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Transformation in "*HAUSA*" Northern Nigeria Traditional Residential Architecture

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ABSTRACT

This study assesses the *Hausa* traditional residential houses with a view to identify transformations in *Hausa* Traditional residential architecture and to investigate reasons and for the transformation. A minimum of 16-40 houses on each ward were purposely selected for the survey. A total of fifty-three (53) wards from (8) eight Local Governments in Kano Metropolitan making a total 1010 houses were studied. Results obtained revealed that, the foundation in the traditional *Hausa* Architecture was excavated at 300-400 meters depth, roofing system were exposed to single or double pitch and made of timber rafters purlin. Finishes in the Hausa traditional Architecture was made of cement plaster. Furthermore, the open spaces area ranges from 15%-35% of the total land area.

Introduction

Saad (1986) asserted that' the basic component required to delineate concepts in order to come up with a design of a house that will meet the approval of "*Mallam Bahaushe*" (*Hausa* Residential House) is to fulfill some basic pre-conditions, firstly, the house has to accommodate a single family or extended family almost invariably that have agnatic relation. In matrilineal dimension such house has to be conceptually be sub-divided into *Cikin Gida*, (Inner core) "*tsakar gida* (central core) and *waje* (outer core) the house has to be flexible, enough to meet the spatial requirements of an extended family, whose size is traditionally never static. The house has to averagely satisfy thermal comforts for the occupants within the three distinct, climatic seasons. Other features includes courtyards, thicker walls *zaures*, foyers, smaller opening; external finishing in mud (*Makuba*) with engraving design and *Zanko* or *Kashin Magani* at the top of the building beautifully expressing the aesthetic of **"*Hausa* Architecture"**typical or common *Hausa* in both Rural and Urban housing and its environment.

The theoretical stand of this study is that strong relationship exists between spatial transformation of analyzed variable geometric shape, and form, planning concept, building materials and construction method. Vis-vis to socio-economic factors of income, inheritance, western education, marriage, lack of space and new materials to the extent that the magnitude of transformation in *Hausa* Traditional Architecture is as a result of Socio-cultural, economic and educational dynamism of the society. At the same it is assumed that different ethnic and occupational group may as well adopt an **archetype, termed (contemporary) Kano Archetype** for a"***Hausa* man"** of modern times in an attempt to formulate design theory and data on average geometric sizes and form construction materials and standard of *Hausa* traditional residence.

Literature Review: (Hausa Traditional Architecture)

The first work that specifically deals with domestic architecture was the two seminal works of **Foyle (1951 & 1952).**This deals with the House of rich merchants in Kofar Mata ward of the Kano city, and the official residence of district officer in Kano respectively; the works were mainly descriptive and technical, and lack any social content.

Schwerdtferger,(1971&1982) specifically traced changes in domestic house form as a result of changes overtime, as such it look more of descriptive work. He found a direct relation between changes in family size and com position, and the changes in domestic house construction and concluded that the ability of family to alter house form (transformation) to suit their needs is contingent upon the prevailing socio-economic forces, **Umar (1997, 27).**

"Prussin"(1968-70's, 80's,1990),her several works extensively surveyed the architecture from region. In its various aspects,from its history,it's construction techniques, to its socio-cultural basis.

"Clapperson",who visited Kano in 1926,writes about residence of king,the German traveler Henrich Barith who visited Kano in 1851 left a vivid description of the architectural details of the King's reception hall with its huge architectural and magnificent ceiling **Barth (1965),**and a German**"Paul Staudinger**" made a similar observation in 1885, **Moody (1967, p14).**

The work of Moughtin on"*Hausa* Architecture" in 1985 is broad based incorporating planning, construction of decoration he summarized that,"new ideas"from outside (*Hausa* land) from time to time, were responsible for the (transformation) in final form of Hausa architecture, he added that, Mud wall though developed in West Africa "Sudan" it is more likely to have been imported from advanced culture.

The most accurate and most detailed work on Hausa architecture is perhaps the work of **Saad (1981),** it makes a unique contribution to the study of Hausa architecture, Saad,

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attempt to understand the role of individual creativity of master builder "magini", the work is full of details on some important aspects of architecture (i.e scale, use and perception of space, symbol, and meaning, aesthetics and decoration etc.

Most Recent Work: is that of **Domowchosky (1990)** vol. III in which he deals with the architecture of the Northern Nigeria with detail discussion and documention with aid sketches and photographs.

Other works,that directly deals with "Hausa architecture" on spatial culture,are the works of **"Trevallion" (1966) Hull (1977) Frihsman (1977) and Nasti (1992),** these works were concerned with Planning, Sociological,geographical and spatial growth in relation to the economy. Oliver (1971) is a collection of essays by architects planners and environmental experts on indigenous African Architecture including seminal work or **Schwerdferger** on Housing in Zaria **(1971).**

Another work worth mentioning is that of Trevor (1993) a researcher from Montreal University Canada who studied Hausa Traditional Architecture (case study Zaria township), Umar(1997),studied the"Socil-Cultural Morphology"of Hausa Living Spaces using Syntax method,and Cited Papoola 1984 that the house, has four transformational stages of growth which we may be termed the minimal, prevalent the mature and the optimum stages.

i. **The minimal stage contains:-***Daki, Zaure, Tsakargida* and *Bandaki* (kitchen)Room,Foyer,Courtyard and Toilet respectively.

ii. **Prevalent stage:-**House expand to contain Dakin girki (Kitchen) Rumfa and Daki two more room) possibly a second Zaure.

iii. **Mature Stage-**The house grows and re-configure,it include more family room and *kofar gida* (outer yard) one other toilet etc, possibly a Turaka (Private Area for *maigida*)

iv. **Optimum Stage:-**The House grows to include upper story with two room suites as the case may be.It should particularly be noted that the stage are not uni-directoral in other word, it is possible to find a case where House grows from the minimal to optimal stage.

It should be remembered that, the final form the house takes will naturally depend on the size, form, dimensions, building materials and components used to construct it.

The aim of the study it to identify transformations in Hausa Traditional residential architecture and to investigate reasons and for the transformation.

Research Methodology

Kano State has (44) Local Government Councils, (LG guide 2001).According to 1991 census, the state has a population of about 5.6million; the sex ratio is slightly male skewed with 50.7%.The gross population density in broad terms decline away from the metropolis to rural areas, Kano Metropolitan attracts substantial number of immigrants, being the seat of government and center of commerce, investment, and education. The eight local governments that constitute the Kano"Metropolitan"area are Fagge, Gwale,Tarauni, Municipal, Kumbotso, Ungogo, Dala, and Nassarawa with a population of over three million and 60% built up residential areas they have been chosen for this study based on the following that:-

1. The (8) Local Government of Kano Metropolitan Area consist of over 200 registered wards according to 1991 census, whose inhabitants are middle-income earners.
2. They contain more than 90% of the sample needed for the study
3. They exhibit traditional setting in an improved or modernized format in town settlements.
4. As commercial and industrial nerve center of the state capital, they produce all necessary building materials for all types of construction in residential houses.

These local governments are considered adequate samples or representation; that have undergone a substantial and tangible transformation in traditional residential house.

Sampling Processes

For convenience, simplicity and administrative demarcation of Kano, sampling into sectors was based on the four cardinal points, North, South, East and West. In order to select houses for analysis, the city wards or (metropolitan ward) within the (eight) local governments areas were first identified, a representative sample wards were randomly and purposely selected from the four section of districts of the metropolitan. Initially, (20) students of the Kano State Polytechnic Department of Architecture were recruited as research assistants subsequently (5) research assistants were recruited from each local government (male (1/2), female (3/4), as the case may be from Works and Health Department. The assistant were given basic training on survey of houses measurement, drawings and administration of questionnaires.

A minimum of **16-40** houses, on each ward were purposely selected for the survey.A total of fifty-three **(53)** wards from **(8)** eight local governments in Kano Metropolitan, making a total **1010** houses, were surveyed. However, only **969** samples were suitable for analysis

Research Question

The study attempts the following questions:-

1. Occupant Source of ownership
2. Circumstance that led to the demolition and rebuilding
3. What are previous building materials, form and concepts?
4. Present concepts, room sizes and shapes and building materials.
5. What are the present changes in Zaures or sizes of rooms, courtyards?
6. No of occupants per room and household.
7. Currently or present, geometrical form, planning, materials and evaluation treatment.
8. Why abandoning tradition methods and concepts to new materials and forms, and materials known as contemporary. Than attempt to establish reasons for changes/transformation as predicted in the research hypothesis and document on the present residential houses its.Advantages or otherwise of contemporary buildings of residential houses in term of cost, durability, and comfortability

The questionnaire is used as an instrument for the study designed to collect data on the subject matter. The questions were be interpreted from English to Hausa when necessary, and conducted orally. It is divided into six parts, A-F respectively.

Results and Discussion

The parameters set out for preliminary research are thus, to obtain information vital to the study, were obtained, yet there is no record of any architectural layout of ordinary residential houses, few available are almost invariably for house of elites and the nobility as asserted by **Foyle (1951) & Dmowchosky (1990).**

In order to establish the basic characteristic of the present contemporary Hausa traditional residential architecture, there is need to examine these aspects or variables (geometry size and form, planning and building materials) these aspects are obvious, measureable and easily perceptible.

In analyzing the physical spatial aspect of the house in planning and elevational treatment certain things were common to the sample houses, whereas other variables depend upon family size,and plot size etc. this were discussed under the following six broad bases, namely – foundation, walls, roof, finished, floor areas, and planning concept.

However, it is noted that some of the'contemporary building' have few sheet, of sketches,(building drawing) used by mason or supervisors during construction, this may be attributed to the level of education of indigenes from technical schools and the polytechnic.

Foundation:-Foundation in the traditional Hausa Architecture are excavated at **300-400mm** depth,**300-600mm** using **150mm,** cement block rather than, Tubali of **300mm** depth 400-**600mm** width, wall construction 785 of the samples use 150mm cements blocks for both the internal and external wall,whereas neither the builder nor the owner knows the terms or differences between load bearing walls and non-load bearing walls. According to Umar (1997 p.244) houses were mainly constructed of "Tubail' hand moulded, sun dried moulded bricks then plastered with cement sand mixture, this completely supplanted the traditional makuba finishing, the roof with Azara,However, this study reveals that 48% of the samples analyzed are made of solid cement brick with partial solid base.

Roof construction:-Two basic roof types were identified in Kano Metropolitan:

Exposed single pitch roof or double pitched roof made of timber rafters purlins and beams with parapet wall and concrete gutter of 600mm covered with corrugated iron sheets with ceiling in place of traditional roof of (Azara) with mud in dome or plat form The study reveals that **68%** of the samples used corrugated iron-roofing sheet or Azara covered with cement concrete in upper floor popularly known as "African Decking".Whereas previous research reveals that wall/floor finishes were simple mud internally at two layers then smoothed and externally with Makuba floor were made with specialized mud for floor called Dabe **Saad (1986 Dmowchosky (1990**)

Finishes: wall finishes are made of cement plaster on cement brick previous research indicated that wall/floor finishers are either of cob or cement screed on Adobe wall and floor.However, it is observed that, floor finishing are still made in a similar way with instant mix ratio of 1:6 or 1:8, regardless of their expected requirement. However, currently decorations are made with specialized cement mortar (Mix ratio 1:4; 1:6)designed and engraved in wall painting, in form of multi colour of choice (white, blue, orange etc).

Floor finishes: Prior to introduction of cement on wall and floor finishes in early, 1990s for specialized purpose, made material to smooth surface wall finishes, floor as well as decorations was used around 1950, cement was introduced to plaster mud walls and floor, as well as Artistic decoration, painted in white ash (Farar kasa) **Dmowchosky (1990) and Sa'ad (1986)**

Floor area and occupancy ratio: The study reveals that there are little variations in the total floor area and occupancy ratio across the samples of (Contemporary Buildings). These variation depend on number of occupant and the magnitude of plot size in relation to total number of rooms thus depend largely on plot size ranging from **30ft x 30ft** plot with**, 3-4** room, **50ft x 50ft 4-6** room, with each accommodating a family of **(2 - 12)** respectively, as the case may be the total floor area per house bear little relation to the number of people in the house as seen is sample **BBG 042, 1.8sqm** is the least average sleeping area per person and **HTR/101 14.0sqm**,being the highest average sleeping area per person.

Generally, the number of person in a house relate poorly to its size, and more and more to the number of families it contained

This shows a significant decrease in average sleeping area per person as revealed by previous researchers 5**.25sqm Schwerdferger(1982)** and **4.8sqm Umar(1997)** respectively, 9.8 average areas per household (Zaria). However, the study reveals that there is a significant decrease in average floor area per person currently 1.85am and consequent decrease in living standard.

Planning concept (form and changes)

Previous research has revealed that Hausa traditional houses consist of series of Zaure,of rectangular or square shape depending upon the status of the owner with an average of **9-16sqm**,used to receive visitors and relaxation known as (**Birkin Bako) Saa'd (1986) Umar (1997),**presently it is in L or I shape of **2-6sqm** which has no relationship with number of occupants currently as entrance lobby is called **"Zoka Wuce".**

Similarly, in Contemporary houses has introduced a guest room with a toilet, usually provided at the front of the house of about **9sqm-12sqm,** which supplement the function of Zaure for guest. The concept of central Rumfa or parlour where family and guest congregate for discussions and relaxation in now diminishing to individual wife's parlour of about **9-12sqm,**the bedroom, and living room, furniture, bears no relations to room sizes and forms, generally depend upon the same status of Amarya (wife) or Maigida generally look congested with no circulation space.

Notably **65%** of the sample houses revealed that, each wife now has a room and parlour sharing a central toilet and kitchen of **2-4sqm** and **6-9sqm** respectively, accessed through a central courtyard of 9-16sqm, depending upon the plot size in Contemporary houses.The geometrical form,it reveals that; 80% of the sample house, room shapes and sizes are regular and uniform in rectangular or squares shapes, except in cases of plots at extreme edges, or irregular appears trapezoidal in shape. However, research reveal that, - Zaure has less do with utilitarian considerations, but more to do with wealth power and social status p. 185 **Umar (1997).** Interestingly, it was discovered that the Zaure now it serves as a utility, entrance lobby for circulation only.

Pit latrine: **Daldy (1945),** reveals that Hausa traditional latrines or toilet initially were flush on floor system called 'Ture' later a 'bucket' system followed by pit latrine of 4-6m depth covered with Azara slab later concrete slab presently, its soak 'away pit' at the external wall of the toilet with the squatting point internally joined by a PVC pipe of **1-0-1-5m** length slanted at a convenient angle slope of **5-10,** to the combined pit of soak away and septic tank outside, popularly called "**Sokawe"** in Hausa.

Wall construction: The persistence use of mud brick as an indicative of its, viability as construction materials, and also its feasibility from economic point of view **Umar (1997),** its discovered, that cement bricks replaces mud brick despite it cost little higher and faster to mould dry build, quicker, and neater than mud. However it is noted that; **46.5%** of the samples were built in cement brick of a single family houses and **33.75%** of the samples made in mud brick. The decision to resolve to brick is taken individually by the owner, rather than collectively by the family.

However, this changes has significantly affected the thermal comfort of occupants in room, when compared with mud brick which has **65%** thermal comfort satisfaction despite the seasonal variation of summer and winter periods where as cement bricks have less **50%** thermal comfort satisfaction in both the two distinct different season, hence occupant has to supplement or compliment with artificial system of cooling or heating system.

The opacity ratio:- (ratio of the 'open space' to build up area in a house ranges from **15% - 35%** of the total plot area the study discovered that,open spaces as courtyard is currently between **10% -25%** of the total plot area, indicating a decrease in area of household activities as well as spaces for lighting and ventilation and a consequent decrease in health condition.The concept of open space for Maigida "**Turaka"** and space for garden and rearing of animals currently has diminished (animals are now left in Zaure, or allowed to roam about outside in streets, space for other household activities is decreasing if not diminishing significantly.A smaller percentage is left for open spaces and greater percentage of sleeping areas with dense population.

The relationship between the sizes of the main functional spaces and the population of the house is more critical. It was discovered that (Daki) or room is the best predictor of number of occupants per house, **schwerdgerger (1982).** However, the study reveals that about two third **65%** of the houses in the sample has room occupancy ratio between 1–5 person per room. The mean sample is however, 9sqm presently rooms occupancy ratio has almost double from an overage of 1.40 in 1963 and **2.67 Umar (1997):**(presently **4.0**)indicating an increase in population and consequent decrease in housing condition **Kabir (2004).**Average sleeping areas per household is **4.0sqm** signifies reduction in previous researchers indicates **9.8sqm** and **5.0sqm** per household, **Schwerdferger 1982 a**nd **1997 Umar** respectively.

Nevertheless, previous works ,have specifically studied the concept and materials in Hausa traditional (mud-brick) architecture. According to **Daldy (1945)** the Art of mud is an inherited craft. But presently the art of mud and brick building "Contemporary" is not inherited art, rather skill acquisition of trained craftsman (**52%** skilled workers) who mainly uses indigenous materials and techniques as well as foreign materials and methods.

Elevation:- the elevation treatment portrays overall character, in effect the symbol and function of a building; aesthetics and decoration are purely elaborated with pinnacles (zonkwaye)monumental entrances with engraving of traditional motifs **Saad(1986),**but however, present Contem porary building portray elements of modern architecture in concrete material with pure creative decorations reflecting financial status of the owner.

One may not hesitate to speculate that the art of traditional masonry and mud craftsmanship is dying, that in the next 20 years or more there may be less than 5% traditional masonry of mud, due to death of older ones, the younger ones are acquiring Contemporary skills, and the people and society prefer "Contemporary" typologies.

Hence that family increases or changes is due to marriage, inheritance, wealth and education are some of the variables identified by previous works **Schwerdferger (1982).** But however, presently – not only due to the above mentioned but also, due to natural disasters, such as resettlements, and road constructions, which constitutes about **18.50%,** similarly the extended family houses are sub-divided into multi-nuclear or individual (unit) of family houses.

Conclusion

Judging from the **1010** sample of house analyzed there is growing tendency to prefer modern building materials most especially in walls roof and openings (in brick, zinc, and metal).Because of their durability viability with instant preparation, though cost higher than traditional mud and timber, the study shows over **50%** of respondents built their own houses.Having, noted that the current state of affairs is the decline in Hausa indigenous architecture particularly in these two board aspects of Hausa architecture; spatial concept, and art of building itself.

It is currently noted that; most of the building owners have been strongly influenced by contemporary building materials and construction components and method, while some have tried to adopt their indigenous taste to the new architectural dispensation.

The study reveals that the major reason behind the prevalent drive to modify or reconstruct (transformation) indicate that wealth 37.5% rain damage 15% marriage 17.5% inheritance 30% as indicated, furthermore the current high maintenance cost of traditional building, (the cost does not necessarily means in monitory terms, but in terms of time and labour).Significantly affects the present dispensation.

Similarly the aspect of building decoration has seriously suffered from this development, hence that the art of arched roof and interior calligraphy and engraving in (Daurin Guga), and exterior decoration as elaborate by **Saad (1986),** its giving way to zinc sheet and ceiling board decorations.

The spatial quality of the house (i.e the arrangement) location and expression of the principal functional space within the houses is not satisfactory, for most house inhabitant, to those areas particularly at Urban periphery or squatter settlements such as Dorayi, Sharada, Badawa, Kurna etc. Similarly there is a strong indication of environmental pollution, of liquid waste filtering the street from various houses, with poor drainage, and in accessibility for vehicles, lack of pubic and commercial spaces as indicated.

In addition the cooking space or "Dakin Girki" where it exist is minimally connected and segregated where there is no kitchen, cooking is conducted in Zaure or entrance lobby or an area appropriated from the courtyard. Study also observed that, 70% of sample houses uses kerosene stove for cooking (unless in case of scarcity or cost) they use firewood. These phenomena suggest the redesign in allocation of space for such function or activities.

It is also noted that most of the house have common toilet and shower, few have self-contained toilets for the master or guest and wives depending upon size of the family and wealth of the owner known as VIP toilet rather than pit latrine. The physical characteristic(i.e geometry and appearance) were recorded in an attempt to appreciate the modern trend in "Contemporary building" of Hausa traditional, domestic architecture at local level of Kano metropolitan city environment.

Conclusively study finally reveals that the reasons for transformation have correlation with inheritance, economic status education construction material etc, thereby establishing a new form and concept of Hausa traditional architecture the contemporary or Kano archetype. colonialism has been the major cause directly or indirectly of the major changes (transformation) in the architecture of Kano.

However, these changes are reflected more in appearance rather than in configuration, of spaces, is still valid, but however, on the other side it seem to be invalid, because configuration of space size and form have significantly changed, as observed.

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