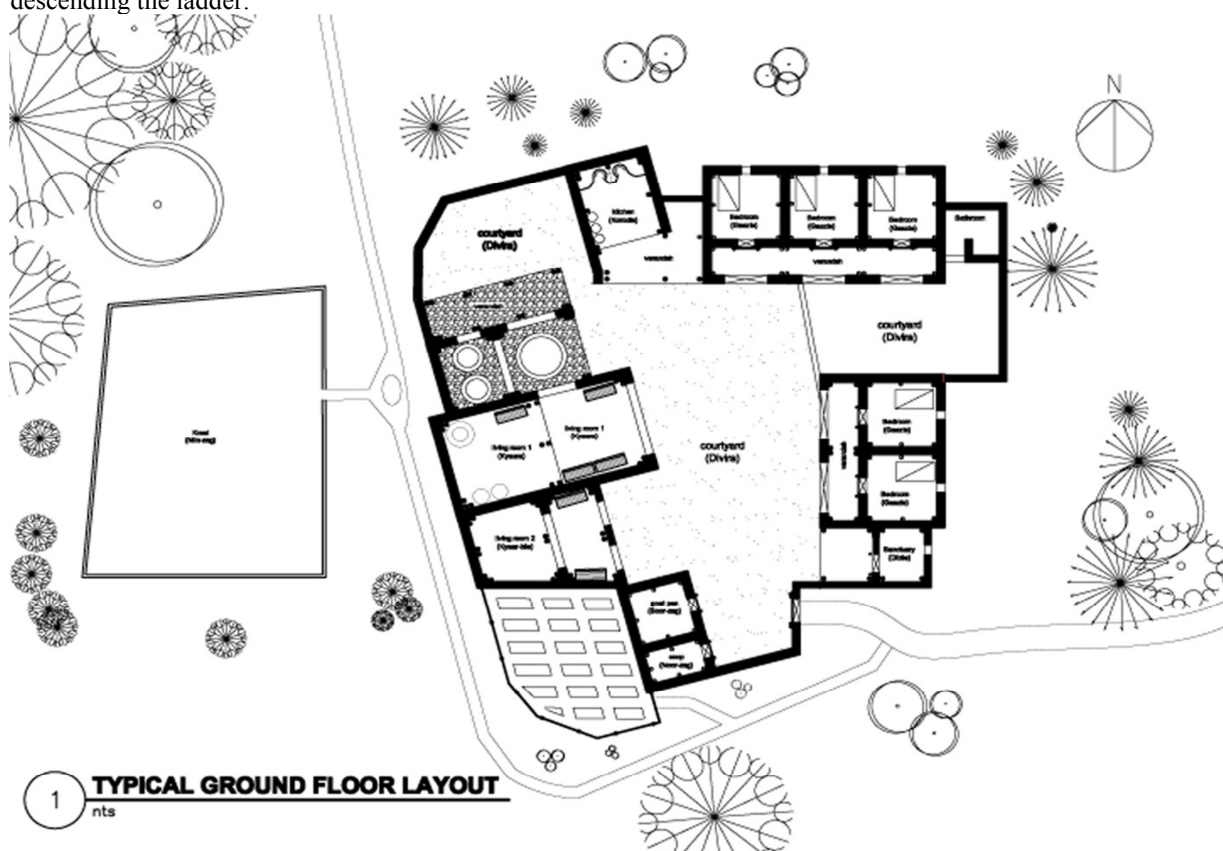


Figure 3: Typical Floor Plan of Dagara House (Source: field survey, 2013)

Openings for doorways and windows are primarily cut through the mud walls to serve their function of access for humans, light and ventilation. The windows (*tokoe*) can best be described as holes in the walls while the doorways (*die'dɔr, die'dɔlee diedɔrkpɛɛ*; door names according to size) are covered door leafs made of grass (*zaana*) mat or woven twigs. It is by now obvious that the Dagara House harnesses its surroundings for its creation. This concept of human relationship with nature has been applauded by brilliant scholars such as Rudofsky (1964), Rapoport (1969), Özkan (1985) and Oliver (1997).

The expression of the architectural form of the Dagara House may well be in sync with Rapoport's (1969) views that, the indigenous or vernacular architecture works with the site and micro-climate, respecting other people and their houses and the total environment, man-made as well as natural. The Dagara House is therefore not in isolation but in a community of other houses forming a typical settlement or village. Houses are located in a dispersed but organically patterned manner to make room for farming around the houses and for livestock rearing. It is important to note that every activity regarding life in the Dagara House is catered for spatially. The full complement of the spatial composition of the Dagara House has been discussed in detail in the

ensuing sections.



Figure 4: Panoramic view of a Dagara House (photo: field survey, 2013)



Figure 5: Cooking area (photo: field survey, 2013)



Figure 5: Courtyard (photo: field survey, 2013)

4.2. The Courtyard(s)

The courtyards (or *divira*; Figure 5) in the Dagara House are the spaces created by the enclosure of rooms in the house. A house may have more than one courtyard, that is, a major courtyard and minor courtyards serving other portions of the living quarters. The multi-courtyards come about as the house grows through the addition of living quarters by sons who have married and are raising families. Culturally, the sons with the permission of their father would attach their house to the old house of the father(s). Thus a typical Dagara House is a collection of the extended family of sons, fathers, uncles, and grandfathers with their wives and children living in identifiable quarters.

The courtyard serves many uses which include; meeting area for families, alternative resting/sleeping grounds especially in the hot season, storage space for farm implements and xylophones, firewood, drying floor for harvested food crops, burial grounds for family heads, playground for children, story-telling, ceremonial grounds for baby out-dooring and receiving marriages. The other uses are the courtyard defines space for circulation and linkages to other spaces and acts as a reservoir for receiving fresh air and day light into room spaces. The courtyard therefore has social, spiritual, physical and technical significance in promoting the living conditions and needs of the people. There is no identifiable measurement or reason for the sizes but most often determined by the family size and capacity.

4.3. Sleeping Quarters

The Dagara House is made up of sleeping quarters (*digani* or *gaabzie*) accommodating male adults, female adults, guests, and children in separate bedrooms. The bedrooms are rectangular in shape just like other rooms in the house (see Figure 2). However, the room is primarily furnished with grass mat(s) (*s□ng*) which serve as sleeping mats for the households and guests alike. The female sleeping quarters would normally be placed near the children's sleeping quarters, while the male sleeping quarters is placed near the main entry to the house. The family head may have his sleeping quarters in the *B□□pi□* upstairs. The rooms are equipped with minimal openings for ventilation and lighting. Due to the wide diurnal range, even though the daytime can be very hot, the cold nights are accommodated suitably indoors with warmth because of the thick perimeter mud walls. The Dagara people are very spiritual, pleasant and caring (Suom-Dery, 2000) that a visitor (*saán*) is normally treated with utmost respect and veneration, so every Dagara House makes provision for visitors (*saám□*). As rightly observed by Prussin (1974) there is hierarchy and jurisdiction over space in the house among members of the household and even visitors.

4.4. Living Quarters/Resting Parlours

The living quarters (*Kyaara*) is a common space in the Dagara House located next to the kitchen and shrine spaces and furnished with seats carved out of timber and arranged along the perimeter of the room. It is a resting room for the family and a reception space for visiting guests. The *kyaara* usually has an opening towards the main courtyards. The observation regarding this orientation is that fresh breeze from the courtyard tunnels through the wide opening into the *kyaara* (see Figure 2). The *Kyaara* also contains clay pots containing drinking water as well as hangers for farm implements. This *kyaara* in the Dagara House plays an important role of creating a common platform for family members to sit together, hold meetings; rest after working on the farms, and even have meals.

4.5. Cooking area

The kitchen (*Korodie* or *MiirÖdie*; Figure 4) is normally placed next to the *kyaara* or separated by a small courtyard. It contains cooking stoves moulded in tripod supports from clay and fuelled by firewood. The women stockpile fuel wood from the farms and neighbouring bushes. Large clay pots and sizeable ones contain clean fresh water and fermented water called *miirko* which contains the local staple food called *saab*. Other storage containers include baskets, clay bowls and processed animal skins for storing flour, salt, dried vegetables, dried meat and spices. The biggest challenge of the design of the *Korodie* is the limited openings which affect the quick escape of smoke from the burning firewood. Hence women who traditionally do the cooking suffer smoke inhalation and tearful eyes from the smoke exposure. In fact the only opening may be found in the roof to allow smoke to escape. Rising smoke therefore engulfs the whole room leaving roof battens, timber columns and beams dark from soot.

4.6. Food storage granaries, flat roof and auxiliary storage spaces

Storage spaces are very important to the Dagara people in the house because whatever is stored has a future use and cardinal to the survival of the people. For instance the storage of selected grains from the harvest for use in the next farming season if not properly carried out will affect the farmer's ability to cultivate come the farming season. Thus, the Dagara house contains granaries of various sizes built to store various crop products from the harvest. The granaries (*bogr-die*) as shown in Figure 6, are usually shaded with a flat canopy supported by a framed structure of 'bush-cut' timber. The *bogr-die* is placed next to the *kyaara* and opens towards the main courtyard. The wisdom with this orientation is to promote cross ventilation of the silos/granaries so as to maintain and prolong the storage period of the grains. The floor supporting the silos is raised about 300-450mm above the surrounding floors to prevent any water arising from roof leakage. The silos are usually constructed of a mixture of clay and straw-stabilizers and built cylindrically to taper at the opening similar to a clay pot.

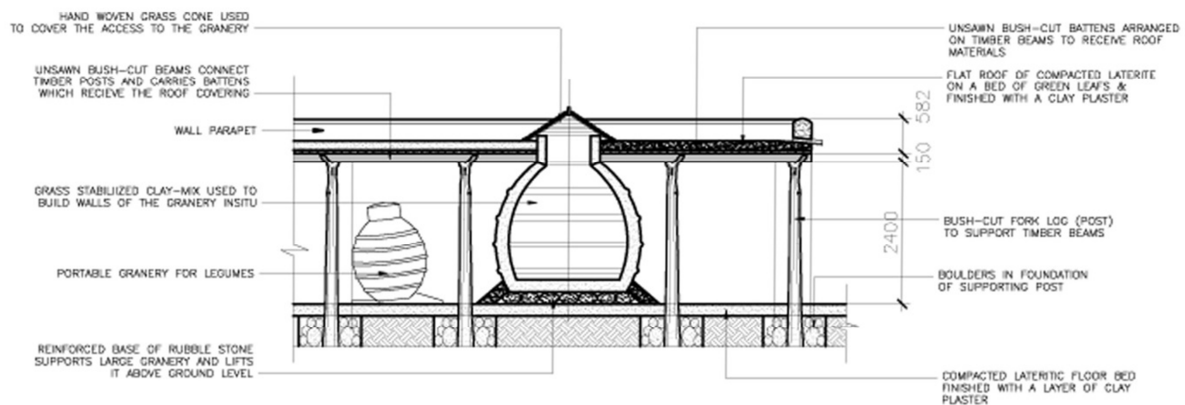


Figure 6: Section through a large granary (source: field survey, 2013)

Access to the large silos is from the roof where the openings are covered with thatch woven hut/cone. The larger silos are used for storing millet, guinea corn and maize, while the smaller ones are used for storing groundnuts, cowpeas, dry vegetables, dry fruits, etc. The flat roof also serves as additional utility space for storing and drying newly harvested crops, and for sleeping purposes in the hot season of the year. The flat roof is designed and constructed of *fermented* and kneaded mud like the rest of the house and finished with a clay-cowdung mix render. The flat roofs at different heights, are further equipped with parapets moulded and projects from the exterior and interior walls. The parapets define the boundaries of the roof and serve as protection for users of the space. The mud parapets monolithically blend with the mud walls and the layer of mud covering the roof. Hand carved wooden spouts placed at vantage points take rain water off the roof safely. Even with these interventions, the flat roof remains the biggest challenge to the performance of the Dagara House.

4.7. External Boundary walls

External boundary walls enclose both rooms and courtyards with defined entrances to various quarters. The walls show the extent of the house in terms of size and enclaves. The walls also act as secondary load bearers to carry extensions of beams from the timber structural frame. The layered course work of the mud wall, the array of projections from the beams, the varied levels of projected parapets above their roof-lines, the limited or no window openings, and the thatch roofed upper rooms define the typical facade of the Dagara House. Prussin (1974) highlighted that the savannah climates require a solution which can cut the biting cold winds while providing cool respite from the intense heat, hence the savannah builder will rather maximize thermal properties of the thick walls rather than maximize ventilation. Since the external boundary walls are the interface with the surrounding environment, cautious vernacular wisdom has been applied to maximize their performance for indoor conditions.

4.8. Animal quarters and Vegetable gardens

Dagara people like other northern cultures raise domestic animals such as poultry, goats, sheep, pigs, cattle, and dogs. Provisions are therefore made in the house to accommodate the animals in coops, pens and kraals. Pens and coops are usually located at the main entrance to the courtyard(s) built out of mud with limited openings. The scale and number of pens in the house depend on the number of animals owned by the household. Cattle kraals are usually located outside the house in the surroundings and built of a fence of bush-cut sticks and woven together using locally harvested fibre. Over the years, most of the Dagara Houses have lost their cattle to poverty, theft and/or disease; hence the number of houses that owned cows are limited. The domestication of animals at home provides a good protein source for the household. Animal ownership also gives status to household heads and also guarantees a means of exchange for transactions.

The culture of backyard farming and seasonal vegetable gardening are common practices in the Dagara House. The vegetable gardens are created using twigs to make fencing enclosure around the vegetable beds. Water would normally be sourced from hand-dug wells around the house. Homes that do not have water wells source their water from the nearest well in the community or from the river down the valley. The vegetables cultivated in the gardens include okra, pepper, pumpkin, garden eggs, tomatoes, and beans. Additional gardens around the nearest river body supplement the vegetable needs of the house.

4.9. Maintenance culture

The Dagara House requires constant attention regarding maintenance. After the rainy season, problem areas are first identified and the necessary material resources mobilized and prepared for a fixed day to carry out the maintenance works. Some of the maintenance works include replacement of rotten timber members, and regular repair of sagging roof structure. Other maintenance works include repairs to cracks in walls and floors, leaking roofs (both thatch and mud), as well as derelict rooms that have to be demolished. Apart from the major repair works, routine maintenance activities such as cleaning of rooms, courtyards, animal pens, roof tops and general surroundings also form part of the maintenance schedules. Wall paintings are rare in the Dagara architecture and so do not form part of maintenance schedules. A notable observation regarding maintenance is that the local people usually plan ahead of the season and their farming schedules and would even inform neighbours to lend their support in a communal fashion for the maintenance works especially if the scale is large.

5. Changing architectural morphology and constraints to architectural heritage

Over the decades the architectural heritage of the Dagara House has been under threat from influences emanating from rural-urban migration as well as urban-rural migration, formal education, religious and socio-cultural transitions. The architectural integrity of the Dagara House is fast changing in spatial form, materials, functionality, and technology due the impact of modernity (see Figure 7). It is important to emphasize that, the pressures that the Dagara House is suffering now, is not new. For instance, the Asante wattle-and-daub thatch compounds, the circular mud and thatch compounds of the Kusasis, Builsas, and Kasenas in Upper East and Dagombas, Mamprusis, Gonjas, Konkombas and Talensis in Northern regions have all suffered the impacts of modernity.



Figure 7: Present condition of the Dagara House with introduction of 'modern' metallic roofing material (photo: field survey, 2013)

The field survey revealed that, rural-urban migration has over the decades contributed to the changing morphology of the Dagara House. For instance, van der Geest (2011) observed that Dagara migrants work in white-collar jobs like teaching and nursing and would normally return home after some years with new ideas, new aspirations and new lifestyles. Characteristically, these returnees would acquire land either in their villages or peri-urban areas in the Dagara land to build a 'modern' house as their dwelling. These 'modern' houses would normally contain spaces akin to the acquired lifestyle and family structure of the person. Spatial form, materials and technology for the construction of the "modern" house are very different from the indigenous features of the architecture. Family structure, as observed by many authors, therefore influences the form and spatial organization of housing (Bourdier and Trinh, 1996; Cornell, 1997; Rapoport, 1999). Other traditional and environmental features such as rectangular forms, courtyards and stabilized mud are usually absent in these newly built houses. Rapoport (2000) observed that culture and environmental quality profiles and specificities have not had their rightful place in housing needs. This is the bane of the Dagara people regarding the Dagara House in modern times. A cursory observation of the settlements of the Dagara people reveals an imagery of houses losing the identity of an important cultural heritage.

As a result of years of exposure to elements of urbanization and lack of conscious advancement of the Dagara House, the architecture is gradually fading off the surface of the earth and the cultural map of the Dagara people. A tapestry of Dagara architecture today cannot be presented without a blemish from one external influence or another. Could the architecture have advanced from indigenous handcrafted houses to modern constructed houses today? The obvious answer is affirmative. There are numerous cases across the world to lend credence to the place of indigenous architecture in modern times of any culture. Pearson (1940), many years ago underscored the importance of indigenous architecture in the advancement of the humanity in giving vital ecological lessons for sustainable living. He cited the *malqaf* wind scoops of the Middle East still incorporated today in modern houses, the massive thick walls and high ceilings that kept buildings cool in hot regions still relevant and utilized today. Features of the Pueblo architecture of Native Americans have found places in modern house design and construction in Arizona, and New Mexico (see Vint and Newmann, 2005).

From the 19th Century, efforts have been made by various cultures around the world to preserve or find a place for their indigenous architecture as time passed by. Pearson (1940) observed that movements were emerging in many countries with the motivation to move away from modernization to restoration or conservation. Open-air museum is one concept that has promoted the preservation of folk living. Examples include Skansen in Sweden, Forbidden City in China, International folk villages in Paris and Viena, Folk Village of South Korea, Weald and Downland Open Air Museum of Sussex England and many more. Dagara people can adopt this concept to safeguard the architecture for posterity.

The drift from vernacular wisdom in building houses in the Dagara land has promoted an indiscriminate use of modern building materials as mentioned earlier. Even though the culture can boast of a good percentage of formally educated people, the translation of this education into the facets of traditional lifestyles has seen very limited significant development in the traditional architecture.

In fact some interviewees from the field survey lamented that the current situation of the Dagara House is a threat to the cultural identity of the Dagara people. For instance; One respondent observed:

"our way of living which was supported by our way of building has changed drastically, all because our young men go down south and come back with packets of roofing sheets". Another respondent observed that, *"houses roofed with the 'iron sheets' become very hot in the afternoons making it impossible to rest inside after farm work".*

Another respondent rhetorically questioned that:

"the white man brought us new knowledge, our people accepted it, threw away the gods, went to church, went to school, but what happened? Did we learn to make our houses better stronger.....and show who

we are?"

The knowledge of new building techniques acquired through colonialism failed to incorporate existing indigenous building wisdom. For instance the following could have been considered; i) weaknesses found in the local architecture could have been overcome with modern knowledge while embracing the local wisdom in house construction, ii) the use of thick mud walls to provide insulation against atmospheric heat for indoor spaces, iii) the social and cultural activities of the Dagara House could have found places in modern design, iv) the economic related activities could have been incorporated, and v) the spiritual (new spiritual orientation) could still find a place in today's Dagara House. A respondent summed up the foregoing that:

"our houses were built by the community and everybody supported without asking for pay, but now we do not have that, even the plants and trees that gave us fibre, logs and so on, have been burned down,.....even the cows that gave cow-dung for the plaster and hide for leather have all been stolen, so we cannot get enough raw materials for plaster and other construction works for our houses".

6. Recommendations and Concluding Remarks

Notably, there are many indigenous architectural heritages in Ghana that are suffering the same situation discussed above. For that matter, the following recommendations regarding the way forward in preserving and promoting the Dagara House are presented. The recommendations include the following;

- Further research is required to underscore and validate the potential for enlisting the Dagara House and architecture as a world heritage asset.
- There is the need for academia, and practitioners especially in Ghana, to show sustained research interests in indigenous architecture in order to develop it to an advance level.
- Architects, especially those practicing in the study area, should utilize the indigenous architectural concepts in the design of new houses. Ghana Institute of Architects should institute award schemes for architects that promote indigenous architecture in Ghana.
- Media programming and reportage could target traditional building practices in a positive light through television and radio documentaries and discussions
- Direct policy interventions from Governmental and Non-Governmental Bodies regarding cultural promotions could target rural dwellers with incentives and support for building and sustaining the architectural heritage.

This paper set out to present an architectural narrative of the Dagara house in its past, present and future perspectives. A major conclusion drawn from the field observations is that, there is a growing disinterestedness in the natural condition of the Dagara House but rather a growing interestedness in the use of foreign materials for building houses. This has been observed to be from a number of factors such as colonization and its remnants, rural-urban interaction, disregard for environmental and local climatic conditions. The story of the Dagara House is not isolated.

Acknowledgement

The authors wish to sincerely thank the Cultural Initiative Support Programme (CISP), the Ghana Government and the European Union (EU) for the financial support during this research. We also recognize and thank Mr. Constantio Nurudong of Kogle, Nandom for his constructive contribution on the Dagara House. Our sincere thanks go out to all rural folks who shared their knowledge and concerns on the Dagara House during the field work.

7. References

- Anselm, E. O. and Ojonigu, F. A. (2010) The Influence of Rainfall on Hausa Traditional Architecture. *Research Journal of Applied Sciences, Engineering and Technology*, Vol. 2(8): pp. 695-702.
- Bodomo, A. and Hiraiwa, K. (2004) Relativization in Dagaare. *Journal of Dagaare Studies*, Vol. 4: pp. 54-75.
- Bourdier, J. P. and Trinh T. M. H. (1996) *Drawn from African Dwellings*. Bloomington Indiana: Indiana University Press.
- Cornell, L. L. (1997) House Architecture and Family form: On the origin of vernacular traditions in early modern Japan, *Traditional Dwellings and Settlements Review* 8 (2) Spring: pp. 21-31
- Cross, J. E. (2001) *What is Sense of Place?* 12th Headwaters Conference Western State College, November 2-4, 2001.
- Fatty, H. (2006) Natural Energy and Vernacular Architecture. In: Jencks, C. and K. Kropf (Eds.), *Theories and Manifestoes of Contemporary Architecture*. 2nd Ed., John Wiley and Sons Ltd., Sussex, pp: 144-145.
- Graham, B. (2002) Heritage as knowledge: Capital or culture? *Urban Studies*, Vol. 39(5-6): pp. 1003-1017.
- Jorgensen, B. S. And Stedman, R. C. (2006) A comparative analysis of predictors of sense of place dimensions: Attachment to, dependence on, and identification with lakeshore properties. *Journal of Environmental Management*, Vol. 79: pp. 316-327.

- Kuba, R. and Lentz, C. (2001) The Dagara and their Neighbors (Burkina Faso and Ghana). *Electronic Journal of Africana Bibliography*, Vol. 7: pp. 1-63
- Kuupuo, S. K. (2010) Some Facets of Dagaaba Folk Wisdom. *Journal of Dagaare Studies*, Vol. 7-10: pp. 41-52.
- Lentz, C. (2006) *Ethnicity and the making of history in Northern Ghana*. Edinburgh: University Press.
- Lentz, C. (2000) Of hunters, goats and earth-shrines: Settlement histories and the politics of oral tradition in Northern Ghana. *History in Africa*, Vol. 27: pp. 193-214.
- Nakuma, C. K. (2002) Guide to the Dagaarhre Orthography. *Journal of Dagaare Studies*, Vol. 2: pp. 1-44.
- Nnamdi, E. (1996) *African Architecture: Evolution and Transformation*. McGraw-Hill
- Oliver, P. (1997) *Encyclopaedia of vernacular architecture of the world*. UK: Cambridge University Press.
- Ozkan, S. (1985) Regionalism within Modernism, in *Regionalism in Architecture*, ed. Robert Powell, Singapore: Concept Media The Aga Khan Award for Architecture.
- Pearson, D. (1940) *Earth to spirit: in search of natural architecture*, Chronicles Books, San Francisco, CA.
- Porekuu, D. P. (2001) *Memoirs of Most Rev. Peter Porekuu Dery: Archbishop Emeritus of Tamale*. Tamale, GILLBT Press.
- Porphyrios, D. (2006) Classicism is Not a Style. In: Jencks, C. and K. Kropf, (Eds.), *Theories and Manifestoes of Contemporary Architecture*. 2nd Ed., John Wiley and Sons Ltd., Sussex, pp: 179-180.
- Prussin, L. (1974) An Introduction to Indigenous African Architecture. *The Journal of the Society of Architectural Historians*, Vol. 33(3): pp. 182 – 205.
- Prussin, L. (1969) *Architecture in Northern Ghana. A Study of Forms and Functions*. Berkley: University of California Press.
- Rapoport, A. (1969) *House form and culture*. Englewood Cliffs, N. J.: PrenticeHall.
- Rapoport, A. (1999) *On the Relationship between Family and Housing*, In: Awotona, A. (ed.), *Housing Provision and Bottom-up Approaches (Family Case Studies from Africa, Asia and South America)*. Aldershot: Ashgate. pp. 1–36.
- Rapoport, A. (2000) Theory, Culture and housing. *Housing, Theory and Society*, Vol. 17(4): pp. 145-165.
- Rudofsky, B. (1964) *Architecture without Architects: A short introduction to non-pedigreed architecture*. London: Academy Editions.
- Schreckenbach, H. (1983) *Construction Technology for a Developing Country*. GTZ Publications: pp. 21-72.
- Smith, L. (2006) *Uses of heritage*. New York: Routledge.
- Suom-Dery, E. (2000) *Family as Subject of Moral Education in the African Context: Incarnating Christian Ethics among the Dagara of North-western Ghana*. Hamburg: Verlad Dr. Kovac.
- Throsby, D. (2001) *Economics and culture*. Cambridge: Cambridge University Press.
- UNESCO (2006) *Cultural Heritage and Local Development: A Guide for African Local Governments*, Published by CRATerre-ENSAG / Convention France-UNESCO.
- Van der Geest, K. (2011) The Dagara farmer at home and away: Migration, environment and development in Ghana. *African Studies Centre*, The Netherlands.
- Vint, B. And Neumann, C. (2005) *Southwest Housing Traditions: Design Materials Performance*. Report Published by Partnership for Advancing Technology in Housing (PATH) pathnet@pathnet.org

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

