

## Settlements Pattern and Functional Distribution in an Emerging Communities: A Case of a Local Government Area of Kwara State, Nigeria

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**Abstract:** This study examines Ilorin South Local Government Area (LGA) of Kwara State, which in the recent time, carved out from city of Ilorin, Nigeria. The impression is that the new LGA, which had established a long string attachment with Ilorin may find it difficult to stand on its own. Settlements in an ideal situation exert good relationship with one another if they have common social and cultural links. But in Ilorin South LGA both infrastructural facilities and social amenities are elusively developed forcing workers to reside in Ilorin city. The study derives its data from the fieldwork-survey and observations and the data gathered were analyzed using Correlation and Nearest Neighbors Analyses. The findings revealed some remarkable achievements within a short while and the levels of new hierarchical settlement orders give the LGA a new unique description. The geographical distribution of the areas also indicated morphological patterns that result from a closed into random generation. Suggestions are put forward with desire to embarking on more regional development programmes.

**Key words:** Hierarchical settlement, distribution, metropolis, morphological patterns, Ilorin, Nigeria

### INTRODUCTION

Settlements are specifically located on the earth surface where human habitants agglomerate. In many respects, settlements are important in all facets of life, because it is through their development that man can explore the environment for his needs. They are the most visible sign that human culture has imposed on the natural world. Settlements, forms, patterns, distributions, types and sizes and their tendency towards change with time have fascinated geographers (Whyne-Hamond and Charles, 1979).

Several factors notably influence location and distribution of settlements over space. These factors are regarded as the cardinal directives in geographic study of pattern in human activities, such as; industries and services, all which are rotated round the settlement. Hence, the connotation; why are settlements distributed the way they are? (Abler *et al.*, 1971). All over the world, several factors always influence location of settlements the way they are and these include; relief, climate, vegetation, political, socio-economic, historical and mythical origin. As a result of these factors, the degree of concentration of people, the extent of planning for the people and attainment of the people varies from one region to another. Whereas, the functions which these settlements-large or small perform, vary in their various locations.

This study is aimed at evaluating the differences that exist within geographical distribution of some settlements in Ilorin South LGA of Kwara State, a LGA that was in recent times excised from Ilorin metropolis. Why there are spatial disparities in parts of the study area and what are the likely socio-economic implications that are likely emanating from this new LGA, among many others. Some improvements have lingered towards the development of the communities by different Governments that are governed the State. But, lack of accessible roads, poor communication system, poor industrial establishment, inadequate distribution of infrastructural facilities as well as low population patronage from nearby urban areas among others, are the major problems that are facing Ilorin South LGA presently. If special care is not taken, the above-identified problems may continue to hinder all attempts to integrate physical planning programmes in the area.

**The study area:** Ilorin metropolis consists of 3 Local Government Areas-Ilorin East, West and South. It is located on Latitude 8°30'N and Longitude 4°35'E. The city emerged as the Kwara State capital in 1967, during the creation of 12 states in Nigeria by the defunct military era. Both physical and structural expansion of the city started from this period and it is almost impossible to distinguish other three LGA'S that are parts of the mother town within the city center (Fig. 1 and 2). However, Ilorin South LGA

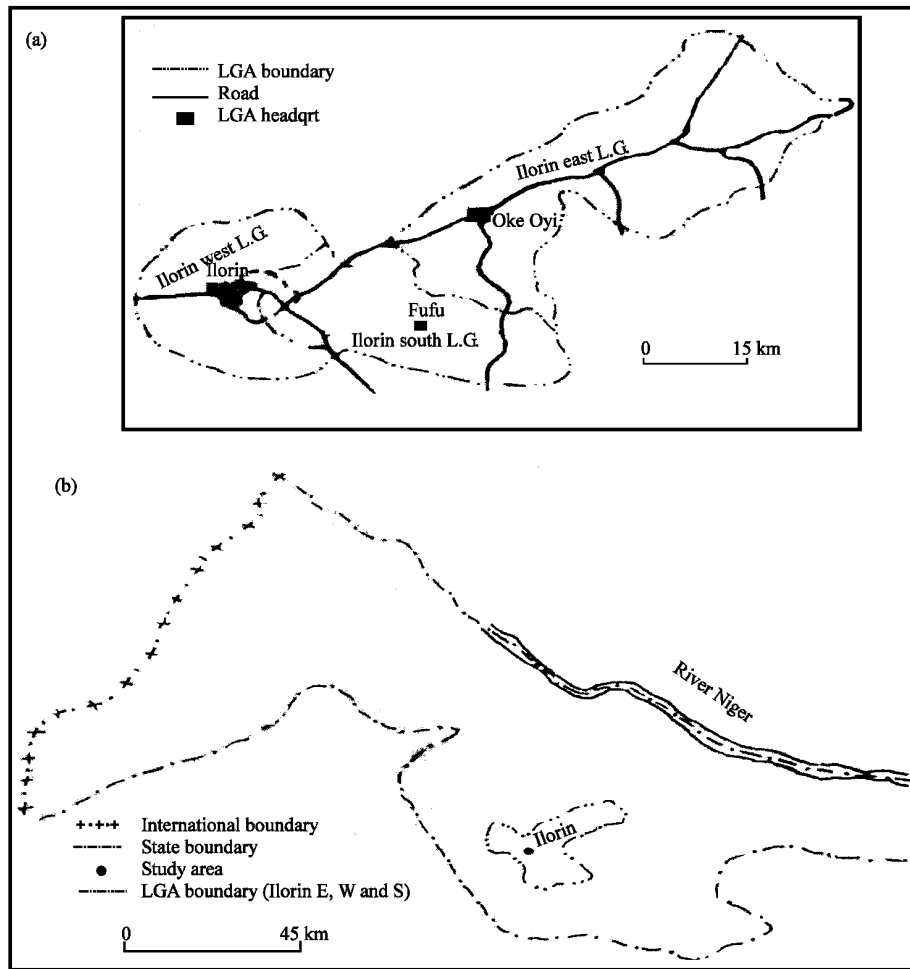


Fig. 1: a) Ilorin metropolis and Ilorin west, east and south headquarters, b): Map of the Kwara state showing the study area

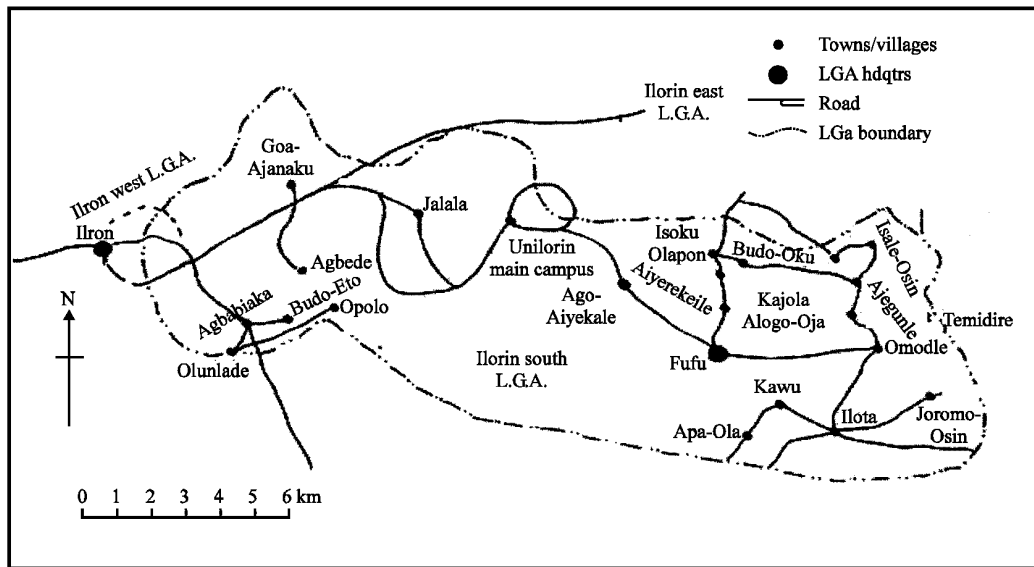


Fig. 2: Ilorin south L.G.A. showing nearest neighbour settlements

was excised from Ilorin Metropolis in 1995 and it has started to grow and expand in all possible directions. Ilorin South LGA has a total population of 154,590 (NPC, 2000) with about 50 communities who are mostly farmers. Though, some other people engage in various other activities like trading, commerce, administration etc. Fufu, a nodal town, is the Headquarters of the LGA and is about 30 km from Ilorin city centre. The expansion of this town extends its socio-economic functions to the surrounding villages and surrounded villages. Thereby, forming different patterns of development, though these developments are at a slow rate, when compared with other Local Government Areas in the state.

**Conceptual framework:** A settlement can be a colony of human beings where people live together and make their living. Settlements vary in size, complexity and stage of development they also, range in terms of provision of facilities and infrastructure provided (Daniel and Hopkinson, 1992). In many respect, settlements are live wire to geography studies, because it is only through their development that man can adapt into the environment to suit his needs. Settlements are the most visible signs that human culture has imposed on the natural world (Whyne-Hammond and Charles, 1979; Ahmed, 1996).

In recent times, some scholars have written on various settlements' attributes in the world. As regards past works that are related to this study, they merely reviewed and generalized issues on settlements. Therefore, in order to shed more light on the issue, the concept and theory of settlement morphology are generally assessed. These consist of three principal categories such as; nucleated, linear and dispersed settlements (Appendix 1). The nucleated settlement takes a form that is governed by a lot of factors such as, the original site of a village, human and social events, as well as defence and security. Thus, nucleation dominates the pattern of rural settlements all over the world (Peter and Hall, 1992). This is one of the reasons, why Olawepo (1999) inferred that a settlement is a unit of space built up by man as a place to live and where to find a living. That is, man has identified an area as environment to live, also which serves him as a defensible space. Nucleated settlements are called hamlets when they contain few houses, but if they contain more houses, they are called villages, which are common in eastern parts of Nigeria (Owolabi, 2000). Dispersed settlement on the other hand, is settlement of separate dwelling units that are scattered and separated by one another. Linear settlements usually have more houses facing the main streets or roads (Whyne-Hammond and Charles, 1979).

Olawepo (1999) classified settlements further; he identified satellites and emergence settlements. The

former, he referred to as settlement that results from population explosion in the urban areas and this may pose problems of accommodation and obviously can result in congestion among population. The establishment of satellite settlements is often an immediate or temporary solution to competition for space. In the latter, settlement forms as a result of emergency, but a short-term arrangement is provided to the affected people. The short-term arrangement could later turn out to be a permanent settlement such as the Lake Nyos makeshift settlements in Cameroon in 1980's that later became a permanent town. Many cities and urban centers like Ilorin, Ibadan, Lagos, Zaria, Kano and Calabar in Nigeria, begun as small villages or small towns but latter turned out as different category of permanent settlements (Onokeroraye and Omuta, 1977).

Settlements may form different patterns in space or variations in sizes, functions, building plans, architectural designs and constructional techniques and building materials. Differences may occur but they are not the same from one country to another or from towns, cities, regions or from one locality to another locality. Some village settlements in the study area vary in form, pattern and distribution due to their origin, socio-economic development, cultural attachments and political links with the mother settlement (Ilorin Metropolis). Ironically, Kwara state settlements that have more political association with government in power benefit from development programmes than settlements, which are not. All over the world, small settlements and villages that are endowed with natural resources can develop naturally. For example, when comparing why different settlements are developed or upgraded in Africa, only the 'Bourbis' (small settlements consisting some few huts) exist in the desert borders. While, large villages (over one hundred huts) are found among the Hottentots. In Britain, villages tend to be larger in the eastern lowlands than they are in the uplands of the north and west. In the same vein, where intensive farming is predominant, it gives rise to generally larger settlements than where there are extensive farming regions. Thus, Egypt, India and China have generally bigger villages than Australia, Argentina and former Soviet Union (Whyne-Hammond and Charles, 1979). Patterns of settlement distribution are almost the same in this study area (Ilorin East LGA) more especially, where there is regular topography but enclosed with different natural endowment distribution. Settlements are therefore regarded as the most visible signs that human culture imposes on the natural world.

## **MATERIALS AND METHODS**

Basically, the types of data required for this research, were based on socio-economic development of the respondents. Such data include; population

Table 1: Population distribution of sample settlements in Ilorin South LGA's

Settlement	Population
Ilorin	532,088
Fufu	1127
Unilorin main campus	1,236
Olunlade	728
Gaa-Ajannaku	524
Ago-Aiyekale	256
Ilofa	1105
Omode	357
Isale-Osin	293
Kajola	523
Budo-Efo	415
Ajgunle temidire	493
Mogaji	496
Alaya-Oja	206
Joromo-Osin	447
Agbabiaka	335
Jalala	654
Agbede	202
Isoku-Olopon	310
Kawu	211
Aiyere-Ile	322
Opolo	208
Budo-Oku	316
Apa-Ola	358

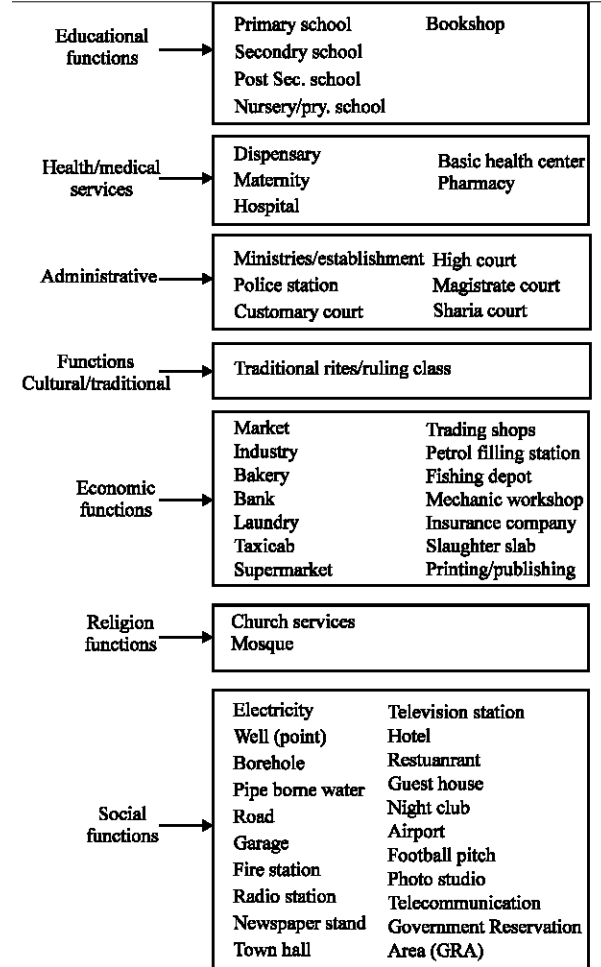
Ministry of finance and economic development Ilorin, projected population figure for 1999. Total population minus Ilorin town =11,122 or 2.1%

characteristics and composition, spatial disparity in the pattern of settlements, as well as 1995 development planning data for the study area. This information for the study were obtained from both primary and secondary sources. The primary source was based on the administration of 240 questionnaires for 24 communities and field observation. A reconnaissance survey was carried out to ascertain areas of focus and likely problems that may be encountered during the actual survey. While, the secondary data were sourced from relevant documents from both Ilorin South and Ilorin West LGAs.

Ilorin South LGA is vast; therefore, a stratified random technique was used, based on 1991 population census. The study area consists of 24 communities (Table 1 and Fig. 1) and 24 households were randomly selected from each village to respond to available questions. Many authors had one time or the other used this method of selection. Olujimi (2000) used the method to study twelve Ibirra settlements in Owo-Ondo state. Also, Olawepo (2001) used a similar method in appraising learning from the people problems in Lokoja, Nigeria.

It is hypothesized that a certain amorphous relationship exists between the population size of the settlements and their functional variability. A Pearson Product Moment Correlation Coefficient was used to show the workability of the hypothesis propounded (computer output in Appendix 2). While again, the Nearest Neighbour Analysis, which was pioneered in Geography by Decay (1962), was also employed to find

Table 2: Funtional Code Tree (FCT) of functions available in Ilorin South LGA



out if there exists any physical relationship that may affect socio-economic and regional development of the study area. The method was also, used to find if there exist some interactions between and among the settlements and or, if disparity exists in the settlements, whereby each settlement performs its activities without any association with other settlements (Appendix 3). Apart from the above, descriptive method of analysis was harmoniously used. This makes it possible for us to relate and find out that, no settlement is an island on its own without a form of association with other settlements nearby or at a distance apart (Table 2 shows functions of villages).

## RESULTS AND DISCUSSION

Settlements are spatially distributed on the earth surface but they vary in terms of their functional attributes. Hence, disparity arises between various categories of settlements. In an attempt to classify settlements in Ilorin South LGA into different categories,

Table 3: Functional size of settlements in Ilorin South LGA's

Settlement	Functions	Settlement	Functions
Ilorin	53	Mogaji	13
Fufu	32	Alaya-Oja	12
Unilorin main campus	29	Joromo-Osin	12
Olunlade	24	Agbabiaka	11
Gaa-Ajannaku	20	Jalala	11
Ago-Aiyekale	17	Agbede	10
Ilota	15	Isoku-Olopon	09
Omode	14	Kawu	09
Isale-Osin	14	Aiyereke-Ile	09
Kajola	14	Opolo	08
Budo-Efo	13	Budo-Oku	07
Ajgunle-Temidire	13	Apa-Ola	07

Author's fieldwork (2006)

some parameters were adopted. A list was proposed for all functions that appeared at least once in each of the sample settlements. This initial list was subsequently modified as a result of reconnaissance and actual field survey experiences. The final list (Table 2) included 53 facilities, utilities and services (functions). The goal of this assessment is to determine the presence or absence of functional items in the list and what class would each of the settlements be classified as a result of functions they perform. However, the summary of the total number of functions for each settlement is shown in Table 3.

The availability of each function listed in Table 2 was used to determine the class in which each settlement belongs. The Summary of the total number of functions available in each settlement is shown in Table 3.

It can be seen clearly that settlements in the study area are endowed with different functions and they are arranged in hierarchical order based on the functions they perform. Thus, they can be categorized into three formidable classes as shown in Table 4.

Based on the orderliness, Ilorin town stands out as the First Order in the hierarchy and ranking of settlements' functions. It is therefore, convenient to say, it possesses 53 functions that have no equal among others (Table 3). While, other settlements followed and attained second and third order, respectively.

Settlements that have closer number of discrete values of distribution were joined together for hierarchical order. Thus, the 3 categories of settlements that have certain distinguishable features which differentiate them from one another (Table 5).

**First order settlement:** Ilorin, the capital of Kwara state stands out as the major first order in the hierarchy and ranking of settlement functions. It provides, a total number of 53 functions. The city has a wide range of industries (large and small scale) and offers some higher order goods and necessary services to itself and nearby settlements. Thus, it exerts great influences on surrounding settlements.

Table 4: Settlement grouping of Ilorin South LGA

Order of settlement	Functional class	Number in each class
1st order	39 above	1
2nd order	20-38	3
3rd order	19 and below	20
	Total	24

Author's fieldwork (2006)

Table 5: Result of hierarchical order of functions performed by settlements in Ilorin South LGA

Areas	Group	Hierarchy of functions	Total no of settlements	Rank
(a) Ilorin	1st order	39-53	1	1st
(b) Fufu	2nd order	20-38	3	2nd
Olunlade	„			
Unilorin main campus	„			
(c) Others	3rd order	19 and below	20	3rd
		Total	24	

Author's fieldwork 2006

**Second order settlements:** Fufu the headquarters of Ilorin South LGA, Olunlade and Unilorin Main Campus were grouped together because they are closed to one another within a discrete stratification. Thus, they formed Second Order in the hierarchy of functions which they perform. Olunlade alone performs 24 functions, while Unilorin with its extended land mass is closed to Olunlade and Fufu, performs 29 major functions. Fufu with similar characteristics performs 32 major functions to itself and to other settlements and beyond. Examples of functions which they all perform include; administrative, farming center, market and trading center, health-care delivery and educational center.

**Third order settlements:** This 3rd order consists of a larger group of settlements. Though, they were grouped together because there was little difference in their discrete scores. Thus, they remain in the same group. The settlements in this category include; Gaa-Ajannaku, Ago-Aiyekale, Ilota, Omode, Isale-Osin, Kajola and Ajgunle-Temidire. Others settlements are Mogaji, Alaya-Oja, Joromo, Agbabiaka, Jalala, Agbede, Isoku-Olopon, Kawu, Aiyereke-Ile, Opolo, Budo-Oku and Apa-Ola. These settlements perform a number of functions put together ranging from Traditional ruling class, ecclesiastic, education, health care delivery, postal services, police posts, mechanic training and workshops units. Other functions are; periodic market, service and training/ shopping complexes.

Results of Pearson Correlation Coefficient in the analysis reveal a positive correlation of 0.7 as patterns exhibited by the settlements (Appendix 2). This equally indicating that there is a higher degree of relationship between size of settlements and their corresponding functional codes.

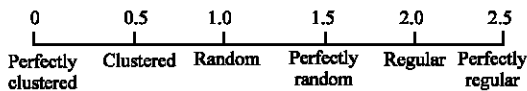
Table 6: Showing location of settlements, their nearest neighbours analysis and distance

Point	Settlement	Point	Settlements' Neighbour	Distance (km)
A	Ilota	Y	Joromo-Osin	2.4
B	Kawu	A	Ilota	1.4
C	Apa-Ola	B	Kawu	1.3
D	Ajgunle-Temidire	G	Mogaji	0.9
E	Kajola	G	Mogaji	1.6
F	Isale-Osin	G	Mogaji	1.3
G	Mogaji	H	Isoku-Olopon	2.3
H	Isoku-Olopon	H	Budo-Oku	3.8
I	Aiyereke-Ile	H	Isoku-Olopon	0.5
J	Alaya-Oja	I	Aiyereke-Ile	1.0
K	Joromo-Osin	L	Ormode	1.0
L	Ormode	N	Fufu	2.2
M	Gaa-aiyekale	N	Fufu	1.6
N	Fufu	J	Alaya-Oja	0.7
O	Budo-Oku	N	Fufu	1.9
P	Jalala	R	Ajanaku	5.9
Q	Unilorin main campus	P	Jalala	4.1
R	Ajanaku	X	Ilorin	2.8
S	Agbede	R	Ajanaku	2.3
T	Opolo	V	Olulande	2.2
U	Budo-Efo	W	Agbabiaka	1.0
V	Olulande	X	Ilorin	5.1
W	Agbabiaka	V	Olulande	1.1
X	Ilorin	W	Agbabiaka	4.8
			Total	53.2

Author's compilation (2006)

A test for spatial disparity in the distribution of settlements in Ilorin South LGA was further carried out using Nearest Neighbour Statistical Analysis. The method is used to assess if there is any degree of physical dispersion or clustering of settlements in the areas (Table 6 and Appendix 3).

The result from calculation of Nearest Neighbour Analysis (Rn) reveals that Rn is 1.12. This is an indication that spatial distribution of settlements in Ilorin South LGA is moving towards perfectly random. In other words, when compared this out put with the Rn scale propounded by King (1962) as shown below, the result exhibits a perfectly random distribution:



The implication of this is that any regular distributed settlements that is found in area of uniform or flat topography, is ecologically suitable for farming, good for road net-work collections and distribution of infrastructural facilities and above all, they attract a larger population (Idachaba, 1985). This is a typical feature of relief present at Ilorin South Local Government Area.

**CONCLUSION AND RECOMMENDATIONS**

This study has demonstrated that settlements in Ilorin South LGA's are naturally located on flat and regular topography. It is suggested that settlements that

are closed to one another should harness this advantage and form themselves into a formidable group by adopting some rural development programmes in heir communities. Adoption of such programmes would serve as catalyst for growth and development into self sufficient now and in the nearest future.

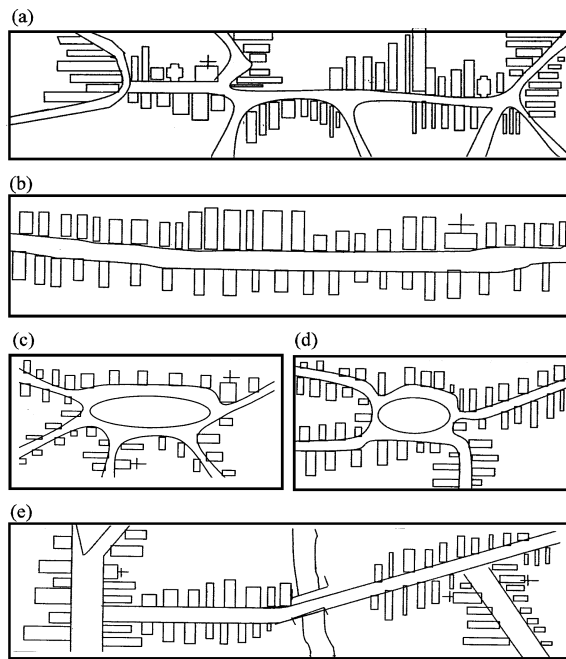
Moreover, planners' perspective is usually the focus on urban expansion on the rural land, which is the utmost practice in some development nations. This can be intensified through agricultural development which is the main contribution of urban on rural settings in order to streamline inequality among poor. Onyemelukwe (1982) and Adibe (1995) noted that the viability of rural settlements in Nigeria depends very much on the size of population and the activities which they perform in order to improve their area.

It is also, a duty commitment of both state government and Local government to develop rural resources being tapped or untapped with guidance and criteria for development and use. The local government officials in their pronouncement, directives and plans should encourage these policies.

The incidence of urban sprawl and urban expansion has extended into rural settlements almost all over the country, with little provision of basic infrastructural facilities and amenities. Areas within Ilorin South LGA's that have rich and important recreational resources should be designed and brought to the attention of the State Government in order to give such recreational scenario a befitting tourism recognition.

Some settlements around Fufu, the headquarters of Ilorin South LGA are typical rural settings, which constitute economically backward areas in Kwara State. After over 60 years of colonialization of the country and some 44 years of independence, rural Nigeria has not changed. Ironically, some major socio-economic development are always concentrated in cities and urban centers at the expense of rural areas, this always creates a dichotomy of inequality and social injustice among Nigerians. It is therefore, recommended that, adequate and sustainable planning strategy must be employed to improve life of rural residents. This will in no small measure serve to assist development in physical and economic integration of all rural settlements in Kwara State and Nigeria as a whole. As often said, no man is an island, therefore, no community is self-sufficient without having to interact with other communities, socially, economically, culturally and politically. Since, not <60% of Nigeria's population is ruralites, therefore, rural development is an impetus force and should necessarily dovetail with similar development in urban centers. The relationship between higher and lower order places should greatly be symbiotic and not to be the horse and the rider relationship.

Lastly, whatever geographical factors bind settlements together and determine their concentration, physical development must be given laudable priorities. In the case of settlements in Ilorin South LGA of Kwara State, prevalence of adequate planning, boosting of agricultural sectors, community integration, provision of essential and basic infrastructures facilities and amenities are essential. Above all, availability of good road networks linking city to rural areas, portable water supply and health care delivery are imperative if our rural areas must develop and check in-migrants from rural to urban centers.



Appendix 1: a: Clustered settlement, b: Linear settlement, c: Loose-knife settlement, d: Open space settlement and e: Double settlement

Appendix 2a: Descriptive statistics

Variable	Mean	SD	N
Size	15.667	10.6063	24
Population	22599.54	108520.9122	24

Appendix 2b: Correlations

Variable	Size	Population
<b>Size</b>		
Pearson Correlation	1.000	0.791
Sign. (2tailed) Level		0.000
N		24
<b>Popn</b>		
Pearson correlation	0.791	1.000
Sign. level	0.000	-
N	24	24

Correlation is significant at the 0.01 levels  
Author's Compilation (2004)

$$\frac{\text{The observed distribution} = \text{Dobs}}{\text{Nearest neighbour distance} = \frac{\text{Exit}}{\text{Number of points}} = \frac{\text{Exit}}{N}}$$

$$\frac{53.2}{24} = 2.2167$$

$$rE = 0.5 \sqrt{\frac{\text{Size of the study area}}{\text{Number of points}}}$$

$$rE = 0.5 \sqrt{\frac{A}{N}}$$

$$rE = 0.5 \sqrt{\frac{134}{24}} = 0.5 \sqrt{5.58}$$

$$\therefore 0.5 \times 2.362 = 1.18$$

$$\therefore \text{Dobs} = 2.2167$$

$$\therefore \frac{\text{Dobs}}{\text{RE}} = \frac{2.2167}{1.18}$$

$$= 1.88 \text{ Random distribution}$$

### Appendix 3: Nearest neighbour analysis

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