

ANALYSIS OF SPATIAL TYPES AND SOCIAL SPACE IN ILE-IFE DOMESTIC ARCHITECTURE

C. O ADEOKUN. Email: lola.adeokun@yahoo.co.uk
Covenant University,
College of Science and Technology,
Department of Architecture,
Ota, Ogun State, Nigeria.

Abstract

This paper focuses on the diachronic development of spatial morphologies in Yoruba domestic architecture (SW Nigeria) and the social rules implicit in domestic space use, utilizing data about the households, and activity and object locations. The results presented revolve around how activities (and objects) ‘spill over’ designated boundaries within the domestic space, the impact of activities and objects on the specialized or non-specialized use of space, and the intensity of focus on each space label as the conventional location for activities and objects. Six spatial types were identified, and a ‘core’ set of function/space labels was found in each type, although these have ‘expanded’ in the newer types, partly in response to new connotations of privacy. Many activities and objects were consistently shown to have flexible boundaries, thereby having an effect on space specialization. Newer geometric types were characterized by slightly increased specialized use of certain space labels (although the prevalent pattern was non-specialization), and a modest reduction in the degree of extensibility, and intensity of focus. The study demonstrated that there are stronger points of continuity than difference between the spatial types.

Keywords: activity and object locations, social space, spatial analysis, domestic architecture.

1. Introduction

The analysis of the domestic space is on one hand about the physical space, but it is also about ideals and social contexts that influence space use. Many studies have focused on transformations in spatial typology and morphology over time, but only a few e.g. Hillier and Hanson (1984), Kent (1990), Rapoport (1990) have been based on the premise that space morphology possesses built-in social and contextual meaning. Other researchers have focused on the relationships between everyday activities/objects and their meanings, and on social relations between household inhabitants e.g. Csikzentmihalyi and Rochberg-Halton (1981), Korosec-Serfaty (1985), Kent (1990), Miller (2001), but while these studies have yielded significant insight into the organization of normative aspects of the domestic world, they have rarely combined spatial analysis with the investigation of domestic space use.

Physical space is not an inert thing solely defined by its dimensions and geometry, and the process of explaining physical (domestic) space, ought to be in conjunction with space use analysis. Consequently, this study adopted a combined approach to gain insight into the diachronic development of spatial morphologies, and to analyse social ‘rules’ implicit in domestic space use in a sample of Yoruba households.

The idea that identifiable motives underline object and activity locations, points towards the presence of underlying rules. Rules by definition exist in different forms; either as what Wieder (1970) describes as a) 'game-theoretic' rules that formally constitute and prescribe, b) methodical procedures (as in the case of mathematical formulas) or c) in the sense of habit or routine. Giddens (1984) and Wood and Beck (1994) also describe rules as tending to be about a practical competence of space use. It is argued that rules in the domestic setting are more interpretative, and may be applied, modified, or even suspended to integrate with individual motivations. Rules within this study therefore were seen as flexible properties within which individuals make choices, create habits or routines.

2. Literature Review

The decision to analyse physical spaces, and the objects and activities together, was based on the premise that domestic space is more than its geometric entity, fundamental as that is. Tversky (2003) describes space (physical space) as a place of negotiations of social relations as well as a space of navigation for activities and similarly for Lefebvre (1974,1991), there is no sectioning between these kinds of 'spaces', although visible boundaries (e.g. walls) give an appearance of separation.

2.1 Physical Space

The analysis of physical space, its typology, and morphology focused primarily on theories and methodologies developed as a means of analysing physical space objectively, whilst paying cognizance to the 'social' dimension of space. Hillier and Hanson's (1984) space syntax theory and methodologies were also adopted for this reason. But, the results presented here focus on the analysis of typology based on criteria also considered to be fundamental aspects of domestic space morphology; mainly spatial properties that can be shown to be typical of a given type, particularly in relation to space geometries and adjacencies [Stiny, (1980, 1994), Heitor et. Al. (2003), and Colakoglu (2005)]. This process of geometric typing did not constitute a description of every detailed aspect of the plans, but a sum of its generic nature. Van Leusen (1996) highlighted that the process of identifying a typology of dwelling arrangements is a potentially powerful way of condensing architectural knowledge and this process, whilst dependent on perception, can yield useful insight by careful consideration of empirical data in relation to theory.

The discussion of geometric typing here, owes much of its approach to ideas about shape grammars and description grammars. Description grammars, defined by Stiny (1980,1984) [also explored by Colakoglu (2005)], account for features of the design not covered by investigations about the shape of dwellings. Description grammars cover a variety of contextual, typological, and morphological features, that are considered relevant to the internal arrangement of spaces in the dwelling, according to some criteria of interest, which can also evolve/change. Of key interest here, were:- a) the interface between the interior and exterior as a threshold issue, and b) how the inhabitant-visitor interface is resolved within the dwelling; that is, the degree of separation between spaces usually accessible to visitors, and the more private areas e.g. bedrooms.

2.2 Social Space

Even if we accept the idea previously raised that physical space has a social dimension, social space is worth defining because it is not a collection of things. For Lefebvre (1974,1991), social space embraces a multitude of intersections and is both a ‘thing’, and a process. It has a realm of a) social relations of reproduction, that is, the relations between sexes and age groups along with the organisation of the family and b) relations of production, that is, to the division of labour and hierarchy of social functions that manifest as social practices, at the individual and urban levels. Social space is highly relevant in that it ensures continuity, implies a given level of competency via repeated enactment of social practices, as it is about change via the manipulation of rules. His main hypothesis is that each mode of production (or society) has its own particular space, and the shift from one mode of production to another entails the production of a new ‘space’ and that examining transitions between modes of production will reveal that a fresh (physical) space is generated during such changes. The idea that changes in the mode of production will be manifested in transformations of the spatial practices of a region, is arguably a process that has also taken place in Nigeria, in her transition from agrarian into the wider capitalist economy was tested in this study.

Social space for Bourdieu (1984) is also multi-dimensional, comprising acquired and inherited social, economic and cultural capital and this set of useable resources and power plays a significant role in the realm of perception. For him, social space is constructed via the volume of capital, the composition of the capital (the proportions of the three types of capital that is present in the individual), and how the composition of capital change over time. These forms of capital according to Bourdieu (1984) are reproduced primarily via inheritance law and custom (cultural and economic capital), the labour market (economic capital), the educational system (cultural capital). Generally, increased schooling has the effect of increasing cultural capital and in this study, also of increasing economic capital. For Bourdieu (1984), individual choices are rarely completely free from social and cultural capital. Social space therefore is the realm in which daily activities demonstrates the balance that has struck between how people might want to live and the limitations of the physical space.

There is also a strong connection between activities and objects because in both instances, space and time are the main elements being utilised. Kent (1990) and Rapoport (1990) argue that activities are an aspect of culture most likely to influence the use of space and it is the patterning of activities that is crucial and not the single activity reconstructions. Kent (1990) explores ideas about the connection between mode of production, the relationships between domestic activities, and how they manifest spatially. Her thesis is that the greater the degree of socio-political complexity, the higher the functional restriction, the level of compartmentalisation (use of solid walls), and the greater the functional homogeneity within each compartment. This idea though, also supported by Rapoport (1990), is suggestive of the idea of a hierarchy of cultures which could be quite controversial. Her ideas about the role of temporal separation were more viable, as she claims that spaces that appear to be multi-functional only appear to be so, because of minute time intervals that cannot usually be distinguished. She describes the effect on the physical space as either a) functional restriction (specialised) or generic functions (non-specialised). In summary, social space exists in tandem with physical space, and both are influenced by perception induced by personal values created from social identity, thereby reproducing a specific way of life.

3. Aim and Scope of this Study

Understanding the internal spatial organization of Yoruba domestic architecture, and space use patterns of individual households by analysing the relationship between the location of everyday domestic objects and activities was the primary aim of this research. A single stage sample was taken from Ile-Ife, Nigeria. The areas and dwellings chosen included traditional Yoruba dwellings dating back to the nineteenth century, and more recently built contemporary accommodation. Ile-Ife was stratified on the basis of socio-economic character and period of construction into three zones, and one area each from two socio-economic strata, and two from the third stratum were chosen.

4. Research Methodology

Structured interviews via an administered questionnaire, and floor plans and object location maps prepared on-site were adopted to maximise accuracy and depth in the results. The primary sampling unit is the household and 40 households were sampled in each of the four areas. Only one member of each household was interviewed, and only one household was surveyed in multiple-household dwellings.

The four areas surveyed are:

a) Enuwa, which is in the oldest existing quarter in Ile-Ife next to the palace of the king (Ooni of Ife) and the main central market (Enuwa market) is mostly occupied by extended families with many dwellings that go back to the 1890s. The housing unit predominant in the area is the family house (agbo'le). Consequently, the majority of dwellings in the area are owner occupied.

b) Akarabata Layout is the earliest planned housing area in Ile-Ife on what was the outskirts of the town, developed between 1954-1962. The plots were allocated for private development and as a result of a local government stipulation, most of the buildings were constructed between 1955-1962. The area mostly contains rented multi-household dwellings.

c) The privately developed Estates are located on the current periphery of Ile-Ife along major inter-town links and were developed between 1970's to early 1990's. The area contains mainly rented, single household accommodation targeted at middle-income earners.

d) The university staff campus, which has been at its current site since 1967 is on the outskirts of Ile-Ife. The campus was designed by a combination of expatriate and local architects and most of the domestic dwellings were constructed between 1966 to early 1970's and between the late 1970s to early 1980s.

The rental accommodation is for senior and junior staff. Samples from the campus, and the estates were chosen because they are contemporary housing both in layout and aesthetic intentions aimed mainly at middle income earners, although the estates housing are for a speculative market. Akarabata was chosen for its older multi-household housing, while Enuwa was chosen for its traditional extended-family dwellings.

4.1 Structure & Design of Questionnaire: -

The main advantages of the questionnaire based interview were the ability to record information from illiterate respondents, and to prepare the floor plan at the time of the interview. Respondents were asked to inventory their own spaces for activities and objects, as this yielded more detailed information. Open-ended questions were included to elicit more in-depth responses, while a few close-ended questions served to cross check information from open-ended questions. The concepts explored in the questionnaire were: space use, storage, meaning, threshold, and socio-economic issues.

4.2 Spatial Analysis Methodology

Six geometric types were identified based on the following criteria. The first criterion dealt with the grouping of activities into recognisable spatial cores of activities that are related. The cores identified are: - a) the living core (living room, dining room or space and kitchen), b) the sleeping core: - bedrooms (main, children, guest) and, c) the service core: - (toilets, bathroom and shower) or a variation on the service core– toilet, bathroom, shower and kitchen. These cores relate to ideas about sectoring of the dwelling identified by Amorim (1999). The use of sectoring can lead to the creation of an identifiable axis of separation between the living and sleeping cores. The second criterion assessed how elaborate the threshold between the exterior and the main interior spaces is. This relates to whether there are transition spaces like lobbies, veranda, terrace and hall between the front approach to the domestic space and the main reception space, or whether the front door opens directly into the main reception space. The third criterion is the separation between visitors and household pathways within the domestic plan. It refers to the manner in which the interface with visitors is resolved. Some plans have the main visitor entrance opening directly to the living room/parlour, with inhabitants being able to negotiate between the interior and the exterior spaces, without going through the living room. This interface was a distinguishable plan feature.

The final consideration was whether the main cores of the plan were linked by a transition space like a corridor, or by a function space (e.g. orowa). It measured increased reliance on the use of transition spaces (T) for movement between different parts of the dwelling rather than circulation directly from a function space (F) to another. This assessment is linked to a space syntax measure of the T:F ratio; the ratio of transition spaces to function spaces in a floor plan. These four aspects were observable by visual assessment of each plan, and the process can be done in a consistent manner. The questionnaire provided significant information about domestic objects, and the availability of a measurable means of spatial analysis assisted in the comparison of disparate floor plans.

5. Discussion of Results of Spatial Analysis

A total of six geometric types was identified from the sample based on the criteria above. The frequency of each geometric type in the sample areas is in Table 5-1. Overall, three shape geometries were found- the long corridor model [the elongated and double-loaded corridor types) the compact model (the orowa, compact (courtyard) and compact (non-courtyard) types] and the combination type (the mixed type). The six geometric types are described below.

Table 5-1: Frequency of geometric types in the 4 areas

	Estates	Campus	Akarabata	Enuwa		
Period of construction	(1970's -1990's)	(1969-1980s)	(1956-1962)	(1880's to 1940's)	total units	
double-loaded coridor	4		39	16	59	intermediate type
Compact (non-courtyard)	27	8			35	new type
Orowa			1	24	25	old type
Elongated	1	14			15	new type
Compact (courtyard)	2	10			12	new type
Mixed	4	8			12	new type
Total	38	40	40	40	158	

5.1.1 The Compact Model: -

A) The Orowa geometric type: This is essentially the traditional housing type found in Enuwa area, whereby many of the habitable rooms open off the orowa (hall). It is the third most common type. The orowa is a multiple function space often used for the reception of visitors and for many household activities (relaxing, cooking, etc). In most cases, the orowa links directly to the exterior. In all cases, there is little/no elaboration of the threshold, and there is no separation between visitor and inhabitant circulation. Its mean T: F ratio is 0.181, the lowest of all the types.(see example in figure 5.1 below).

B) Compact non-courtyard geometric type: This is prevalent in the flats where space optimisation is important, but it also occurred as a two-floor detached house with a compact footprint. It is the second most common type in the sample, and the majority of examples of this type have an axis of separation dividing the sleeping quarters from the living quarters. The plan layout is either a) sleeping areas around a main corridor (often double-loaded) with service spaces on subsidiary lobbies or b) bedrooms sharing a common lobby with a service facility (bathroom). Where the plan is on two floors, separation between the sleeping and living areas is achieved vertically. Its mean T:F ratio is 0.329, and the threshold is less elaborate between the exterior and the living room (see figure 5.1).

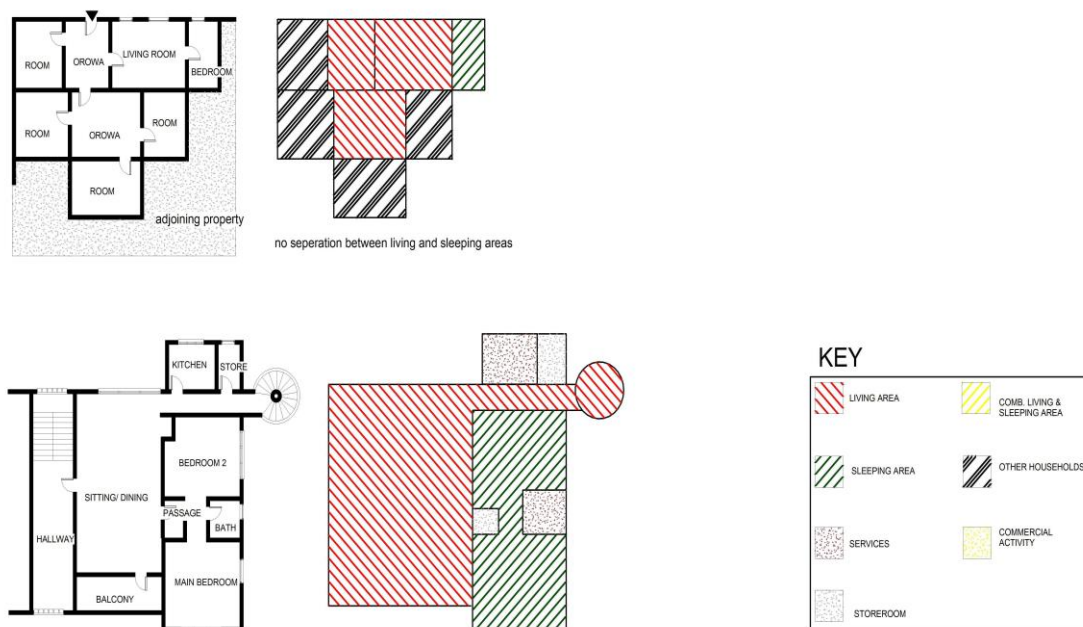


Figure 5.1: Orowa type [above] and compact (non-courtyard) type [below]

C) Compact (courtyard) geometric type: In most examples of this type, the sleeping quarters is arranged along one or two sides of the courtyard, or on a short corridor off the courtyard. There are clearly recognisable cores for the sleeping, living and services, but the separation of living area from sleeping area is not strongly demarcated. The most common form of separation is for the service areas to have a separate corridor from the sleeping quarters. Visitor access does not conflict with the sleeping areas and the issue of threshold elaboration is well developed in about half of the examples in the form of a series of transition spaces (porch/veranda, hall) before getting to the living room. The mean T:F ratio for the type is 0.343; the highest of the geometric types(see figure 5.2).



Figure 5.2: double-loaded corridor type (left) and compact courtyard type (right).

5.1.2 The Long-Corridor Model: -

D) Double-loaded corridor geometric type: This is the most common type in the sample and they are mostly tenements. Only the service core is separated from the rest of the dwelling usually to the rear of the house. The living and sleeping spaces usually open onto the central corridor, which may be shared with other households in the tenement. There is only a partial elaboration of the threshold between the front entrance and the household's habitable rooms, because the front door opens directly to the central corridor, or occasionally to a front veranda. There is no separation between visitor and inhabitant circulation, because the central corridor is used by visitors and other households alike (see figure 5.2).

E) Elongated plan: This type has the sleeping spaces arranged along a main single-loaded corridor with a clearly defined axis of separation between the living area and sleeping areas. In most cases the service area is a distinct sector though remaining an integral part of the domestic space. The main visitor access is through the living quarters without accessing the sleeping areas. In almost all cases the corridor access to sleeping areas is linked directly to the exterior allowing for choice of exiting from the bedroom area without using the main front door. The elaboration of the threshold between the exterior and the living room is most developed in this type, involving at least two intermediary spaces. It has a mean T: F ratio of 0.210; the second lowest value in the sample (see figure 5.3).

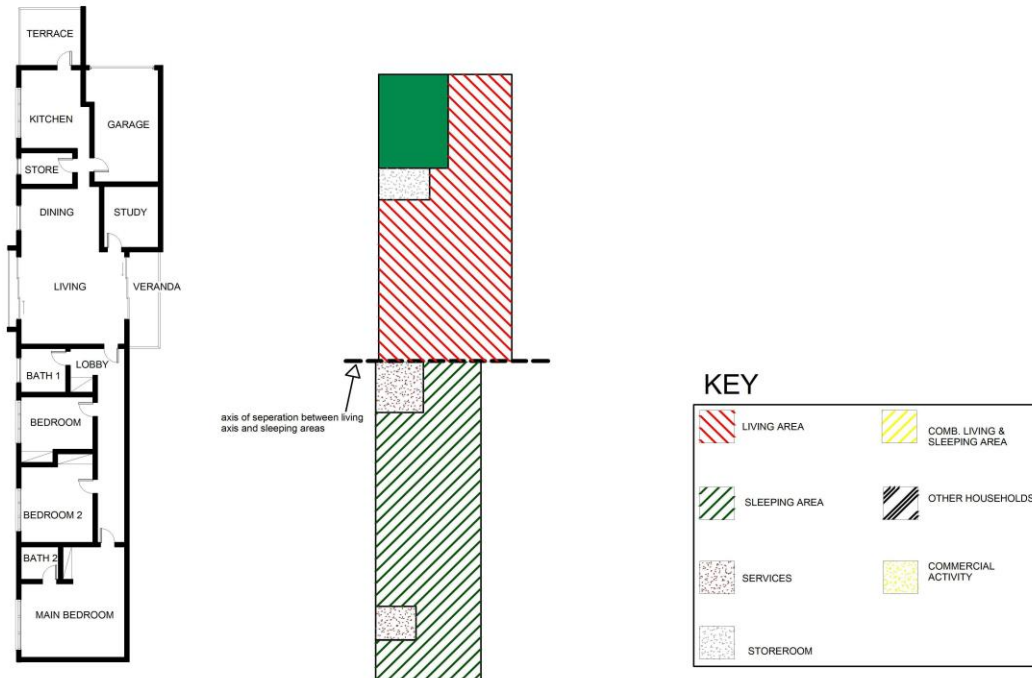


Figure 5.3: Elongated geometric type

5.1.3 The Combination Model: -

F) Mixed geometric type: This type is a hybrid of the elongated and compact plans. The living areas are usually linked by function labels whilst the sleeping areas are connected by a double-loaded, truncated corridor system, and with a low mean T: F ratio of 0.213, the focus is less on transition spaces for connecting different parts of the dwelling. An axis of separation between the living quarters and sleeping quarters is not strictly demarcated though the three cores are often clearly identifiable. Direct access for the visitor from the front entrance to the living room is the norm without passing through non-reception areas. The threshold between the exterior and interior is not elaborate. Because the study room is sometimes within the sleeping quarters, and the guest room in the living sector, only partial separation between living and sleeping areas is often achieved (see figure 5.4).

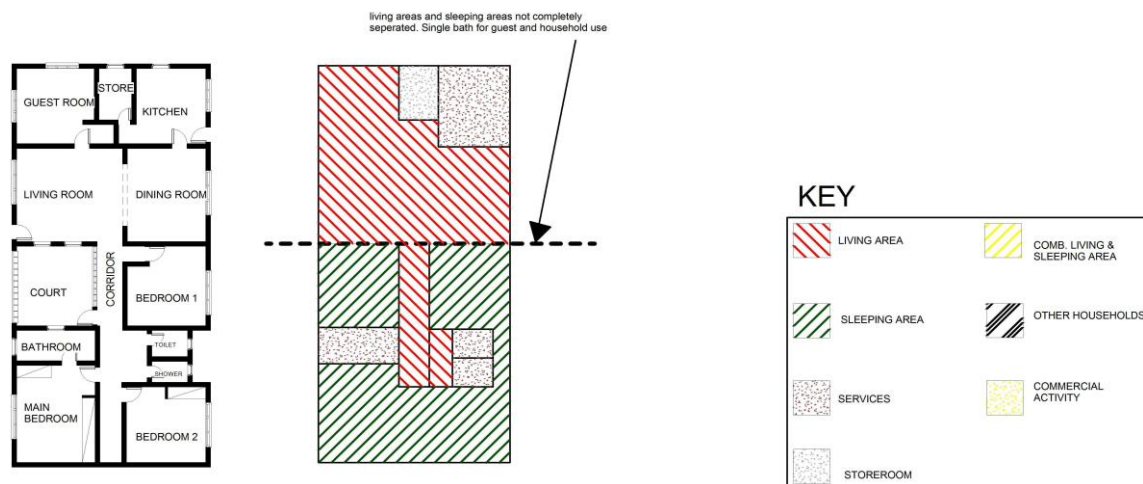


Figure 5.4: Mixed geometric type

5.2 Discussion of Spatial Analysis

The orowa geometric type is almost totally restricted to Enuwa, and its absence from the Campus and Estates lends credence to the claim that it is the traditional geometric type in Ile-Ife. Four of the geometric types - the compact (courtyard), compact (non-courtyard), elongated, and mixed types, occur exclusively in the more recently developed areas as rental accommodation occupied by educated, higher income groups and the elongated and mixed types; mostly found in the campus sample, are quite dissimilar to the traditional type. The compact non-courtyard version is mostly found in the estates occupied mostly by professional workers. The double-loaded corridor type is in-between these two groups, and is strongly identified with Akarabata because it comprises mostly rented tenements. The orowa-type, and the compact (courtyard) type were most commonly rented by average income and low income households, though most of the orowa-type plans were owner-occupied (inherited) by lower income households. The geometries varied distinctly on the following criteria: – a) the degree of separation between living and sleeping sectors, and b) the increased T : F ratios, from the older to the newer examples (see table 5.2). New labels emerged that did not occur in the old types- for example, the storeroom (and the dining room).

According to Steadman et. al (2000), geometrical distinction, characterises a distinct ability to accommodate different generic functions, which can often be explained by reference to the range of activities found in them. Each geometric type captured a relatively specific boundary point on the basis of the defined criteria. There was more geometric variety in the newer areas, although the oldest area (Enuwa) is slightly more varied than Akarabata, showing a positive correlation with changes in modes of society. Many of the floor plans had a compact surface area achieved by connecting spaces through function labels, or by arranging rooms round a courtyard. Elongated plans where a single loaded corridor was the main means of connecting most of the space labels, tend to be dominated by the corridor in terms of the connections of different parts of the plan. Geometry was found to be an aspect of innovation in domestic space development, with consistent relationships to some socio-economic variables.

Table 5.2: Summary of Geometric types

Criteria for geometric typing	Orowa-type	Double-loaded Corridor	Mixed	Compact (courtyard)	Compact (non-courtyard)	Elongated
1. Separation between living and sleeping sectors	No	No	Partial	Partial	Yes	Yes
2. Extent of Threshold Elaboration	No	Partial	Partial	Yes	Partial	Yes
3. Separation of Visitor and Inhabitant circulation	No	No	Yes	Yes	Yes	Yes
4. Increased focus on transition spaces (T:F ratio)	0.181	0.216	0.213	0.343	0.327	0.217
Most common location of each type	96% Enuwa	66% Akarabata	66% Campu s	83% Campus	77% Estates	93% Campus

6. Results of Space use analysis

The second part of the section explores space use in terms of the following concepts.

A) The conventional activity and object locations in the genotypes were identified, and compared in terms of the degree of extensibility of activities and objects in physical space, in relation to Thompson's (1998) concept of personal extensibility. Thompson (1998) defines extensibility as the ability to overcome the 'problem' of distance, that is, how activities spill over designated boundaries. We refer to how activities/objects were found in spaces other than their conventional locations.

B) The second aspect relates to the impact of inherent characteristics of activities and objects on the specialization of space. This relates to Kent's (1990) hypothesis about the correlation between restrictions on space use, and increasing specialisation of society, and to Lefervre's (1990) ideas about the link between changing modes of production in society and the emergence of new spaces, outlined previously.

An inventory of space labels was compiled from 126 different floor plans, and it contains thirteen labels (table 6.1) that occurred in at least 5% of the plans. The inventory contains unequal numbers of each space labels because no single space label is common to all floor plans, and because of one-room accommodations that were either described as a parlour, or a bedroom by the respondents.

Table 6.1: Space inventory from the total sample.

Space 1- Living room/Sitting room/Parlour, Space 2- Dining room, Space 3- Kitchen, Space 4- Toilet, Space 5- Bathroom/Shower, Space 6- Main Bedroom, Space 7- Bedroom (incl. children & guest rooms), Space 8- Passage/Corridor, Space 9- Orowa, Space 10- Veranda/Balcony, Space 11- Store, Space 12- Study, Space 13- Garage.

6.1.2 Core space labels in the sample

The most frequently occurring space labels in the six geometric types are shown in Table 6-2 (group I labels), and the table shows an increase in the numbers of most common space labels (group I), from the older to the newer geometric types. This is the 'functional core' of each geometric type, based on spaces that occurred in at least 66% of the sample for each type. This core and it reflects differences between shared and self contained types. The family compounds and tenements also have a smaller functional core than the flats, semi-detached, and detached houses.

The expansion of the functional core is demonstrated by the appearance of the dining room, study, and garage in the newer geometric types mostly occupied by higher income, educated households. The orowa is the only phased out space label. The concept of functional core labels is about the level of functional complexity that are invariably part of the description grammar of each geometric type [Heitor et. Al (2003)]. Increased access to tertiary education, increases in income level, and increased exposure to other cultures, which for many have come via educational opportunities abroad, have influenced the educated elite, via changes in their perception of what ought to be standard provision in the domestic space.

The new spaces also accommodate activities previously crammed in with other activities in traditional geometric types e.g. the dining room for eating, previously done in the orowa, as well as accommodate new activities like reading/studying, lending some support to Kent (1990); and Rapoport (1990), hypothesis of the link between space use and society.

Table 6-2: Functional core of the geometric types based on spaces that occur in at least 66% of each type

Orowa type	Double-loaded Corridor	Compact (Non-courtyard)	Elongated	Compact (courtyard)	Mixed
Living rm/palour	Bedroom	living rm	living rm	Living room	living room
bedroom	Corridor	kitchen	kitchen	dining room	kitchen
orowa		toilet	toilet	kitchen	toilet
		shower room	shower room	toilet	shower rm
		bedroom	main bedrm	shower room	main bedroom
		corridor	bedroom	main bedroom	bedroom
		veranda	corridor	bedroom	corridor
			store	corridor	garage
			study	veranda	
			garage		

6.1.3 Convention of Activity Locations: degree of extensibility and the geometric types

An inventory of twenty activities was built up from the respondents' answers (see Table 6-3 overleaf). The process of establishing the convention of locations involved listing all activities found within the 'boundary' of each space label for the total sample (and respective geometric types), and identifying the most common locations for each activity. There were lots of similarities in activity locations across the geometric types. For instance, family living, general storing, reading/studying have a wide extensibility across board, while hosting social events, water collecting, bathing, toileting and sewing, have limited extensibility within the dwellings. Just a few activities behaved differently across the types- ironing, food preparation, eating, reading/studying- amongst others.

Cooking and food preparation are much more restricted in location in the newer geometric types, and the wide extensibility for eating as an activity evident in the total sample, is dictated by its many locations in the enduring type, but is strongly identified with just one location in the new types. Overall the newer geometric types have the most restricted extensibility. Activities that are concentrated in just one/two locations are more normative, e.g. religious activity, retailing, laundry, bathing, and toileting, while general storing, eating and reading/studying had a wide extensibility in their locations. In between these were - family living, entertainment, cooking, and food preparation.

6.1.4 Activity Locations and spatial characteristics

The extensibility of each activity, and the variety of activity array both affect the character of the spaces. Spaces range from those non-specialised in character with a wide variety of activities (e.g. Orowa, corridor, bedroom), to space labels that are specialised (e.g. Toilet), with little variation in the activity array. Generally, there are many similarities across the geometric types. Geometric types with a small functional core, use their spaces in a non-specialised way, but the new types with larger functional complexes also have a few non-specialised spaces (bedroom, living room).

Table 6-3: convention of activity locations, based on the total sample.

SUMMARY OF CONVENTION OF ACTIVITY LOCATIONS	← MOST SPECIALIZED														Total locations	
	orowa	verandah	corridor	bedroom	dining room	living room	main bedrm	kitchen	study rm	bathroom	garage	store rm	toilet			
family living	8	37	12	25	8	113	11	1	3	2	1	0	0	11		
general storing	4	8	71	57	2	0	8	44	0	2	4	71	1	11	MOST EXTENSIBLE	
eating	9	1	4	38	80	73	6	9	0	0	1	0	0	9		
reading/studying	6	1	4	66	30	63	30	0	25	0	0	0	0	9		
sleeping/dressing	4	1	0	153	1	26	70	0	11	0	0	4	0	8	MOST EXTENSIBLE	
religious activity	0	1	0	9	1	26	7	0	1	1	0	0	0	7		
entertainment	4	1	0	24	3	95	0	2	1	0	0	0	0	7		
ironing	2	0	3	6	11	0	2	0	1	0	0	0	0	7		
cooking	13	0	29	1	0	3	0	117	0	0	0	2	0	6		
food preparation	6	3	1	0	0	1	0	23	0	0	1	0	0	6		
retailing	1	9	1	0	1	0	0	0	0	0	1	0	0	5		
laundry	2	6	2	0	0	0	0	0	0	31	0	0	0	4		
Animal rearing	4	0	0	1	0	0	0	1	0	0	0	0	0	3		
toileting	1	0	0	0	0	0	0	0	0	12	0	0	120	3		
Hosting events	0	0	1	0	0	4	0	0	0	0	0	0	0	2		
Water collection	0	1	0	0	0	0	1	0	0	0	0	0	0	2		
bathing	0	0	0	0	0	0	0	0	0	139	0	0	0	1	EXTENSIBLE	
sewing	0	0	0	0	0	0	0	0	0	0	0	1	0	1		
sports	0	0	0	0	0	0	0	0	0	0	0	0	0	0	LEAST	
Other*	1	0	1	0	2	0	1	1	1	0	15	0	0	7		
Total number of activities in each space	14	11	11	10	10	9	9	8	7	6	6	4	2			
Total number of times that each space is the most common and 2nd most common location for any activity.	3	4	4	7	4	6	2	3	0	3	1	2	1			

Note: The most common location and the second most common location for each activity is shown in red and blue respectively. The core space labels are highlighted in gray.

6.1.5 Convention of Object locations: degree of extensibility and the genotypes

The thirty-nine object categories in the sample were allocated to respective categories based on whether they are utilised in the same activity e.g. crockery (plates, spoons, forks, etc), or whether they can be used interchangeably – e.g. (stove/cooker). Objects that do not fulfil the above criteria were recorded as single objects. The most extensible object categories were: unused items (junk), regular use furniture, spare furniture (as might be expected), and portable water, fuel, food, fridge, iron/board, and bowls and basins, (in eight to eleven different locations in the total sample), and also in three to seven different locations in individual floor plans. Objects of restricted extensibility, are those that are constrained to just one or location in each home, include electronic gadgets, fans, alcoholic beverages, valuables, portable lights, worship objects, etc. Comparison of the object array of the various geometric types showed key differences occurred in only eighteen object categories.

Five of the eighteen categories are related to cooking as kitchen facilities vary considerably in the sample. The stove/cooker is less extensible in the intermediate and new geometric types, and more extensible in older and enduring types, whilst the opposite situation occurs with the fridge. Some are objects common to all the domestic spaces (e.g. regular use furniture, crockery, clothes, print material, food, electronic gadgets) while other objects seem context specific and may not feature highly in the object inventory of a different locale e.g. portable water containers, large cooking pots, portable fan, and crates & cartons of soft drinks and beer (because the bottles are recycled in Nigeria). There was a low occurrence of cars/motorbikes, phones, and computers, although since the study was done, there are much higher incidence of these objects in Nigerian households. Farm tools, animals for consumption, the sewing machine and retail goods were all found in a small but significant number of households.

6.1.6 Space Specialisation: interaction between activities and object categories

A comparison of the effect of activities and objects on space labels, shows that some spaces like the garage, toilet and bathroom are very specialised in terms of activity and object arrays, whilst only the bedroom, and to some extent the corridor and living room, are non-specialised for both objects and activities. At odds are the space labels that are different in terms of use (for activities) and content (for objects): - the storeroom, and to a lesser extent; the main bedroom, orowa and veranda. The majority of spaces were of low specialisation for objects and activities particularly the core spaces (see figure 7-1 for graph showing space specialisation for use and content overleaf).

7. Conclusions

The functional core of space labels was demonstrated to have ‘expanded’ from the older to the newer geometric types partly in response to the allocation of existing functions into independent spaces. The emergence of new space labels in the newer genotypes was combined with the disappearance of traditional orowa in the newer genotypes, coinciding with the demands for new definitions of privacy, and functional needs. This supports ideas by various theorists linking changes in spatial configuration and space use with changes in social requirements. A significant number of activities and objects had consistently wide extensibility across geometric types, whilst specific activities and objects had consistently limited extensibility. The main points of departure were in relation to cooking, which was less extensible in the newer geometric types. It is noted that the degree of extensibility

showed more differences across geometric types for the object categories, with some difference occurring in about half of the object categories reflecting a generic flexibility.

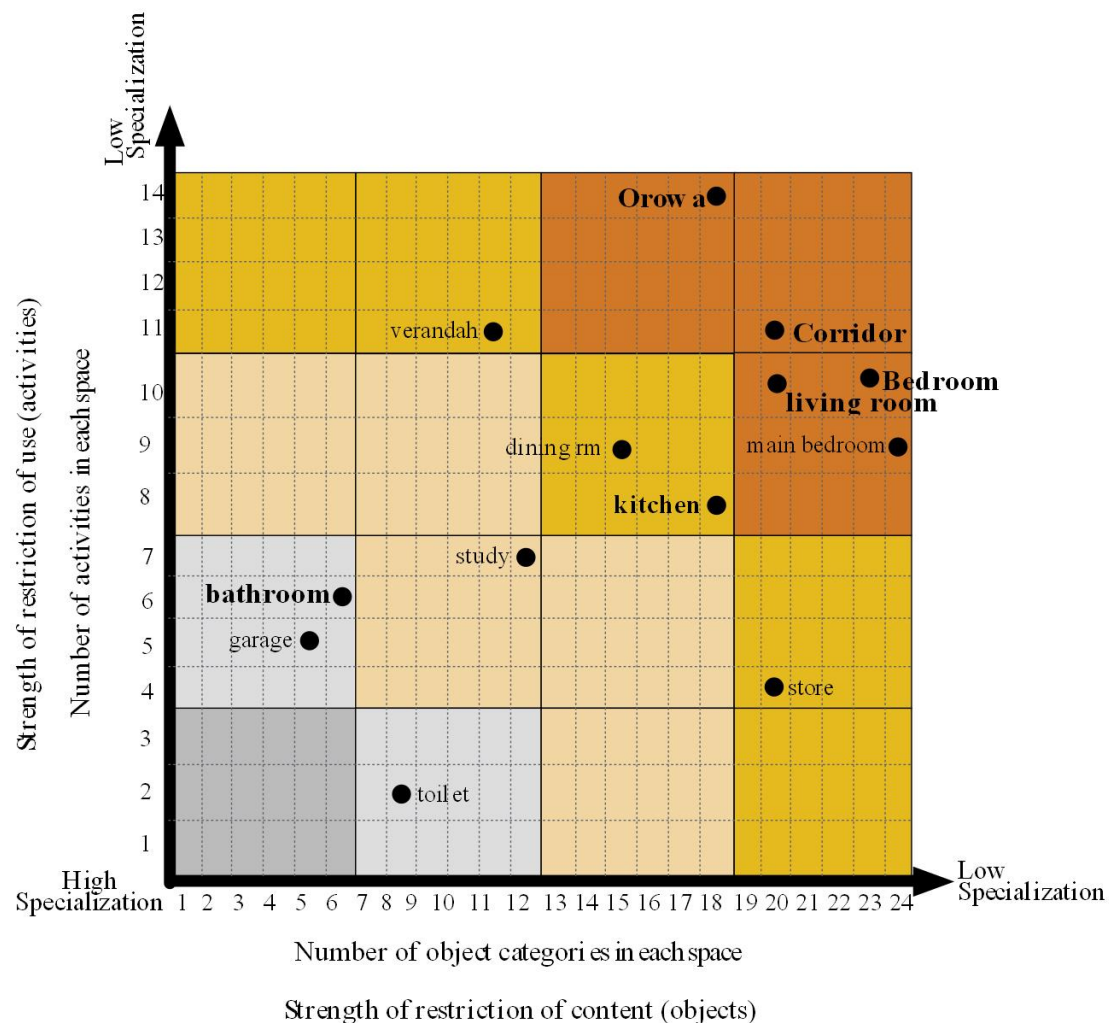


Figure 7-1: Summary table of conclusions

These 18 object categories were quite varied in that some were less extensible in the new types whilst other objects were more extensible in the newer types.

Several spaces were not as rigidly specialised as the use of functions labels may suggest- the orowa, living room, main bedroom, bedroom, were all non-specialised in almost all geometric types. The toilet and bathroom were specialised in all types, with the differences occurring for the veranda, corridor, store & kitchen. Contrary to the notion of multi-functionality versus mono-functionality, what was in operation is a high degree of non-specialisation (multi-functionality) though less pronounced in the newer geometric types. While spaces that are quite specialised in terms of numbers of activities in the spaces are distinct, fewer spaces seem to be specialised in terms of objects, suggesting that higher value is placed on the location of an activity, with the location of objects being more amenable to individual choice. Overall, there were more points of continuity between the old and the new geometric types than expected, but the points of departure point partly to consequences of inadequate facilities, as well as real differences in lifestyles.

Table 7-1:summary of findings

Summary	Orowa-type	Double-loaded corridor	Mixed	Compact (courtyard)	Compact (non-courtyard)	Elongated
Newness of spatial type	Old type	Intermediate type	New type	New type	New type	New type
Functional Core Size (no of space labels)	3 space labels	2 space labels	8 space labels	9 space labels	7 spaces labels	10 space labels
Emergence of New Space Labels	No new space labels	Emergence of Corridor space label + disappearance of old Orowa (central hall)	Emergence of new space labels + disappearance of old Orowa (central hall)	Emergence of new space labels + disappearance of old Orowa (central hall)	Emergence of new space labels + disappearance of old Orowa (central hall)	Emergence of new space labels + disappearance of old Orowa (central hall)
Degree of Extensibility	<p><u>Points of Similarities in Geometric Types: -</u></p> <ul style="list-style-type: none"> • Similar wide extensibility for family living, general storing, eating, reading/studying across the spatial types but with slightly less extensibility in the newer geometric types. • Limited extensibility of hosting social events, water collecting, bathing, toileting and sewing, in all geometric types. <p><u>Points of Departures in Geometric Types: -</u></p> <ul style="list-style-type: none"> • Cooking and food preparation are much more restricted in location in the newer geometric types • Ironing has restricted extensibility in the enduring type, and more extensibility in the newer geometric types due to the inherent flexibility of the activity itself • Degree of extensibility shows more difference for the location of objects, with some difference occurring in about half of the object categories. Some of these 18 object categories were less extensible in the new types whilst other objects were more extensible in the newer types. 					
Degree of Specialization	<p><u>Points of Similarities in Geometric Types: -</u></p> <ul style="list-style-type: none"> • Low specialization of orowa, living room, bedroom, and corridor. • High specialization of the garage,study and toilet. <p><u>Points of Departures in Geometric Types: -</u></p> <ul style="list-style-type: none"> • veranda, corridor, store & kitchen are more specialized in the newer geometric types 					

Acknowledgements:

I wish to thank Prof J. Hanson (Ph.d Supervisor) at UCL Bartlett school of Graduate Studies, and the Ile-Ife respondents who kindly gave up their time, and allowed their homes and lives to be a part of this study. I also wish to thank the HOD of Department of Architecture, Covenant University for the support to participate in the 2012 Waber conference.

References:

- Adeokun C. O. (2007) Continuity and Change in Yoruba Domestic Architecture; (Lifestyle patterns, and degree of consonance with spatial types) Unpublished thesis, Bartlett Graduate school of Architecture. London, University College London.
- Amorim, L. (1999). The Sectors' Paradigm: a study of the spatial and functional nature of modernist housing in Northeast Brazil. Unpublished thesis, Bartlett Graduate school of Architecture. London, University College London.
- Bourdieu, P. (1979, 1984). *Distinction: A social critique of the judgement of taste*. Paris, London, Routledge and Kegan Paul Ltd.
- Colakoglu, B. (2005). "Design by grammar: an interpretation and generation of vernacular house types in contemporary context." *Environment and Planning B: Planning and Design* 32: 141-149.
- Csikszentmihalyi, M. and E. Rochberg-Halton (1981). *The meaning of things; Domestic symbols and the self*. Cambridge, Cambridge University Press.
- Giddens, A. (1984). *The Constitution of Society*.
- Heitor, t., J. P. Duarte, et al. (2003). Combining grammars and Space syntax: Formulating, evaluating and generating designs. Fourth International Space Syntax Symposium, London.
- Hillier, B. and J. Hanson (1984). *The Social Logic of Space*. Cambridge, Cambridge University Press.
- Kent, S. (1990). Activity areas and architecture: an interdisciplinary view of the relationship between use of space and domestic built environments. *Domestic Architecture and the use of space: An interdisciplinary cross-cultural study*. S. Kent: 1-8.
- Korosec-Serfaty, P. (1985). Experience and Use of the Dwelling. *Home Environments*. I. Altman and C. M. Werner. New York, Plenum Press: 65-83.
- Lefebvre, H. (1974,1991). *The Production of Space*, Blackwell Publishing.
- Miller, D. (2001). Behind closed doors. *Home Possessions: Material Culture behind closed doors*. D. Miller, Berg: 1-19.
- Rapoport, A. (1990). Systems of activities and systems of settings. *Domestic Architecture and the use of space: An interdisciplinary cross-cultural study*. S. Kent: 9-20.
- Steadman, P., Peter A. Rickaby and Frank E. Brown (2000). "A classification of built forms." *Environment and Planning B: Planning and Design* 27: 73-91.
- Tversky, B. (2003). "Structures of mental spaces: how people think about space." *Environment and Behaviour* 35(1): 62-80.
- Van Leusen, M. (1996). "A typology of dwelling arrangements." *Environment and Planning B: Planning and Design* 23: 143-164.
- Wieder, D. L. (1970). *On Meaning by Rule. Understanding Everyday Life*. J. D. Douglas. London, Routledge and Kegan Paul Ltd: 107-135.
- D. Wood, & R. J. Beck (1994). *Home Rules: Culture, Environment and the American Family*. Baltimore: The Johns Hopkins University Press Ltd.