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HOUSING DEVELOPMENT AND MANAGEMENT: A BOOK OF READINGS



Edited by
TUNDE AGBOLA
LAYI EGUNJOBI
C.O. OLATUBARA

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Edited by

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First Published 2007

Published by

Department of Urban & Regional Planning
Faculty of The Social Sciences,
University of Ibadan,
Ibadan, Nigeria.

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ISBN 978-245-416-8

Printed by Malijoe Softprint, Ibadan
© 0803 579 8918, 0803 441 0289, 0805 438 6050

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Preface

Whether we examine housing as an economic good, a social product or a fundamental human right, it is apparent that housing touches each and every individual in a very intimate way. Its stature has assumed increasing importance in contemporary times because of its many dimensions and especially its direct and indirect effects on the individuals, various economies and the society at large. For example, extant literature are awash with the sociological and psychological effects of housing on productivity and social well being of humans. Similarly, the economics of housing reveals, in increasing scale, the backward and forward linkages of housing to employment, productivity and by inference to poverty alleviation and many more. This explains the attraction of the subject to politicians even if their affinity is ephemeral. Similarly, housing has become a multi-disciplinary and trans-disciplinary subject involving many professions and professionals. Accordingly, housing can no longer be discussed and analyzed in the same narrow and myopic conception of old, as new evidences suggest a more pragmatic approach to knowledge acquisition, discussion and analysis of the subject.

This then is the rationale for this book. The aim of the book is to examine and present housing as a holistic yet disparate subject involving most of the allied building professions and professionals. The book is intended to be a one-stop shopping collection of housing materials that will appeal, educate and nourish various professionals in the housing and housing related fields.

The quest to write such a comprehensive book arose from the needs of students of the Housing Development and Management Programme of the Department of Urban and Regional Planning, University of Ibadan. The idea of a housing

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- O'Sullivan, A. (1996). *Urban Economics*. The Irwin Series on Economies, USA.
- Odudu, W.O. (1994). "Maintenance Management Culture". A Paper Presented at Seminar on Highrise Buildings in Nigeria: Problems and Prospects, Lagos.
- Olateju, Bayo (1994). "Maintenance Management Culture". Presented at the Seminar by European Economic Community, National Planning Commission and Federal Ministry of Works and Housing in Collaboration With Yaba College of Technology on Highrise Building in Nigeria: Problems and Prospects.
- Oyebamiji, A. (2000). "Maintenance of Public and Private Assets: Issues and Problems". An Occasional Paper Presented to the Department of Estate Management, Yaba College of Technology, Lagos.
- Oyefeko, S.T. (1990). "The Role of Maintenance Culture of Buildings in the Economic Development of Nigeria", *N.I.O.B. Journal*, Sept. 1990, pp. 4-7.
- Rothenberg, J. and Edel, M. (1972). *Reading in Urban Economics*, Macmillan Publishing Co., New York.
- Seeley, I.H. (1982). *Building Maintenance*, London, Macmillan Publishers Limited.
- UN (1962). *Report of the Ad Hoc Groups of Experts on Housing and Urban Development*. United Nations Publications Series No. IV.
- UN (1975). *Interregional Seminar on the Social Aspects of Housing*.
- WHO (1961). *Expert Committee on the Public Aspects of Housing*, Technical Report Series No. 225.

CHAPTER THIRTEEN

Elements of Rural Housing

WAHAB, BOLANLE

1. Introduction

Housing as a subject has a long and complicated history in relation to urban and regional (settlement) planning. This is perhaps borne out of the fact that in their search for means of survival, the second priority of the early humans after food was shelter --a place of abode free from attack by predators and the inclement weather. As the population of the early humans increased and the structure called "shelter" transformed from the cave to weak/temporary sheds, simple and isolated semi-permanent, and later permanent structures, shelter-centered issues started to manifest. There were such issues as what type of structures to build; number; size; components; materials to use and how to obtain them; method of construction; spatial arrangements of the structures; juxtaposition of shelter with other key elements of the settlement, especially circulation system and work-places and; managing these human abodes among others.

Housing issues have progressively become very complex, naughty, seemingly unmanageable and yet, very critical for urban and rural developments. They have, therefore, gained the attention of not only every human but a cross section of professions in the built environment, commerce and industry, health and sanitation, public administration, and agriculture, among others.

In urban and rural settlements all over the world, housing, whether in single unit or multiple forms, is unarguably the most predominant land use component. As Best (1962)

observes, residential land accounts for about half the total area of our towns and cities. Housing or residential usage is the single largest component in both rural and urban settlements and the most general. Housing is one of the key elements which link the tangible economic and social aspects of any settlement. As Agbola (1998) observes, housing is a set of durable assets which accounts for a high proportion of a country's wealth.

Housing issues do not, however, manifest themselves in the same form, magnitude, complexity and solutions. But while urban housing receives unparalleled attention of policy makers, politicians, public administrators, organized private sectors, NGOs and development partners, rural housing is badly sidelined. The Federal Government of Nigeria (1991 and 2006) rightly observes that public attention regarding housing was directed towards the urban areas almost to the exclusion of the rural communities (FRN, 1991). In a joint study carried out by the Nigerian Institute of Social and Economic Research (NISER) and the University of Ife (Unife) in 1982, it was stated that the housing problems of rural dwellers in Nigeria have been accorded very low priority in National Planning (see also Onibokun 1987 and Olujimi, 2000). Ahmadu Bello University (1982) also observes that in the provision of social amenities, the direct construction of houses and the granting of mortgage loans, among others, the emphasis of government actions favoured the urban areas more than rural areas.

Olujimi (2000) however, notes two cases where public authorities provided some housing in certain rural areas: (a) some of the 20 farm settlements in the old Western Region in the 1950s had modern houses built for the settlers, and (b) the Niger Dam Authority built 4,320 new and fairly modern houses to house the villagers displaced from 205 villages by the construction of Kainji Dam in the late 1960s. Olatubosun (1975) laments over the neglect of what he calls "Nigeria's rural majority" by governments. He elaborates on rural deprivations

in the areas of infrastructural facilities and services but hardly on rural housing.

A lot of literature abound on a wide range of urban housing issues (Onibokun, 1976, 1985, 1990; Onibokun and Agbola, 1990; Olatubara and Agbola, 1989, 1992; Agbola 1986, 1998; Egunjobi, 1980, 1998; Sule 1982; Jinadu, 2004; Adeniyi, 1972; Abiodun, 1976) ranging from delivery, policy and programmes, finance, and management, to formal and informal markets, affordability, cost recovery and infrastructure. It is not so for rural housing. There are scanty literature exclusively devoted to rural housing (Egunjobi, 1986, 1989; Onibokun, 1987; ABU, 1982; Olujimi, 2000; Akinbamijo 2000; Agbola, 1991; Sokomba, 1987; NISER and Unife, 1982; Yinusa, 1985; Obayiuwana, 1988; Mills-Tettey, 1989; Crooke, 1966; Dmochowski, 1990) while the subject is rather discussed as a small part of other main issues such as rural development, rural infrastructure, rural services, rural economy, rural resource management, and rural ecology (George, 2006; Sulyman, 2006; Olaseni, 2004; Amole, 1998). Rural housing deserves an elaborate, extensive and exclusive coverage not only because the rural areas make up 64% of Nigeria's population (FRN, 2005), the current slogan about the world becoming a global village deserves a very serious attention. Rural housing is an issue that must be given priority attention not only by federal, state and local governments, but also by professionals, especially settlement planners, housing developers and managers, architects, builders and quantity surveyors. This is to prepare the rural areas to adequately meet the housing needs of urban population that may be annexing those restful rural areas under the seemingly unavoidable world hyper-urbanization, especially in Africa by the year 2035.

This chapter is devoted to some aspects of rural housing. It needs to be stated from the outset that the chapter can neither cover all the relevant issues in rural housing nor exhaustively

discuss the few issues to be covered. The intention is to present salient points for other scholars to build on.

2.0 Rural Architecture: Some Conceptual Issues

As stated in the previous paragraphs, this chapter is essentially about rural housing. It will however, commence with a short discussion of some basic concepts that are considered germane to the understanding of the subject. The concepts include: 'rural', 'architecture/house', and 'rural housing'.

2.1 What Is Rural?

The term 'rural' has spatial, demographic, social, cultural, economic or occupational and even nutritional dimensions. Most definitions of the 'rural' characterize it by size and location. Flora et al (1992) characterize rural communities by the following factors: (a) population size (b) distance from urban centers (c) isolation (d) relatively homogenous cultures (e) an economy based on natural resources, and (f) a strong sense of local identity. The word 'rural' also means relative isolation from major transportation routes, from cultural institutions (town halls, museum, cultural centre, cinema houses), and long distance between communities.

Different countries use different population figures to define rural areas. The 1952 population census in Nigeria defined any settlement of 5,000 people as rural, while the 1963 population census defined rural as any settlement of less than 20,000 population (Olatunbosun, 1975). In Canada it is 1000 or below; India 5,000; Japan 30,000; USA 2,500; Mexico 2,500, while in Denmark a rural area is a center of 250 or less population.

Furthermore, the word 'rural' conjures up a variety of images: singleness of purpose, dull life, few non-native or stranger elements, low crime rate, small population size, mono-ethnic/linguistic group, absence of secondary and tertiary level activities, wide open spaces, closeness with nature, isolation,

freedom, privacy, solitude, intimacy, cooperation and collaboration and cultural homogeneity. To all these, Howard (1965) add: fresh air and low rents; abundance of water; bright sunshine; land lying idle; abundance of wood, meadow and forest; long hours and low wages; lack of amusement, and lack of drainage. Some of these features are reflected in the nature and condition of rural housing. Examples of rural areas are huts, farmsteads, nomadic and temporary grazing hamlets, villages, farm settlements, logging hamlets, mining community, hunting villages, fishing villages, railroad community, and holiday resorts (e.g. golf courses). Flora *et al* (1992) add ski slopes, retirement communities, Native American reservations, bedroom communities next to large cities.

2.2 Architecture/House

Architecture is a science as well as an art of building design and composition. Hornby and Cowle (1974) define architecture as "art and science of building", while building is defined as "house or other structure" and house is described as a "building made for people to live in". Among all the arts, architecture is the most firmly linked with human life and reflects its dynamics most faithfully (Dmochowski, 1990). The house is the most basic structure erected by people and the single most important thing ever built by most persons in nearly all-folk cultures (Jordan *et al*, 1994).

Folk architecture, which is another term for rural architecture, is the material expression and tangible product of a folk culture. Folk architecture, which Jordan *et al* (1994) rightly term "architecture without architects" is derived "not from the drafting tables of professional architects, but from the collective memory of a traditional [largely unassuming, intuitively rich and self-sufficient rural] people". A house reveals much about a region and culture (de Blij, 1993) such as the available building materials and construction technology;

the social and economic needs and aspirations of the people; their cultural traditions, religion and method of governance/administrations, and the natural environment that the house must be conditioned to.

Rural architecture, building or house, as we may find convenient to use, is conceived and consequently produced through an indigenous knowledge-based process which utilizes the collective mental images, knowledge and experiences, and adaptation of a people that change little from one generation to another.

A rural house is a reflection of a folk culture's expression or exhibition of identity, values, priority, aspirations, economy, technology, and industrialization. Rural houses are the visible material elements made, tested over centuries of social experiments and used by a people less influenced by westernization, globalization and modern technology.

Jordan *et al* (1994) describe folk houses as buildings that, as a rule, are beautifully suited to their physical environment and were produced by builders who, through centuries of trial and error learnt to construct dwellings that provide comfort and protection from the extremes and hazards of the local weather.

Rapoport (1969) conceptualizes the house as "an institution not just a structure, built for a set of purposes". A house performs the functions of rest and can be used for different activities (residential, medical, commercial, religious, vocational, communal and recreational). As a social unit of space or environment, housing has a profound influence on the health (social and physical well-being (Wiltgen and Wahab, 1997)), social behaviour, productivity as well as success and failure of the individual or group.

A house is any type of physical structure (temporary or permanent) which offers shelter and identity to humans (excluding auxiliary and environmental facilities). A house is also a physical and special compartmentalized enclosure that protects humans against the element and all forms of danger. It

is "a shelter that keeps one out of extreme weather conditions such as too hot or too cold temperatures" (Egunjobi, 1998). It can be built of stones, planks, mud and bricks.

Architecture ranks high among the proudest expressions of a rural or folk culture, especially in terms of identity and capability (social, economic, organizational, artistic and technical). Different types of houses were built by early humans in their efforts to shelter themselves against harsh weather and predators and also meet other needs (economic, social, spiritual and psychological). As de Blij (1993) observes, the ancient Egyptians built huge pyramids which, to this day, remain timeless hallmarks of the Egyptian culture. In the same way, the Greeks and Romans were noted for their great public buildings in the form of huge structures supported by very tall stone columns. One of the greatest material achievements of the Islamic nation is their great mosques with the beautiful domes and tall minarets. Non-folk (modern) culture's technological process is reflected in their 'reinforced concrete architecture', the steel and glass, and aluminum skyscrapers such as the Tower Eiffel in Paris.

2.3 Rural Housing

A house is a part of housing and the house becomes housing when we have it in multiple of houses/units provided with basic facilities and services for the physical, mental, social, economic, health, cultural and material well-being of individuals and families. Housing is often taken to mean shelter by the people in arctic winds, the snowy regions, and the tropical rains and hot sun who need protection against the elements and, in the same way, the mountain dwellers who need protection from enemies. However, housing is more than shelter. Agbola (1998) describes housing as a collection of characteristics to provide a unique home within any neighbourhood. He further defines housing as a bundle of

services and an array of economic, sociological and psychological phenomena.

Beyer (1967) defines housing as simply urban planning, and also a "product- a highly complex product, a bulky, durable and permanent product [with] a fixed location being used only in the place where it is built". Beyer goes further to describe housing as an economic and social process, as a large proportion of national wealth is usually in the form of village and city dwellings while 25 per cent of the personal consumption expenditure of a given population is housing expenditure.

Housing is the process of providing functional shelter in a proper setting in a neighborhood supported by sustainable maintenance of the built environment for the day-to-day living, working and recreation of individuals and families/groups within a community. Housing is the physical structure or house (temporary or permanent) which provides shelter for man plus all the auxiliary facilities (within and outside the structure and the environment of the structure which includes utilities, services and devices (manual, electrical, and mechanical) all of which contribute to the physical, health, mental and material well being, comfort and satisfaction of an individual or family.

Rural housing refers to a context of housing that is defined as rural (Amole, 1998). Rural housing connotes a social and cultural process by which an individual or group in a community acquires a territorial space to build a house, the method of building the house, of maintaining the house and its surrounding space and facilities, and the relationship between the household and immediate neighbours. Rural housing can also be described as an economic, social and cultural process which involves an intimate understanding of the basic socio-cultural and economic aspirations of the people. In other words, it is a process of socio-cultural and economic action for providing the shelter needs (requirements) emanating there from.

3.0 Types of Rural Architecture

Rural houses may be distinguished on the basis of:

- (a) Purpose;
- (b) Materials of construction;
- (c) Height; and
- (d) Floor plan (house form).

3.1 Rural House Types Based on Purpose Served

House types are valuable indicators of cultural traditions and transitions (de Blij, 1993). In the rural areas, the main types of architecture that may be found in terms of the purpose they serve include the following:

- (i) Domestic architecture (the houses in which the high and low people dwell);
- (ii) Religious architecture which is basically a worship or meditation center such as shrines, temples, churches, mosques, and pagodas. A pagoda is a religious building — a sacred tower of pyramidal form (e.g. a Hindu temple) or of several storeys (e.g. Buddhist tower);
- (iii) Secular architecture in the form of palaces (*'afin'*) of African Kings or monarchs (Obis, Emirs, Obas as in Nigeria), and castles which abound in the United Kingdom. Edinburgh castle is a classical example of architectural edifices produced by an ingenious folk (rural) society.
- (iv) There is of course what may be called work-place architecture built by the rural people. This is often a simple and casual structure built entirely of local materials serving as:
 - (a) production center (where blacksmiths produce tools e.g. hoes, axe and cutlasses for farming; implements of war/gaming e.g. bows, arrows, guns, or short axes for palm wine tapping); or

where potters produce a range of domestic utensils for cooking, eating and drinking; or where the indigenous brewers produce local gin such as 'ogogoro', 'burukutu', 'akpeteshi', 'otika' (guinea corn drink), and 'tombo'; or production of arts and crafts such as carved objects, woven textiles, baskets, mats and stools among others);

- (b) sale of local products including farm produce, food stuffs, arts and crafts materials and other items of needs by the local population, and
- (c) an observatory or surveillance point for surrounding houses (made possible the way it is spatially juxtaposed and strategically located along footpaths, which provide access to houses and other structures).

Public architecture is another type found in rural areas. This is a structure which serves as a meeting place for the people. An example is the community hall ('*gbagede*'). Although the secular buildings also provide space for public meetings and entertainment (especially in their usually very large courtyards), some activities require meeting outside the palaces or castles.

3.2 Rural House Types Based on Materials

Rural houses vary in size and materials from one region of the world to another. The small size and 'cheap' or 'primitive' materials and construction technique used reflect the modest means of the people. They include the following:

- (a) poles and leaves houses built by highly mobile (shifting/wandering) cultivators or food-gathering people of the tropical rainforests;
- (b) earthen (mud-walled) houses made from Swiss clay/mud (pounded earth) or sun-dried (adobe) bricks

- used by the sedentary or stationary subsistence farmers and hunters who dwell on highlands, river valleys and desert oases (e.g. Chinese farmstead, Yoruba and Hausa mud houses and the loam-made walled houses of the Igbos of Nigeria);
- (c) cave dwellings of the people who live in caves;
 - (d) thatched houses built of elephant grasses or thorn bushes by the nomadic people and their host farmers in the semi-arid and tropical savanna grasslands of Africa;
 - (e) stone houses (single-storey) with thatched roofs as found in Peru, Egypt, China, Ireland, India, South-Central Africa e.g. Zimbabwe, the Andean highlands of South America, and also built by the Mediterranean farmers who live in rocky lands;
 - (f) poles, thatch and mat-walled houses of highland Papua New Guinea, and the nomadic Fulani of Nigeria;
 - (g) traditional stone and brick houses of the Canadians;
 - (h) wattle houses (poles and sticks woven in an interlocking pattern and plastered with mud) found in South East of Nigeria and many parts of Africa along the west coast and the lowland basin, Indonesia, the Philippines, South of China and east of India;
 - (i) grass beehive-shaped houses of the African Zulus;
 - (j) Igloo snow house of the Eskimos of the frozen regions;
 - (k) skin or wool or cloth tents (light weight and movable shelters) of the Sami peoples of northern Finland and nomadic cattle and sheep herders of North and Southern Africa;
 - (l) log cabins of the United States, northern and eastern Europe and similar areas in the higher latitudes endowed with timber deposits; or the log houses with sod-protected (grass covered) roofs in Scandinavia (de Blij, 1993);
 - (m) sod or turf houses found in the prairie regions e.g. Russian steppes and the American Great Plains;

- (n) half-timbered, wood-framed houses found in central Scandinavia, South America, Germanic Europe, Norway, forested area of Southern Nigeria, and parts of Australia and China, and
- (o) Stilt (elevated) houses of people in flood-prone areas as in the riverine and delta areas of southern Nigeria.

In contemporary times, however, the types of houses found in many rural areas of Nigeria (especially those peri-urban areas or villages close to large urban centers) are (a) the purely traditional houses (where the floor plan, construction materials and techniques are indigenous; (b) modified-traditional (floor plan is traditional but materials are a mixture of traditional and modern); (c) modernized-traditional (e.g. courtyard house designed by draughtsmen and/or architects and constructed by western-trained builders using modern materials), and (d) the purely modern house. The (a)-(c) types are the most prominent.

3.3 Rural House Types Based on Floor Plan

The form of the house is influenced by the extent to which one lives in it and the types of activities that also take place in it (Rapoport, 1969). Culture plays a significant role in determining house form in folk societies, particularly as manifested in the various facets of culture: cosmology, religion, family and social structure. Altman and Chemers (1980) observe that one aspect of cosmology in relation to house form concerns horizontal and vertical dimensions of the universe. They note that Oglala Sioux of Indians have circular conception of the World and so design their homes and communities accordingly, while the ancient Chinese societies emphasized the regular quality of the world and so designed their communities accordingly (Altman and Chemers, 1980). The Yorubas of Nigeria believe that the form of the world is circular

or rectangular and build their houses and settlements accordingly (Lagopoulos, 1972).

In the pre-colonial towns and villages in Africa, the prominent house forms include:

- The square plan, flat-roofed Arab houses of Egypt and Northern Sudan;
- The round plan, conical (steep) roofed or trumpet-shaped houses of Tullishi of Southern Sudan and Uganda, Wanji of Tanzania, Luo and Kikuyu of Kenya and the Junkun of the Middle belt of Nigeria;
- The rectangular courtyard houses of Yoruba, Hausa and Ekoi of Nigeria or the earthen walls, mud hump-roofed courtyard dwellings of the Congo of Tanzania;
- The round, thatched roofed or the flat-roofed box-like houses of the Hausa and Fulani in the Northern plains of Nigeria (Olatunbosun, 1975) (see Figs. 1 and 2);
- The cone-on-cylinder dwelling of sedentary agriculturalists in Tanzania, Mozambique, Malawi and Zimbabwe;
- The round plan, oval houses of Ambo of Namibia and the Sotho of Lesotho;
- The hemispherical and beehive-like dwellings of South Africa (Hull, 1976);
- The rectangular (cloth) tents of the nomadic pastoralists of Ethiopia, some Tuaregs of Niger the Fulani of Nigeria, and others in the deserts of Africa;
- The bread-loaf-shaped dwelling of the Zulus of South Africa (Hull, 1976);
- The Pyramidal thatched roof and square plan houses of the Ngelima of Zaire (Denyer, 1978).

3.4 Height of Rural Houses

Houses in rural areas can also be typified on the basis of height.

In most rural areas of Nigeria, bungalow (single storey) is the



Fig. 1: A group of mud-walled and thatch-roofed houses in Danmanan Community in Bakura LGA of Zamfara State.

Source: Author, 13/09/07

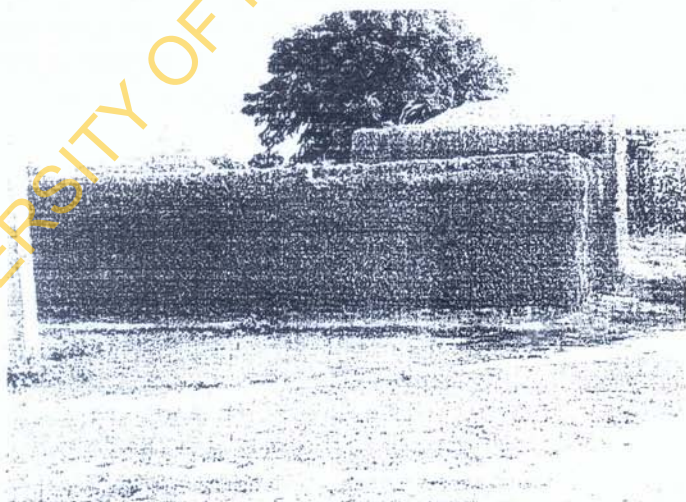


Fig. 2: Mud house in Birni Morgaji, Zamfara State. Note the round mud roof, thatch roof and mud wall fence.

Picture taken by author 12/09/07.

prominent house type with very insignificant proportion of two-storey and rarely three-storeys and above. A two-storey mud house, two rooms deep on two sides in Eni-Oosa village off Olorunda-Aba/Ijaye road in Akinyele local government area of Oyo state built over 45 years ago is still being habited at the ground floor as at June 2007. However, its upper floor remained unoccupied while the front elevation is being weathered away. In Babamogba Ogundeji village in Akinyele Local Government Area (LGA) of Oyo State, all the 74 buildings as at December 2006 were bungalows (see pp.454-455 and Figs. 17 & 18). In a study conducted by NISER and the University of Ife (Unife) (1982) in 103 villages in nine southern states (including Lagos, Oyo, Bendel, Anambra and Cross Rivers) 83.6% of the buildings sampled were single-storey (bungalows) out of which the traditional buildings covered 49.4%. Only 6.4% were more than two storeys in height (made up of 2-storey traditional buildings in Lagos (6.2%), Oyo (18.9%), Ondo (15.2%), Bendel (9.0%), Ogun (4.0%), Rivers (1.1%) and Cross Rivers (1.3%). Furthermore, there were 3-storey traditional buildings reported in Anambra (2.0%) and Lagos (1.5%). In Ibule-Soro village, Ondo State, Olujimi (2000) reported that 211 (97.7%) of the buildings were single-storey while only 5 (2.3%) were two-floor modern buildings.

4.0 Functions of a Rural House

A rural house, like any modern house, provides basic functions to the maximum satisfaction of the occupants. The fact that a typical rural house is built of mud, forest wood and thatch does not make it in any way inferior (by the scale and perception of the occupier) to a modern house built of concrete, glass and steel roof. Ruralites display an incredibly high level of satisfaction and pleasure in their simple architecture (which some urban and modern apologist derogatorily refer to as

“primitive”, “ramshackle” and “worthless” — structure and product of uncivilized people.

Just a poser here: Is a rural building a primitive building? Primitive building refers to that produced by societies regarded as primitive by anthropologists (Rapoport, 1969). It refers to the levels of economic, political, cultural, institutional and technological development as well as the nature of social organization of a people. The rural houses or dwellings which were produced in folk culture may appear rudimentary, simple and too elementary to a computer-age/modern man, going by the present complex technological standards. It should, however, be noted with sincere acknowledgement and unparalleled recognition, that those rural houses were built by a people based on their intrinsic knowledge, intelligence, ability, capability and available resources. In the words of Rapoport (1969), “primitive is a relative term; to future societies we [and our concrete, steel and glass dwellings] will undoubtedly appear rather primitive”.

A rural house performs the following functions among others:

- (i) protection against the unpredictable natural element such as sunshine, storm, cold, precipitation, and excessive heat;
- (ii) security against predators, unwanted visitors, and all forms of intrusion;
- (iii) provision of individual and group privacy;
- (iv) provision of comfort and pleasure;
- (v) a source of personal identity and status symbol (one of the best indicators of a person's standard of living and his/her position in the society);
- (vi) a place for sleeping and mating (reproductive activity);
- (vii) a place for character formation and development of harmonious family life among its members;

- (viii) a place for housekeeping activities (food preparation, eating and washing);
- (ix) a repository (store) for safe keeping of individual and group's precious personal and household possessions (e.g. jewelries, hand-woven textiles, masquerade costumes, and foodstuffs to dry up);
- (x) a work-place or center (workshop, retail shop/outlet, office) and a means of income generation;
- (xi) a recreation/entertainment/relaxation center where one can socialize, play or listen to folk songs and folk stories, play local indoor games (such as 'ayo'), watch folk drama, drink and participate in related forms of entertainment;
- (xii) a healing center (which serves as local maternity, dispensary or hospital for the treatment of all forms of physical and mental ailments or problems ingeniously handled by traditional healers, herbalist and birth attendants);
- (xiii) a place of worship (shrine, church and mosque); the home is the safe temple for daily religion for the ancient Chinese (Deffontaines, 1948);
- (xiv) a final resting place for the dead to facilitate spiritual interaction between the dead and living members of a family. This practice is, however, fading out very fast as corpses are rarely buried inside a building proper in contemporary times except the corpses of kings, or powerful priests or on the instruction of the dead while alive;
- (xv) a place for learning (especially about a culture's aspirations, norms and values), and
- (xvi) a place for the preservation of cultural heritage/expressions through for example, traditional house decorations.

5.0 Characteristics of Rural Housing

The houses produced in most rural societies exhibit a number of characteristics or features which include:

- (i) Traditional design and uniformity in buildings. In rural areas a house is meant to be like any other house in the neighbourhood in which it situates. Except for the size, which may depend on the number of families living in it, all other aspects are similar—simplicity of form, material used, construction technique, management framework and sanitation practices among others.
- (ii) Local (indigenous) technology. The construction method or procedure is simple, clear and easy to grasp.
- (iii) Aesthetic quality which is high and cognitively clear coupled with sensory richness which is not specially created for each house, but rather a product of tradition as handed down through generations.
- (iv) Self-help/communal building technique which promotes speedy completion through mutual (collective) labour freely offered by family members and neighbours (Wahab, 1996).
- (v) Traditional rural houses have a characteristic additive quality in the sense that they are flexible and easily expandable at any point in their life span. They are open-ended or what Wahab (1997) refers to as “unfinished architecture” unlike the high-style modern urban houses with their closed, rigid and final form.
- (vi) Intensive use of local building materials (mud, thatch, timber, stone, rope, bamboo etc).
- (vii) Maintenance is simple and cheap. Communal labour/effort is applied to repair works on buildings. Although the frequency of replacement of the roof

(especially thatched roof) may be high, the thatch, ropes and other materials are readily available at virtually no naira cost.

- (viii) Rural houses are highly unspecialized which makes them easily comprehensible by members of the community who learn the basics while participating in the building process. The houses are built by all unlike the high-style and highly specialized modern buildings, each being an original creation/model and built by teams of professionals.
- (ix) Social acceptability is another attribute of a rural house. Because the house form, construction and delivery process are the joint efforts of everybody in the community, the structure in its entirety is accepted by all to the extent that there is little or no individual variation. Every villager identifies with every village house.
- (x) Layout of folk housing is highly informal, subtle, hardly of any 'recognizable' pattern but rather organic, functional and cognitively clear. The house, its courtyard, the paths, nodes, edges, squares and districts are in close functional juxtaposition. The elements of each neighbourhood are understood by all including teenagers.
- (xi) Low occupancy ratio; (quantitative adequacy).
- (xii) Home ownership and cultural attachment.
- (xiii) Low cost (lower-order) facilities that are considered 'adequate' by those who own them.
- (xiv) Earthen buildings are ecological architecture and this gives rural housing its attribute of enhancement rather than destruction of the ecosystem (ecological equilibrium). The usual outright bulldozing of top soil, all plants and even sculptural pieces of rock on a housing plot preparatory to construction that is common with urban housing development is alien in

rural housing. It is only the square metres of land (the exact portion) on which the house will stand that is cautiously weeded thereby protecting other existing flora and fauna.

- (xv) Serenity and beauty of nature.
- (xvi) Well-kept surrounding of houses.
- (xvii) Houses are developed in great harmony with their surroundings. Landforms are not tampered with, rather housing and its ancillary facilities are allowed to blend with topography without much cut-and-fill. The ruralites are able to have good vistas and their neighbourhoods, especially where the land is undulating, are picturesque.
- (xviii) Neighborliness and lack of anonymity.
- (xix) Low cost and affordable housing.
- (xx) Land for housing is in abundance and obtained for free in many cases and where paid for the price is extremely low and affordable.

The above positive attributes of rural housing notwithstanding, scholars, professionals, administrators and urban apologists/modernists regard rural housing as lacking in character, facilities and services, elegance, and straight-jacket geometry and that the houses are nothing more than pet houses, "old fashioned, backward, unbecoming and inappropriate for the life style of the rich ... their design and construction are thus being increasingly discouraged" (Wahab, 1996:68). Such urban commentators appear not to notice that while the rural houses accommodate the whole village population, several urbanites (including women and children) sleep in empty trucks in garages, underneath over-head bridges, on traders' kiosks in markets and by road sides.

At the time of writing, a section of Apete district in Ibadan has not had electricity for 8 months (November 2006 to June

2007) and so the residents use kerosene lamps. The story is the same in many urban centers in the country.

6.0 Rural House Design and Layout

6.1 House Design

In the layout and function of houses there is an impression of social values and economic needs (de Blij, 1993). Rural architecture appears in different floor plans and height (number of floors) from one continent or region to another. In rural Nigeria, single-storey thatched roof houses (similar to those in Ireland and China) are the commonest. The floor plan of Irish local architecture includes the rectangular single-storey two rooms deep house (with barrel-roof, end chimney and plastered stone rubble wall) (Fig. 3), and the rectangular single-storey two rooms deep centre door/entrance (with mud walls, central chimney and hip roof). Figs. 5 and 6 are examples of Chinese and German folk houses respectively (see Jordan *et al* 1994). In North America, the Yankee or New England wooden frame folk houses have different floor plans (Figs. 7): (a) the Yankee 'upright and wing' dwelling (Fig. 7a) is made up of a square two-storey and two rooms deep structure recessed one side at one room deep to form an extension called the 'wing' (each has a central chimney); (b) the Yankee 'Cape God' dwelling is a rectangular one-and-a-half storey structure two rooms deep built around a central chimney, and (c) the Yankee New England 'Large' dwelling which is a two-and-a-half storey structure two rooms deep with a central chimney. There are also the log houses (built of notched logs) such as (a) the 'saddlebag' — a rectangular dwelling of two log rooms separated by a chimney and double fire place (Fig. 8a), and (b) the 'dogtrot' house which is a two-room rectangular dwelling separated by an ungated passage that is roofed along with the rooms (Figs. 8b and 9). Fig. 10 shows an earth lodge in Arizona–New Mexico.

There is also the African-American rural house in North America called the 'shortgun' house because its floor plan has the shape of a short gun. It is a narrow rectangular house one room wide but up to four rooms deep having a covered front balcony or porch with 3-4 steps to the ground. Its covered and stepped-down porch is similar to that of the Acadian Creole house in Acadiana a region in Louisiana (see Jordan *et al* 1994 for more details).

The typical rural house in the Yoruba speaking Southwest of Nigeria is of three types (Fig. 12a-e): (a) the rectangular dwelling (face-to-face design) two rooms wide and between 2-6 rooms deep (Figs. 12c and e) with a central passage that provides access to the rooms, (b) a rectangular dwelling of one room wide and between 4-6 rooms deep fronted by a narrow passage (Figs. 12a and d) that provides a link between the rooms and the outside covered porch or, in some cases, open courtyard (impluvium). This is a complete dwelling unit, (c) the compound ('*agbo-ile*' in the native language) is a huge rectangular, sometimes square single-storey house consisting of 3 or 4 of the type (b) dwelling joined together with a central courtyard (Fig. 12b) which varies in size from 35.8m² in Ajisebiolowo compound to 3.75m² in Oriade compound in Iseyin, Nigeria (Wahab, 1997:158). The compound has one entrance, and many times two (entrance and exit). The layout of the Yoruba compound is similar to the single-storey stone built Inca Marca farmstead in Peru and Bolivia (South America), or the multistory half-timbered German Frankish courtyard farmstead, Central Europe (Fig. 6) or the single-storey courtyard house of the Chinese farmstead in Szechwan province with its adobe (brick) wall and thatch roof (Fig. 5).

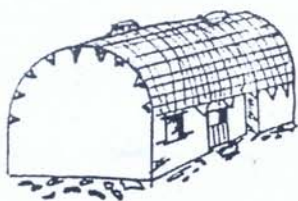


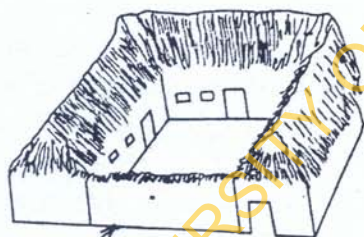
Fig. 3: Irish rectangular single-storey two rooms deep house barrel-roof chimney and plastered stone rubble wall.

(Source: Jordan *et al*, 1994, p. 280).



Fig. 4: Irish rectangular mud house single storey two rooms deep with central chimney and and hip roof.

(Source: Jordan *et al*, 1994, p. 280).



Adobe wall tatched at top for protection from weather

Fig. 5: Chinese farmstead, single-storey adobe brick wall, double pitch thatched roof

(Source: Jordan *et al*, 1994, p. 280).



Fig. 6: German Frankish half-timbering two-and-a-half storey house with pitch roof

(Source: Jordan *et al*, 1994, p. 280).

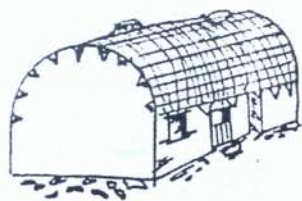


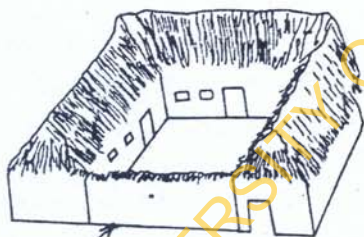
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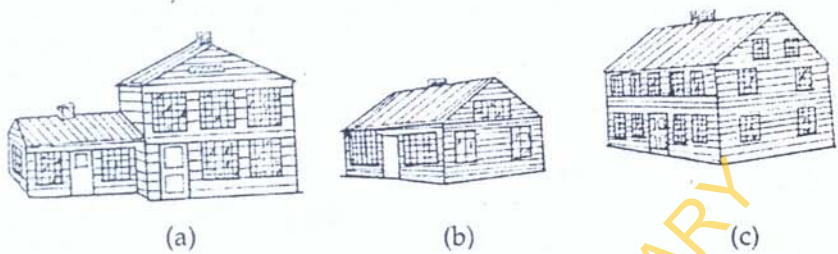
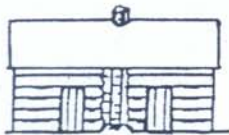
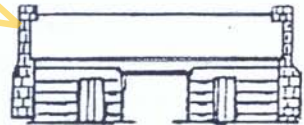


Fig. 7: Timbered houses of varying storeys (heights) in North America. (Source: Jordan *et al*, 1994, p. 281).



(a) Log "saddlebag" house.



(b) Log "dogtrot" house.

Fig. 8: American log houses, single storey one room deep with central or side chimney. (Source: Jordan *et al*, 1994, p. 281)



Fig. 9: A "dogtrot (timbered) house in Central Texas.

(Source: Jordan *et al*, 1994, p. 282).



Fig. 10: An earth lodge (hogan) in Arizona-New Mexico. (Source: Taylor, 1982, p. 149).

The courtyard in Yoruba house is designed to accommodate/facilitate a variety of activities including receiving visitors (socialization), cultural entertainment and telling of moonlight tales (recreation), taking fresh-air after the long day's work (relaxation), carving, tie and dye, weaving (local arts and crafts), rearing of domesticated birds (chicken, ducks, pigeon) and friendly animals (goats, dogs, cats, sheep) and growing of basic medicinal plants that can cure common ailments, especially stomach ache, headache and wounds. Similarly, but in addition to the above, within the courtyard of a Hausa rural house may be found donkey and cow.

The keeping of domesticated animals is one aspect of the African rural housing that people criticize (Fig. 13). Whereas in areas of rural Eastern Europe, de Blij (1993) note that people and some livestock live under the same roof (Fig. 14) as Jordan et al (1994) also report that people and livestock either occupy different ends of a unit farmstead, (often without a dividing wall separating the two), or in multi-storey unit farmsteads

livestock live on the lower floor while the people live above as found in Germanic Europe.

6.2 Layout

In the rural areas of western, northern and upland parts of Eastern Nigeria as well as parts of Eastern Europe and northern Spain, the layout of houses and auxiliary facilities does not follow a conscious order in the sense that there is no formal layout produced by physical planners based on tight-fisted spatial standard. Houses are not regularly or geometrically arranged; rather, houses develop one after the other in a close pattern that depicts the socio-cultural relationship among the people (brotherhood, defense and communal living). Houses and compounds are spaced or arranged close together at a distance that will allow easy communication (verbal) across the houses yet far apart to allow adequate inter-compound (open) spaces used for both relaxation and recreation and the carrying out of local arts and crafts (Figs. 15 and 16).

Climate exerts a profound influence on the overall structure of Yoruba settlements (Wahab, 1997). Traditional settlements worked with the local climate, not against it (Lozano, 1990). Spaces between houses and group of houses or compounds were moderately small or relatively narrow in order to keep out the sun and enable people to walk under cover/shade provided by the shadow (*'ojiji'*) of the houses and compounds (Wahab, 1997).

As a rule, the rural housing layout ensures that every house is accessible by the relevant mode of transport in the community (in most cases walking, horse and camel riding (Fig. 17), and later bicycle, and nowadays motorcycle). Streets in typical traditional rural settlements in Western Nigeria were exclusively made out for pedestrians and human portage the very reason for their narrow width and winding nature. In

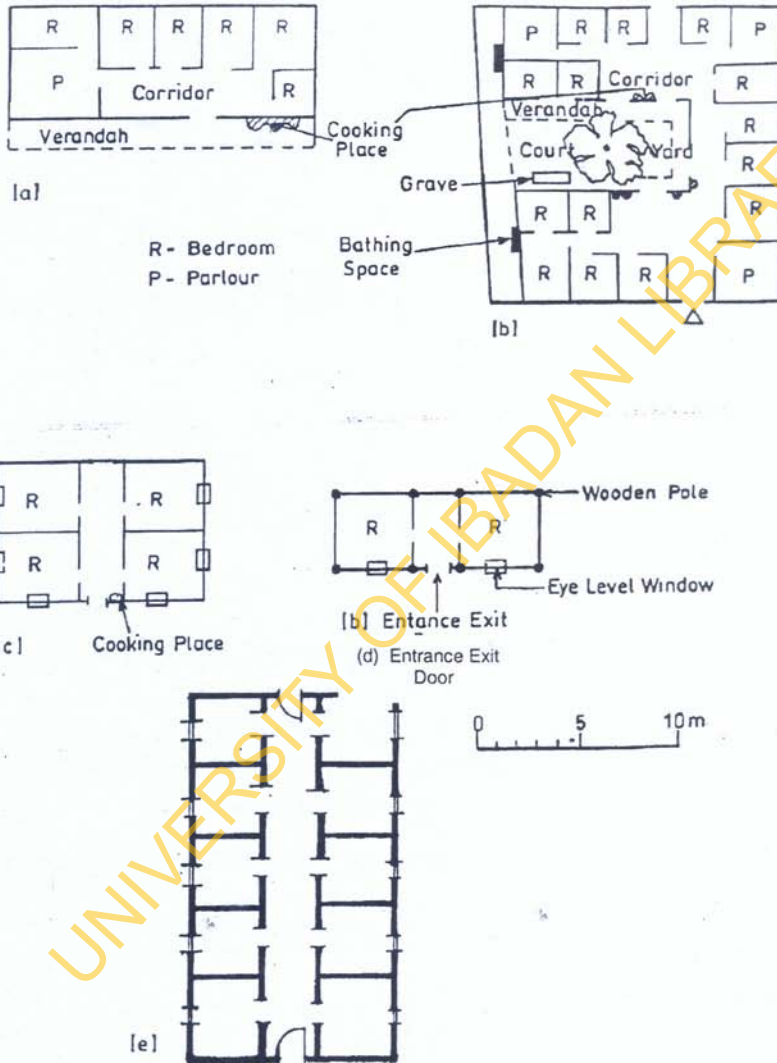


Fig. 12: Typical rural house units in parts of Nigeria.

Sources: (a) and (b), adapted from Wahab, W.B., 1997, p. 139;
 (c)-(d), author's field compilations, 2007.

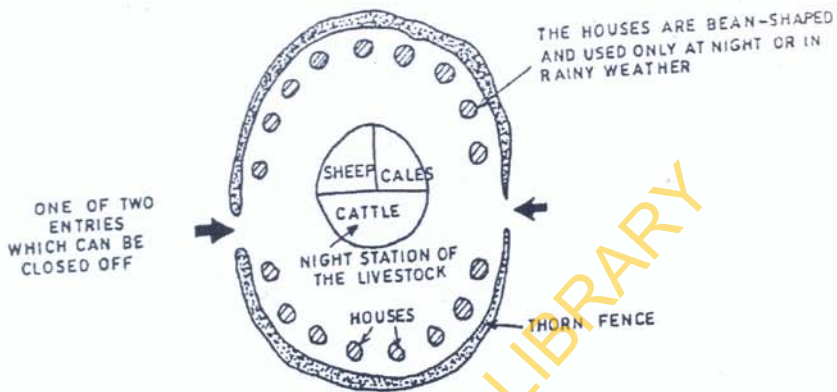


Fig. 13: A Masai rural compound (diameter approximately 130 feet or 39.65 meters). Note the location of animal spaces at the centre of the compound.

Source: Rapoport, A. (1969), p. 57.

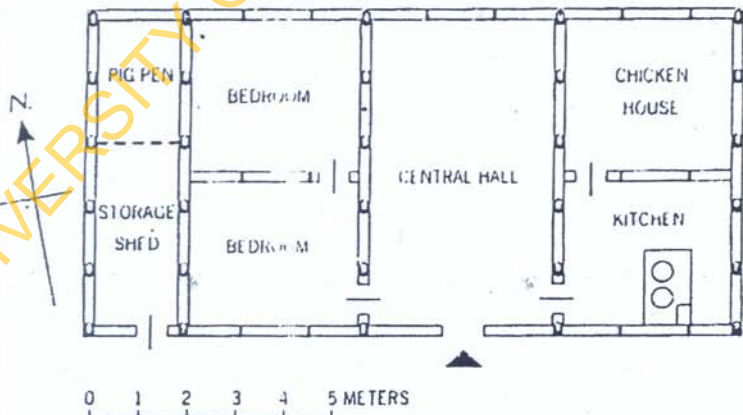


Fig. 14: A traditional rural house from Jiangsu Province, China. Note the location of pig pen and chicken space within the house.

Source: de Blij, H.J. (1993), p. 360.

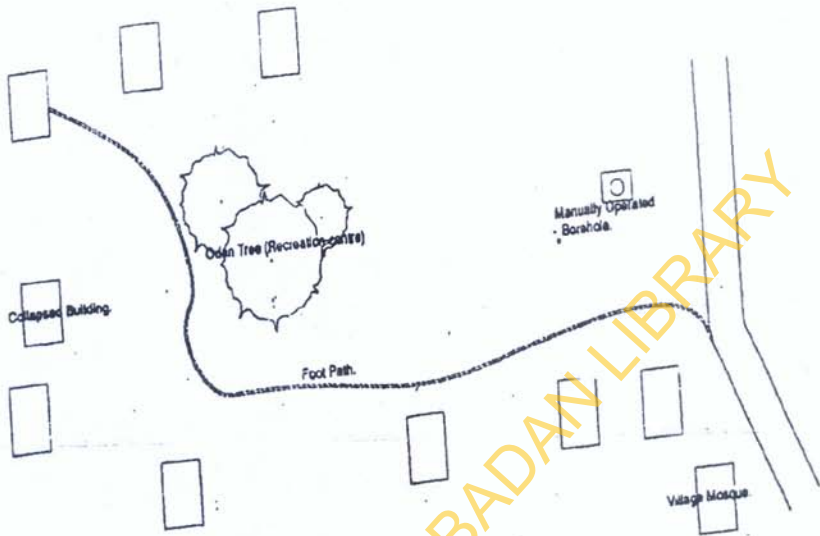


Fig. 15: Sketch layout of Seeni village in Bode-Igbo area of Iddo Local government, Oyo State. Note the wide air-space separating the houses to allow for not only immediate use for relaxation, neighbourhood activities and crafts but future house expansion.

Source: Bello *et al.* (2006), p. 25.

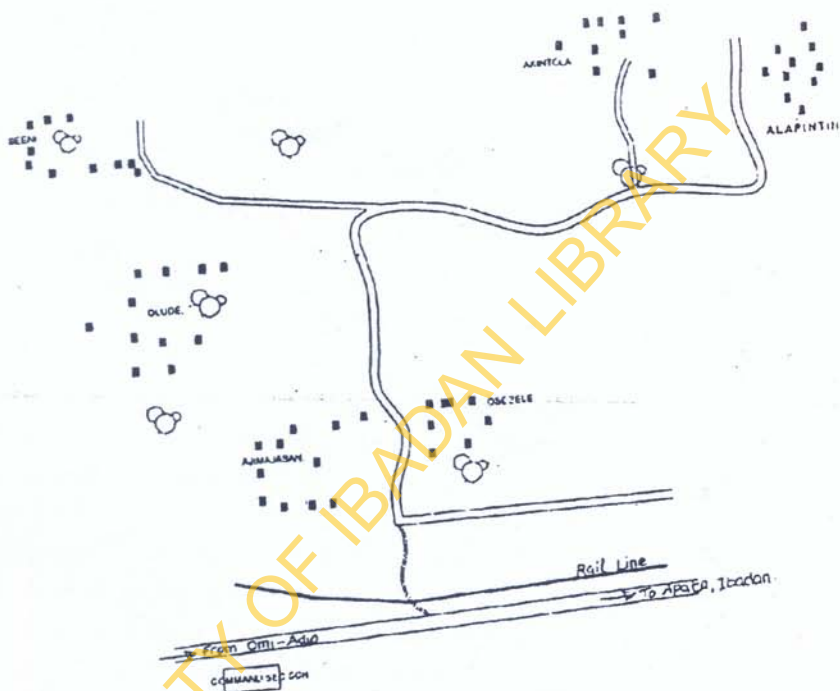


Fig. 16: Sketch plan of six villages in Bode-Igbo area of Iddo Local government, Oyo State, Nigeria. Houses are connected to one another and to the nearby earth road by a network of footpaths.

Source: Bello et al. (2006), p. 25.



Fig. 17: A mud house in Birni Tsaba Community in Zurmi LGA of Zamfara State. Note the small roof-level rectangular opening/observation point to monitor the outside of the house.

Source: Author, 12/9/07.

rural farming communities, the arrangement of houses is in tiny clusters surrounded by vast area of cultivated land. In the northern parts of Nigeria, especially where cattle is reared, houses in cattle villages assume a layout pattern in which dwellings are arranged in a circle surrounding a central corral or Kraal where livestock are kept similar to what is found in rural Cameroon and Masai region (Fig. 13). In most rural communities the house of the Chief or Village Head is larger (with adequate storage space for food, implements, livestock etc) and occupies a prominent location in the layout.

7.0 Local Building Materials in Rural Housing

Different materials are used in the construction of rural houses in different parts of the world based on local availability, functionality and sustainability (Figs. 18-20). Poles and leaves are principal materials used to build houses by mobile (shifting) cultivators. The big log cabin is the famous dwelling in the cold, forested areas of Northern Europe based on the fact that its thick walls can withstand extreme cold and heavy snowfalls. The log house (Figs. 7-9) has its walls made of wooden planks and the roof also of wood with a protective layer of tiles or tarpaper (de Blij, 1993).

In rural Africa, people explore the resources within their locality in the construction and maintenance of their houses and facilities. Resources such as materials, human (local builders) and financial are sourced locally. This is informed by the need to have houses that are economically, socially and ecologically sustainable. The tropical African climate permits the use of forest wood, palm fronds, thatch, leaves and matting. In Somali region, the walls of a rural house are made of pebbles and soil mixed with termite-mound clay, dried and hardened by the sun (de Blij, 1973).

Mud is perhaps the most popular material for building houses in folk societies. In rural housing, "mud is not only an option as a building material but the best option" (Richard Lang quoted by Uwaegbulam, 1999). Most of the numerous types of houses developed in history were once built of mud (Eaton (1982) whether in Jericho, Harappa and Mohenjo-Daro in Pakistan; Chan-Chan in Peru; Babylon in Iraqi; Santa Fe in New Mexico; Ile-Ife, Oyo, Ikinyinwa, Ilaji-Oke, Ile-Ife, Okitipupa, Ilaje-Eseodo, Igbokoda, Iseyin, Kano, Zaria, Benin, Birni Mogaji, Kadadaba and Modomawa (Fig. 21) in Nigeria; Spain, Germany, England and Scotland. "In those places unbaked earth was used for housing, prestigious monuments, warehouses, aqueducts, pyramids, monasteries, and palaces"

(Wahab, 1997). In the 7th Century BC, the "famous Tower of Babel was built of earth, its seventh level teetering at 90m – [hu]mankind's first skyscraper" (Eaton, 1982).

Bricks (made of earth or cement) are another popular material next to mud used for rural housing. Earth brick is made by pouring wet mud into wooden moulds or frames, allowing it to dry a little before the frame is removed and the brick is left in the sun to harden for as long as one chooses. This is sun-dried brick common in Arab culture, middle and South America, Africa, Northern India and northern China. Moist mud is used as mortar to bind the bricks together. As the layers of bricks dries out it is smeared with wet mud to cover the joints. In the case of the oven-baked brick, the wet brick is fired in oven or kiln after the wooden frame is removed from it. The firing hardens and strengthens the brick.

The building materials in use in the construction of rural houses in most rural areas of the world include the following (see Figs. 18-22):

- Swiss mud;
- Bamboo;
- Termite-mound clay;
- Forest wood, branches;
- Thatch for roof (now being replaced with corrugated zinc roofing sheets noted for its ugly rust);
- Palm ribs and fronds;
- Leaves;
- Stone;
- Rope for fastening/lashing building elements (now being replaced with nails);
- Sand;
- Tree barks;
- Gravel, pebbles;
- Mat;

- Raffia palm;
- Leaves (e.g. indigo leaves for floor and wall smoothening);
- Animal dung;
- Shells (e.g. periwinkle, cowries);
- Straw;
- Timber, logs;
- Adobe (Mud) Brick (sun-dried, baked);
- Wattle;
- Lime;
- Water;
- Grass and brush, and
- Snow.

In contemporary time and with the 'intrusion' of urbanites into the either-to self-sufficient rural areas, industrialized building materials are gradually introduced for rural house building as found in Birni Tasba (see Fig. 22). Such materials include (see Table 1):

- Cement (being used to replace mud mortar);
- Nails;
- Sandcrete blocks;
- Asbestos roofing sheets;
- Roof tiles;
- Long-span aluminum roofing sheets;
- Iron-rods (for lintels and columns);
- Glass;
- Metal hinges, locks; and
- Paints.

de Blij (1993) makes a case for the use of corrugated metal sheeting in place of thatch. The zinc sheets, though hot, protects better against rain and moisture, does not accommo-

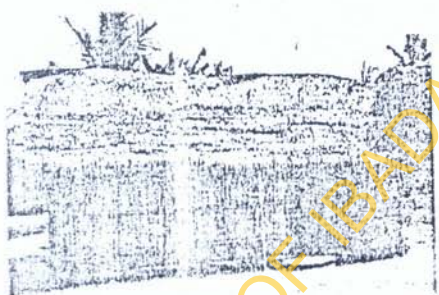
date disease-carrying vermin, and often serves as a catchments for rain water.

For the simple fact that the above-listed materials are manufactured in industries either within the country or outside, their prices are unaffordable to an average villager. As at April/May 2007, a bag of cement in Ibadan sold for ₦1,950.00 (which is about 25% of the minimum wage earned by a civil servant), while a bundle of corrugated iron roofing sheet sold for ₦10,200.00 whereas a kilogram of maize produced by rural farmers sold for ₦16.00. The level of poverty in the rural areas may not allow the villagers to switch to the use of many of these modern building materials for a long time. The pro-poor housing programmes being canvassed will need to examine and perhaps adopt the use of indigenous (local) building materials and style of house building for it to be meaningful to both the rural and urban poor. Onibokun and Agbola (1990) observe that the incursion of exotic building materials into the rural and urban housing is the result of the contact with the outside world through interregional and international training of professionals in foreign countries. This brought changes in use of materials for house construction.

In Babamogba Ogundeji village in Akinyele LGA of Oyo state, Babajide *et al* (2006) report the following materials used in the construction of the 74 houses found in the village: wall materials were mud (61%), mud plastered (34%), mud brick plastered (4%), and sandcrete blocks (1%). All the 74 buildings were roofed with corrugated metal sheets. Two floor materials were reported: mud (61%), and concrete (39%). Ceiling materials include raffia and bamboo (22%), planks (10%), asbestos (18%) while 50% of the houses had no ceiling. Window materials were mainly the traditional/local materials consisting of wood (96%) and mat (4%) (see Figs. 23 and 24).



(a)



(b)



Figs. 18 (a) and (b) are housing units in Shoko village, Badagry local government area of Lagos State, Nigeria. They are built of raffia ribs/tree branches for walls and pitch thatch roofs.

(c) A house in Shoko village. The external walls of the house are made of forest woods, raffia ribs, while the roof is built of thatch/raffia/palm fronds.

Source: Compiled from Adebayo-Onisile *et al.* (2006), pp. 10 and 16.



Fig. 19: A Papago round grass lodge at Coyote Indian village, Pima County, Arizona.

Source: Taylor (1982), p. 146.



Fig. 20: An Igloo (Eskimos snow house) under construction.

Source: Taylor (1982), p. 148.



Fig. 21: A group of mud houses in Modomawa Community, Birni Mogaji LGA, Zamfara State. Note the air space between compounds, the shady trees and a cement/sandcrete block structure being developed at the background.

Source: Author, 12/9/07.



Fig. 22: Mud houses in Birni Tsaba Community in Zurmi LGA of Zamfara State. Note the mixture of round mud roof and double-pitch roof made of corrugated metal sheets.

Source: Author, 12/9/07.