



eCOMMONS

Loyola University Chicago  
Loyola eCommons

---

Dissertations

Theses and Dissertations

---

1975

## Socio-demographic Factors Affecting Population Density: The Case of Eastern Nigeria

Daniel Obikeze  
*Loyola University Chicago*

Follow this and additional works at: [https://ecommons.luc.edu/luc\\_diss](https://ecommons.luc.edu/luc_diss)

 Part of the [Sociology Commons](#)

---

### Recommended Citation

Obikeze, Daniel, "Socio-demographic Factors Affecting Population Density: The Case of Eastern Nigeria" (1975). *Dissertations*. 1594.  
[https://ecommons.luc.edu/luc\\_diss/1594](https://ecommons.luc.edu/luc_diss/1594)

This Dissertation is brought to you for free and open access by the Theses and Dissertations at Loyola eCommons. It has been accepted for inclusion in Dissertations by an authorized administrator of Loyola eCommons. For more information, please contact [ecommons@luc.edu](mailto:ecommons@luc.edu).



This work is licensed under a [Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License](#).  
Copyright © 1975 Daniel Obikeze

SOCIO-DEMOGRAPHIC FACTORS AFFECTING POPULATION  
DENSITY: THE CASE OF EASTERN NIGERIA

by

Daniel S. Obikeze

A DISSERTATION SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL  
OF LOYOLA UNIVERSITY OF CHICAGO IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

NOVEMBER

1974

## ACKNOWLEDGMENTS

This dissertation may not have been possible without the assistance, advice, cooperation and support of a large number of persons and organizations whom I have the privilege to know, to live and work with. To all these persons and organizations I wish to acknowledge my indebtedness.

I am particularly grateful to the members of my dissertation committee: to the chairman, Dr. Jai P. Ryu; to Dr. Kathleen Norr for her insightful suggestions and advice; to Dr. William M. Bates who was ever available and ever ready to discuss, direct and encourage; and to Reverent Thomas M. Gannon and Dr. Richard Block who read the draft and offered invaluable suggestions. My gratitude also goes to the Director and staff of the Africana Library of Northwestern University, Evanston, Illinois, for placing their entire facility at my disposal and for personal services rendered. To my fellow graduate students, especially Fr. Yvon Yangyuoru, for their moral support and useful ideas, I express my thanks. Finally, my profound gratitude goes to my wife, Fidelia, for her patience and support--both moral and material--through the years of my graduate studies and months of preoccupation with this dissertation.

## VITA

The author, Daniel Sunday Obikeze, was born on September 12, 1939 in Awa, East Central State, Nigeria. He is the second son of Elijah Okeke Obikeze and Oyidie Mgboli (Onwu) Obikeze.

He had his elementary education at Anglican School, Ufuma, Nigeria. He attended New Bethel Grammar School, Onitsha, Nigeria, where he obtained a West African School Certificate, second division, in 1958.

Between 1959 and 1961, he studied privately and passed the London General Certificate of Education in three subjects at the advanced level. In October, 1961, he entered the University of Nigeria, Nsukka, and in June, 1964 he obtained a Bachelor of Arts degree (honours division) in Sociology. While at the University of Nigeria, he was elected secretary of the University of Nigeria Sociological Association.

In January, 1965, he was appointed Administrative Officer (Student Affairs) at the University of Nigeria, Nsukka, a position he held until 1970.

In September, 1970, he was granted an assistantship in Sociology at Loyola University, Chicago. He received the Master of Arts degree in Sociology in June, 1973 and was awarded the Arthur Schmitt Fellowship of Loyola University 1973-74.

## TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS . . . . .	ii
VITA . . . . .	iii
LIST OF TABLES . . . . .	v
LIST OF ILLUSTRATIONS . . . . .	vii
CONTENTS OF APPENDICES . . . . .	viii
 Chapter	
I. INTRODUCTION . . . . .	1
II. REVIEW OF RELATED LITERATURE . . . . .	19
Density: Concept and Measurement	
Density: A Sociological Variable	
Density Theories	
Density Studies of Eastern Nigeria	
III. METHOD . . . . .	36
Procedure	
Variables and Hypothesis	
The Data	
IV. RESULTS . . . . .	79
V. RESULTS (Continued) . . . . .	104
Regression Analysis	
Path Analysis	
Dispersed Settlement Pattern and Relative Density	
VI. THE CASE OF EASTERN NIGERIA . . . . .	127
REFERENCES . . . . .	141
APPENDIX A . . . . .	151
APPENDIX B . . . . .	155
APPENDIX C . . . . .	156
APPENDIX D . . . . .	159

# LIST OF TABLES

Table	Page
1. Population Densities of Thirteen African Countries and the Three Regions of Nigeria . . . . .	3
2. Rural Population Ranges for the Three Regions of Nigeria, by Administrative Divisions . . . . .	4
3. Physiographic Zones of Eastern Nigeria . . . . .	9
4. Occupational Groups in Eastern Nigeria . . . . .	10
5. Distribution of Major Ethnic Groups by Provinces of Eastern Nigeria . . . . .	12
6. Summary of Data on Tribal Density . . . . .	55
7. Number of Cases Confirming and Not Confirming Hypothesis One . . . . .	81
8. Type of Land Ownership by Relative Density . . . . .	82
9. Number of Cases Confirming and Not Confirming Hypothesis Two . . . . .	83
10. Type of Work Organization by Relative Density . . . . .	84
11. Number of Cases Confirming and Not Confirming Hypothesis Three . . . . .	86
12. Type of Consumption Unit by Relative Density . . . . .	87
13. Number of Cases Confirming and Not Confirming Hypothesis Four . . . . .	88
14. Type of Political Decision-Making and Relative Density . . . . .	89
15. Number of Cases Confirming and Not Confirming Hypothesis Five . . . . .	91
16. Type of Family System and Relative Density . . . . .	92
17. Number of Cases Confirming and Not Confirming Hypothesis Six . . . . .	93
18. Type of Descent System and Relative Population Density . . . . .	94

# LIST OF TABLES (Continued)

Table	Page
19. Number of Cases Confirming and Those Not Confirming Hypothesis Seven . . . . .	95
20. Pattern of Kinship Organization and Relative Population Density . . . . .	96
21. Number of Cases Confirming and Not Confirming Hypothesis Eight . . . . .	97
22. Settlement Pattern and Relative Population Density . . . . .	99
23. Number of Cases Confirming and Not Confirming Hypothesis Nine . . . . .	101
24. Type of Religious Belief by Relative Density . . . . .	102
25. Type of Technology by Relative Density . . . . .	105
26. Relative Annual Temperature by Relative Density . . . . .	107
27. Relative Annual Rainfall by Relative Density . . . . .	107
28. Phi Coefficients of Association between Technology, Relative Temperature and Respective Independent Variables . . . . .	109
29. Zero-Order and First Order Partial Phi Coefficients Between Dependent, Independent and Control Variables . . . . .	109
30. Phi Zero-Order Correlation Matrix . . . . .	113
31. Multiple Regression of Kinship Organization, Settlement Pattern, Relative Rainfall on Relative Density . . . . .	114
32. Comparison of Actual Correlation Coefficients with those Calculated from Path Models . . . . .	118
33. Administrative Divisions of Eastern Nigeria by Tribe . . . . .	134
34. Divisional Density of Eastern Nigeria by Tribal Composition. . . . .	135
35. Major Tribes of Eastern Nigeria by Kinship Organization and Settlement Pattern . . . . .	138

## LIST OF ILLUSTRATION

Figure	Page
1. Political Map of Nigeria (1953) . . . . .	7
2. Density Map of Eastern Nigeria . . . . .	14
3. Tribal Map of Africa . . . . .	58
4. Trial Path Models . . . . .	117
5. The Path Diagram . . . . .	119



## CONTENTS OF APPENDICES

Appendix	Page
A. A Note on Nigerian Census Data: 1953 vs. 1963 . . . . .	150
B. Area, Population and Density of the Three Regions of Nigeria: 1953 . . . . .	155
C. Population Density Ranges of Nigeria . . . . .	156
By Administrative Divisions 1953	
By Provinces 1953	
Eastern Nigeria by Administrative Division	
D. Methodological Problems and Issues . . . . .	159

## CHAPTER I

### INTRODUCTION

With the achievement of the "demographic transition," the problems of population size and density no longer occupy such a central position in the social and economic theories of Western Europe as they did during the last two centuries. Nevertheless, as Van de Walle (1972:117) has said, these problems "have by no means lost their relevance in the developing nations of Africa, Asia, and Latin America." For one thing, it is in relation to the countries of the so-called third world that the term "population explosion" is so frequently used in recent years. With this in view, the author considers the study of factors that influence population distribution and density in traditional societies a worthy scientific endeavor. This study therefore considers the old issue of population density in a rather different environment. It is envisaged that there are some scientific advantages to be gained by reexamining an old question from a different perspective. It makes possible a reassessment of the already accepted theories and explanations in the light of new evidence. Further, the new situation may bring into focus some aspects of the problem hitherto considered irrelevant or unrelated to the main issues.

In view of its unusually high population density, the former Eastern Region of Nigeria<sup>1</sup> presents a suitable focal point around which this study may be organized. According to Karmon (1966), "the most significant fact about

---

<sup>1</sup>As employed in this study, Eastern Nigeria refers to that geographical area of Nigeria encompassed by the three eastern states, namely, the Rivers, the South-eastern and the East Central States.

this region is its unusually high concentration of human population." There seems to be a general agreement among students of Eastern Nigeria that its population density is too high by African standards (Talbot, 1926; Lorimer, 1961; Stevenson, 1968). Perhaps the earliest documentary evidence of large population concentration in this area is contained in Adams' (1832) account of a series of ten voyages to Africa made between 1786 and 1800. According to him, "The Heebos (Ibos), to judge by the immense number annually sent into slavery, inhabit a country of great extent and extremely populous . . ." (1832:130-1). Writing on the same subject a century later, Amaury Talbot stated that based on the 1911 and 1921 censuses, the population density in some areas of Eastern Nigeria compared favorably with those of England and Wales at about the same period. As he put it, "the 596 and 423 to the square mile in Owerri and Okigwi compared with 618 and 445 of England and Wales in the years 1911 and 1881" (1926: Vol. IV, p. 7).

In more recent years, with relative improvements in African population statistics, scholars of various disciplines have continued to confirm these early testimonies. The following citations represent but a cross-section of such opinions:

Among all geographical regions in tropical Africa, Eastern Nigeria is remarkable for having the highest density of population. There is no other country or region in that area whose rural population density is so much a fraction of that of Eastern Nigeria, not even Western Nigeria, which is part of a common greater geographical unit.

Karmon (1966:5)

There can be little question that the Ibo region in South-eastern Nigeria constitutes one of the greatest nodes of rural population density in all sub-Saharan Africa. It may indeed be the major node . . . The very nature of the density and the large area involved bespeak a rather respectable antiquity.

Stephenson (1968:190-2)

The Ibo population is unusually dense for a society sustained on the basis of a hoe culture.

Lommer (1961:99-101)

One of the major problems in the demographic pattern (of population distribution in Africa) is however explaining the exceptionally high densities found on poor soils, as in portions of Iboland.

Hance (1970:78)

In quantitative terms, Table 1 presents comparative density figures for thirteen African countries and the three main Regions of Nigeria.

TABLE 1

POPULATION DENSITIES OF THIRTEEN AFRICAN COUNTRIES AND  
THE THREE REGIONS OF NIGERIA

Country	Census Year	Area (Sq. Miles)	Density (Sq. Miles)
Algeria	1966	919,500	13.5
Sudan	1956	967,300	10.6
Kenya	1962	225,000	41.1
Tanzania	1967	362,800	34.6
Liberia	1962	42,800	23.7
Senegal	1960	75,600	40.3
Dahomey	1961	43,600	48.3
Togo	1960	22,000	65.4
Sierra Leone	1963	27,800	78.5
Gambia	1963	3,900	78.7
Ghana	1960	92,300	73.0
Zaire	1962	905,200	41.1
Nigeria	1953	356,700	86
Northern Nigeria		282,000	60
Western Nigeria		30,000	140
Eastern Nigeria		29,000	245

Sources: Brass et al., 1968:154; Karmon, 1966:5.

The above table is self-explanatory. By showing the densities of Nigeria's three Regions alongside those of other African nations in this table, the author means to emphasize the size of Eastern Nigeria relative to some African countries. Thus, while Eastern Nigeria has a land area greater than three of the countries in the list (Togo, Sierra Leone, and Gambia), none of the

thirteen countries has as much as one-third the density of this region.

TABLE 2

RURAL POPULATION RANGES FOR THE THREE REGIONS OF NIGERIA,  
BY ADMINISTRATIVE DIVISIONS (SUMMARIZED), 1953<sup>1</sup>

Density Per Square Mile	Per Cent of Regional Population		
	North	West	East
Less than 100	58.3	24.1	10.1
100 - 299	36.6	48.1	12.8
300 - 499	. .	27.8	48.2
500 - 699	. .	. .	17.1
700 and Above	. .	. .	11.8
No Information	5.1	. .	. .
Total	100.0	100.0	100.0

Table 2 presents a condensed summary of rural population ranges for the three former Regions of Nigeria by administrative Divisions (see Appendix C for the full figures). From the above table, it may be seen that while 58.3 per cent of the population of Northern Nigeria live in Divisions with less than 100 persons per square mile; 24 per cent of the population of Western Nigeria; and only 10.1 per cent of Eastern Nigeria live in Divisions of similar density. On the other hand, while no Division in Northern Nigeria attains a density of 300 persons per square mile, 27.8 per cent of the population of Western Nigeria and as much as 77.1 per cent of that of Eastern Nigeria reside in Divisions of 300 or more persons per square mile. Finally, while no Divisions in both Northern and Western Nigeria attains a density of 500 persons per square mile, 17.1 per cent of the population of Eastern Nigeria live in Divisions of this density and as much as 11.8 per cent live in Divisions with a density of 700 or more persons per square mile.

<sup>1</sup>The author prefers to use the 1952-3 rather than the 1963 Nigerian census figures in this study. The reasons are explained in Appendix A.

In practical terms, the problems posed by unusual population concentration in Eastern Nigeria have for long been the concern of the Regional Administration. In the 1940s, for instance, the Colonial Administration proposed a resettlement scheme aimed at a more even dispersal of population within the Region. The proposal was received with such a vehement opposition that it was promptly withdrawn.

High as the population density of Eastern Nigeria might be, it is by no means the highest in Africa. Density in cultivated areas of Egypt, for instance, was as high as 1,887 per square mile in 1960 (Hance, 1970:54). What makes the Eastern Nigerian situation so intriguing is that the general physiography and the techno-environmental conditions in this region fail in many significant ways to conform to those usually associated with high population density in other areas of the world. These include fertile, aluvial soils, use of the plow, and irrigation. Several attempts have been made at scientific explanations of this phenomenon but as Simon Ottenberg has said ". . . the causes of the high density (in Eastern Nigeria) have never been adequately explained and are in need of study" (1955:140). The present study is, in some ways, a response to Ottenberg's call.

At this point, a brief review of the general features of Eastern Nigeria appears in order.

### The History

Eastern Nigeria, like the country itself, was an artificial creation. Its emergence and subsequent desuetude as a geo-political entity marked but stages in the constitutional evolution of Nigeria.

The Berlin Conference of 1885 placed the Oil Rivers and the Lower Niger coastal districts of West Africa within the Zone of British influence. In 1900, these areas, known as the "Niger Districts" and defined as:

The territories on the line of the coast between the British Protectorate of Lagos and the right or Western bank of the Rio del Rey, and the territories on both banks of the Niger, from its confluence with the River Benue at Lukoja to the sea, as well as the territories on both banks of the River Benue, from the confluence up to and including Ibi.

Burns (1969 :151)

were constituted into the Protectorate of Southern Nigeria. In 1914, the Protectorate of Nigeria was born with the amalgamation of the Northern and Southern Protectorates, although the two continued to be separately and differently administered as the Northern and Southern Provinces. In 1939 the Southern Provinces were divided into two governmental units known as the Western and Eastern Provinces. By the 1946 constitutional amendment, these Provinces were renamed Regions and Nigeria became a Federation of the three--Northern, Western, and Eastern Regions (see Fig. 1). The word "Region" was officially dropped in 1966 and the constituent units of the country were simply known as Northern, Western, Eastern and Mid-Western Nigeria.<sup>1</sup> Following a national crisis which led to the civil war in 1967, the country was divided into twelve administrative units called States. By this process, the former Eastern Nigeria was split into three separate states, namely, the Rivers, the Southeastern and East Central States.

### Physiography

Geographically, Eastern Nigeria, once described as a rhomboid, is located on the south-east corner of Nigeria, off the Bight of Biafra in the Guinea Coast. It stretches from 4° 15' to 7° 5' North and 5° 30' to 9° 16' East covering an area of 29,484 square miles or approximately 8.2 per cent of Nigeria. It is bounded on the West by the River Niger; on the South by the Atlantic Ocean, on the East by the Cameroon Republic.

---

<sup>1</sup>The Mid-Western Region was carved out of Western Nigeria as a separate governmental unit in 1964.

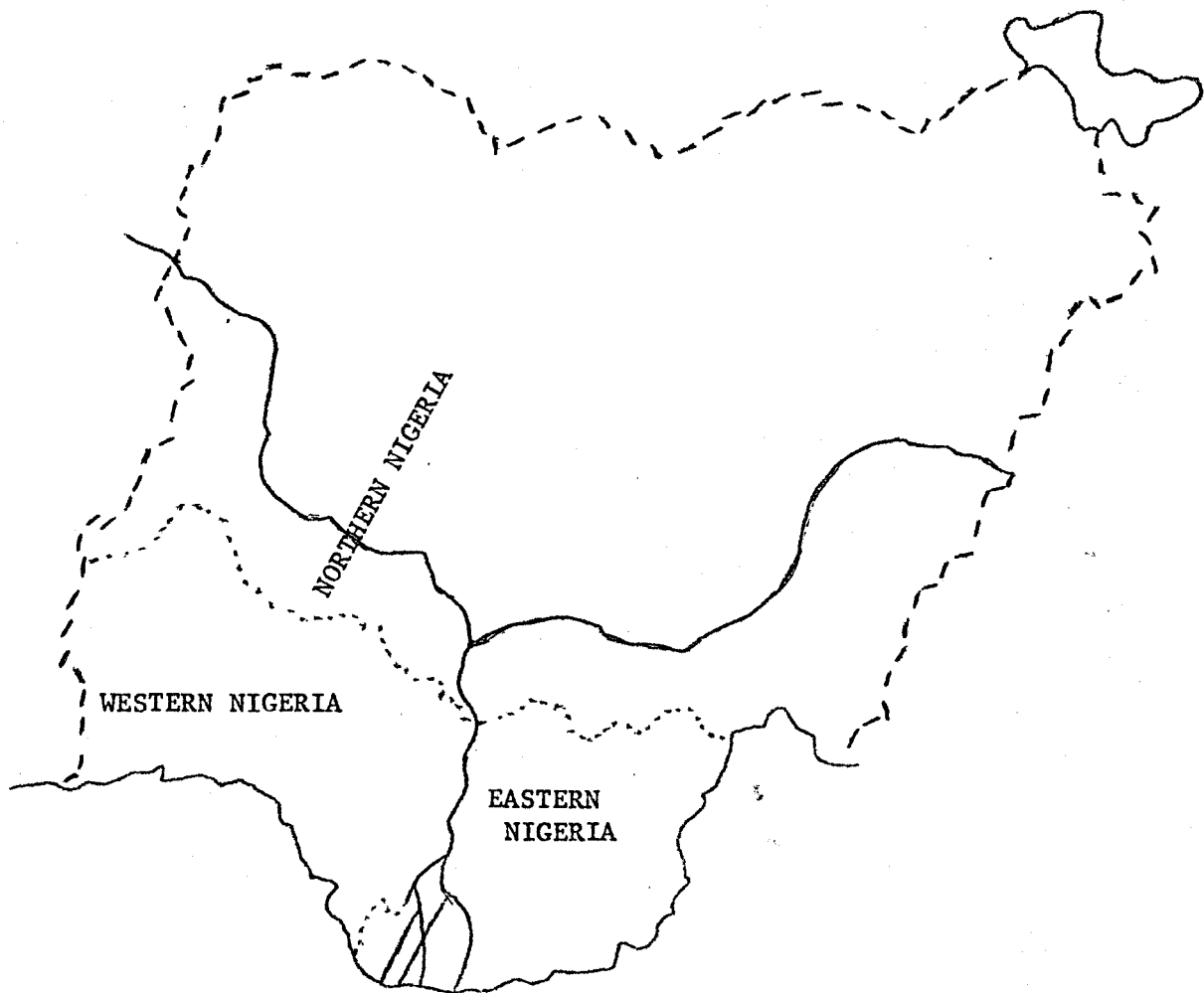


Fig. 1.--The Three Regions of Nigeria, 1953



Eastern Nigeria lies within the tropical rainforest belt and this is reflected in its climatic conditions. As Pritchard puts it, ". . . the climate is hot 80°F (26.5°C) during the day, dropping to 60°F (15.5°C) at night" (1969:70). Rainfall is generally heavy, though heaviest along the coast and diminishing steadily as one goes inland and towards the north. Thus, while Port Harcourt recorded 21.1 inches of rain and 28 "rainy days" during the month of August 1965, Enugu, located on the near-north fringe registered 13.2 inches of rain and 19 "rainy days" during the same period. Following the climatic pattern rather closely, the vegetation displays remarkable changes, from dense mangrove forest along the coast to what has been called "the derived savannah" as one moves inland (Floyd, 1969; Karmon, 1966).

However, the landforms of Eastern Nigeria have certain distinctive features. The area is characterized by low-lying, well-drained, almost flat plains scarcely rising above 400 feet. As Y. Karmon has said:

There are coastal plains also in other countries of the Guinea Coast but none reaches the dimensions of the (Eastern) Nigeria plain or has its peculiar soil types. (1966:8)

One effect of this type of landform is the absence of waterfalls and cataracts which in turn facilitates river travel and communication.

Eastern Nigeria may be divided into five broad physiographic zones (see Table 3).

The Eastern Uplands are essentially a westward extension of the Cameroon mountains forming "an elevated complex of crystalline hills, mountains and plateaux . . . in stark contrast to the flattish terrain of the Cross River Basin and coastal lowlands" (Floyd, 1969:96). In Obudu Division, Ogoja Province, it attains a height of 6,350 feet.

Apart from the intrusion of a ridge of escarpments running from Nsukka-Udi highlands, southwards to Okigwe and Arochuku, the rest of the country

TABLE 3  
PHYSIOGRAPHIC ZONES OF EASTERN NIGERIA<sup>1</sup>

Zones	Area (Sq. Miles)	Per Cent of Total Area	Per Cent of Total Population
Eastern Uplands	5,213	17.9	5.5
Cross River Basin	6,101	20.9	17.4
Plateau and Escarpment Zone	3,992	13.6	16.1
Coastal Plains	7,974	27.1	55.2
The River Flood Plains and Deltas	6,048	20.5	5.8

Source: Yehuda Karmon, A Geography of Settlement in Eastern Nigeria. 1966:9.

<sup>1</sup>Figures include two provinces of the Southern Cameroons.

consists of relatively flat river basins and flood plains. As shown in Table 3, the three major plains, the Cross River basin, the River Flood plains and the Coastal plains cover about 70 per cent of the territory.

These favourable relief features notwithstanding, Eastern Nigeria has one of the poorest and least fertile soils in Africa. As with the landforms, the territory falls under five soil types. Of these, ferrallitic (completely weathered) soils are the modal type, covering over 50 per cent of the entire area. These are naturally poor quality, porous soils with little mineral deposits. According to Floyd, "these soils are rich in free iron but have a low mineral reserve and therefore a lower natural fertility than the ferruginous tropical soils" (1969:106). Yet what requires explanation is the anomaly whereby these areas of infertile soils support the highest population concentrations.

#### The Economy

Peasant agriculture is still the main stay of Eastern Nigerian economy. According to the 1953 population census, (see Table 4) 42 per cent of the entire population and 83 per cent of the "working" population are engaged in

TABLE 4

## OCCUPATIONAL GROUPINGS IN EASTERN NIGERIA, 1953

Occupations	Number (in 1000)	Per Cent of Total Population
Agriculture and Fishing	3,043	42
Trading and Clerical	292	4
Crafts	75	1
Administrative, Professional and Technical	50	0.7
Other Occupations	142	2
Total "Working" Population	3,602	49.7

Source: Population Census of Eastern Nigeria. Lagos, 1952.

agriculture and fishing. It is pertinent to note that a large proportion of those reported as traders are also part-time farmers. Eastern Nigerians are subsistent farmers in the sense that the main bulk of economic activity is geared towards the production of food crops for local consumption. Food crops are estimated to constitute 75 per cent by value of the total agricultural production. Among the food crops, yam is by far the most important and is traditionally regarded with great deference. Floyd (1969) estimated that yam alone accounts for over 57 per cent by value of total food crop production. Other food crops grown in Eastern Nigeria include cassava (manioc), cocoyam, maize and legumes.

It is believed that sometime in the past, shifting cultivation was the prevailing farming method in Eastern Nigeria. At present, it is practised only in relatively few areas in Calabar and Ogoja provinces, where land is still abundant. Bush fallowing and slash-and-burn technique are by far the most predominant modes of farming in Eastern Nigeria. However, the period of fallow varies widely depending on the amount of land available. Within the high-

density belt, bush fallowing can no longer be sustained and what has been called rudimentary sedentary cultivation is resorted to.

The machete and the hoe constitute the major agricultural implements in Eastern Nigeria. These are fashioned locally by guild-controlled black-smiths. Traditionally, these implements are intimately tied to the soil and fertility cults. The plow is unknown in this area and partly because of the prevalence of the tse-tse fly, beasts of burden are not utilized for either tilling the soil or for transportation. Even in the riverine areas, irrigation as an agricultural technique is not a regular practice.

Oil palm is the single most important cash crop of Eastern Nigeria. It grows wild in the farmlands and plantation cultivation is but a very recent development. In 1963, Eastern Nigeria produced about 180,000 tons of palm oil, two-thirds of which were exported and a third consumed locally. In the same year, about 200,000 tons of palm kernel were exported.

Trading in local commodity was a traditionally female occupation and closely tied to the extensive market system of Eastern Nigeria. However, with the introduction of "foreign" or overseas goods and the cash economy, trading has become a lucrative occupation pursued by both sexes.

Most of the important crafts of Eastern Nigeria were traditionally controlled by clan-based guilds. Of these, black-smithing, wood-carving, weaving, pottery, medicine and priesthood are the most important. Today, some of these guilds are being organized or transformed into cooperative societies.

#### Ethnic Composition

Ethnically, Eastern Nigeria is by no means a homogenous unit. It is inhabited by peoples of varying ethnic and linguistic groups. Numerically, the most important of these groups are the Ibos, Ibibios, Ijaws, Efiks, Ekois, Ogonis and Ekuris.

Table 5 presents a distribution of the major ethnic groups shown in the 1953 census by the five provinces of Eastern Nigeria. It shows that the Ibos are predominant in four of the five provinces, Ibibios and Efiks are predominant in Calabar province while the other ethnic groups are concentrated in Ogoja province.

TABLE 5  
DISTRIBUTION OF THE MAJOR ETHNIC GROUPS BY PROVINCES  
OF EASTERN NIGERIA, 1953

Ethnic Group	Total Population (1953) (in 1,000)	Per Cent of Provincial Composition					
		Onitsha	Owerri	Ogoja	Calabar	Rivers	Total
Ibo	4,917	98	98	63	10	40	70
Ibibio-Efik	809	*	*	*	45	*	12
Ijaw	259	*	*	*	*	35	4
Ekuri-Yakor	98	*	*	35	15	*	1
Other	937	2	2	2	30	25	13
Total	7,020	100	100	100	100	100	100

\*Implies less than 1 per cent of provincial population.

Source: Population Census of the Eastern Nigeria, 1953. Lagos, Nigeria.

#### Pattern of Settlement and Population Distribution

The charge that the use of average density figures to describe the population distribution in any given territory conceals significant variations is borne out clearly in the case of Eastern Nigeria. For, the regional average density of 245 persons per square mile obscures the fact that within the region the density ranges from 50 in Calabar Division to over 850 persons per square mile in Orlu Division.

There are variations in the pattern of settlement but generally the compound is the smallest settlement unit. Typically, it consists of a number of separate housing units for the head of the family, his wives, sons and other dependents. These housing units are often enclosed in a wall or fence. The size of the compound varies with the family size and the number of housing units. Each compound is surrounded by a piece of garden land called compound land which also separates one compound from another. A cluster of compounds constitute a village or quarter and a cluster of these in turn make up the town-group. Each quarter and each town group is usually separated from others by tracts of farm land. Each village is connected to every other village and town-group by a maze of roads and pathways. It is the physical arrangement of these compounds, quarters, and the layout of the inter-connecting pathways, gardens and farm lands that produce a particular settlement pattern.

Floyd (1969) identified five settlement patterns in Eastern Nigeria:

(1) areas of continuous settlement where the separating farm and garden lands have either vanished or are reduced to the minimum; (2) areas where villages are separated by narrow farm lands one-quarter to two miles wide; (3) areas where villages are separated by broad farm land of over two miles wide; (4) areas of scattered villages; and (5) virtually uninhabited areas.

However, it seems more convenient to group population distribution patterns in Eastern Nigeria into three principal zones:

The High-density zone.--This zone is organized around two core centers of high population concentration. One is located in the northwest; the other in the southeast. These two centers are connected by a region of moderately high density, thus presenting the picture of a dumb-bell-shaped territory some 120 miles long. It has an average width of 25 to 30 miles and stretches from Onitsha in the north to Oron at the Cross River estuary in the south (Floyd, 1969:41).

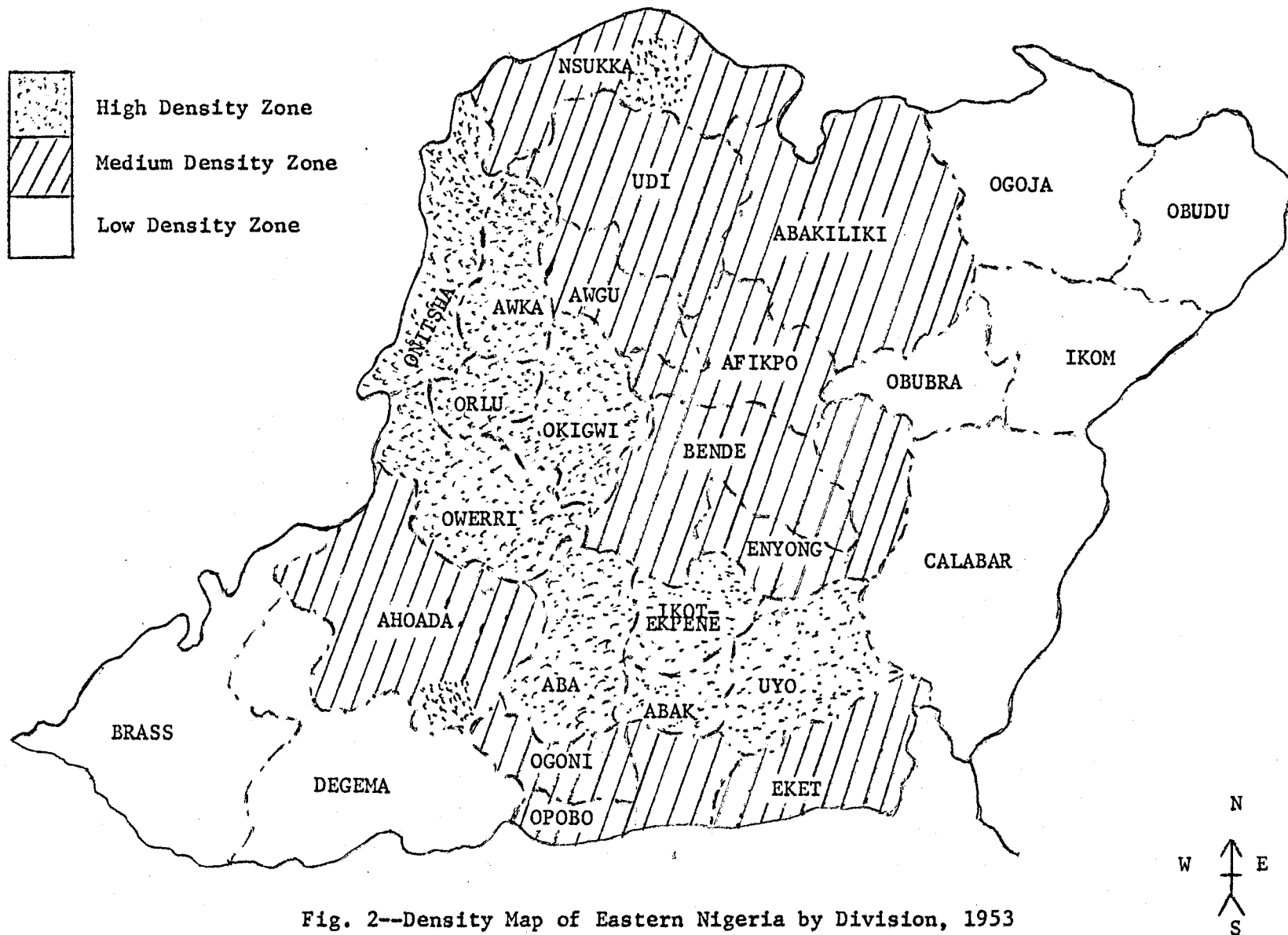


Fig. 2--Density Map of Eastern Nigeria by Division, 1953

Within this high density zone, the density ranges between 400 and 900, with a mean of 600, persons per square mile.<sup>1</sup> Together, these two centers cover 21 per cent of the land area and contain 46 per cent of the population of Eastern Nigeria. They encompass Orlu, Okigwi, Owerri, Awka, Onitsha, and Aba Divisions within the Ibo territory and Abak, Uyo, and Ikot-Ekpene Divisions in Ibibio land.

There is a third high density center located in the northwesterly section, around Enugu-Ezike in Nsukka Division. Here the density rises to over 800 per square mile although the density for Nsukka Division is only 342. This core center is also linked to the north-south axis by a medium density region.

#### The Medium Density Zone

Immediately outside the core centers of the high density zone, the population concentration falls off rather sharply into the medium density zone. Radiating from the core centers, this zone opens out both ways to include a vast territory within the Cross River basin to the North and the River flood plains to the South. Density in this zone ranges from 100 to 400 persons per square mile.

#### The Low Density Zone

The very existence, the expanse of territory involved and the density in this zone bring out clearly the peculiarity of the Eastern Nigeria situation. The zone may be considered under two groupings: forested areas with fertile but sparsely populated agricultural lands and swampy areas with adverse natural conditions.

The virtually uninhabited fertile lands cover large areas of Ikom, Obubara and Ogoja Divisions in the upper Cross River basin and Calabar

---

<sup>1</sup>This zone is often referred to as the North-South density axis.



Division in the southeast corner. Whereas the problem in the high density zone is that of too many people living in so small an area of poor, unproductive land; in the low density zone, the issue is that of so few people living in so great an expanse of fertile and extremely productive soil.

The area of adverse natural conditions are found in the creeks of the Niger Delta and in the rugged terrain of Obudu and Oban hills to the northeast. Here nature discourages human settlement and density is correspondingly low.

Together these two areas cover 42 per cent of the entire land area of Eastern Nigeria but contain only 10 per cent of the total population. Density in this zone ranges from 40 to 100 per cent with a mean of about seventy persons per square mile.

#### Summary and the Study Focus

The preceding sections have presented the study "problem" as well as a brief sketch of the general features of Eastern Nigeria. The purpose in doing this is to lay out in some detail the general background out of which the study problem has arisen. As stated earlier, the problem of population density is as old as social science itself. But it is the author's dissatisfaction with the explanation of the Eastern Nigeria situation that has compelled him to seek a new perspective to the old question.

Some insightful attempts have, no doubt, been made at a scientific explanation of the unusually high density of population in Eastern Nigeria. Surprisingly enough, almost all the existing studies have been done by geographers and anthropologists. One consequence of this is that the effect of geo-physical and historical factors have been over-emphasized to the neglect of socio-cultural ones.

From the present perspective, population density is seen as the end-result of the interplay of the three demographic forces of natality, mortality and

migration. Emile Durkheim (1900) has expressed essentially the same view when he said several decades ago:

It is the currents of internal migration which determines the relative importance of urban and rural populations; and dependent on this factor are natality and mortality which cause the size of the general population to vary. It is the tendency of a society to live in a concentrated or dispersed pattern which explains its density.

Thus, the author considers density a truly social phenomenon which calls for sociological study and explanation. In other words, it is argued that such a genuinely social problem as population density cannot be adequately explained on the basis of physical environments and histography alone. This is not intended to imply that geo-physical factors should have no place in the study of density or that density could be completely explained on the basis of the "social" alone. Rather the argument is that while generally both factors contribute in determining the density of a given society, there may be situations where social factors become more crucial than the physical. Thus, where, as in the case of Eastern Nigeria other explanations still leave many stumps unburied, it becomes necessary to explore the social dimensions. This, in a nut-shell, is what the present study is out to do.

The need for a sociological investigation of population density in Eastern Nigeria becomes all the more necessary when the following facts are taken into consideration: (a) the coexistence, under the same physiographic conditions, of both a high density and a low density belt; (b) the fact that although the low density belt "is blessed with the physical requirements of a good agricultural belt, yet, materially the inhabitants are hardly much better off than those in the high density zones;" (c) the population density of Eastern Nigeria is purely rural in character. None of the five major towns in Eastern Nigeria is located within the high-density axis (Udo, 1963); (d) agricultural technology has not advanced beyond the hoe and the matchet; (e) irrigation is not practised;

(f) the prevalence of the tse-tse fly, the mosquito and other vectors of tropical diseases ensure that mortality is as high as elsewhere in West Africa; (g) that contrary to the practice in other traditional societies, Eastern Nigerian population tend to concentrate in the interfluves away from sources of water supply (Udo, 1963).

## CHAPTER II

### LITERATURE REVIEW

Social science literature relevant to this study may be grouped under two broad categories: those dealing with various aspects of the phenomenon of population density and those addressed specifically to population density studies in Eastern Nigeria.

#### Density Concept and Measurement

Of all the descriptive statistics in use in demography, the density ratio is, perhaps, the most popular, the most misused and the most abused (Day and Day, 1973). Part of its popularity rests on its simplicity and practical applicability. It summarises the relation between people and land area (or natural resources by implication) in terms that are readily understood and communicated (Barclay, 1958:25-28). For this, density figures have become a principal weapon in Malthusian debates.

Yet, it is this simplicity and crudeness of density measure that disposes it to ready misuse particularly in the hands of non-demographers. What constitutes the irony of the situation, however, is that given the practical utility of this concept to administrators, economists, politicians, and demographers alike, and in spite of recent refinements in demographic techniques generally, no overall satisfactory measure of density has yet been devised. As a consequence, the traditional crude measure of density continues to be used despite its proven inadequacy (Hance, 1972).

As our earlier illustration would have shown (see Chapter I, p. 4) the principal case against the use of crude national density--usually given as total national population divided by the total land area, expressed in persons

per square mile--is that "where total numbers of people are enumerated within large expanses of national territory much of which is unoccupied, the resulting figure is not only meaningless but is sometimes dangerously misleading as to the true situation" (James, 1957:117). In short, it tends to obscure internal variations often vital to planning and development.

Nevertheless, some noteworthy attempts have been made toward improvement of density statistics. Only a few of these will be considered here.

In his book, The African Husbandman, William Allen (1965) introduced the dual concept of "human carrying capacity" and "critical population density" (CPD). Human carrying capacity is defined as "the maximum population density which a system is capable of supporting permanently in that environment without damage to the land" (1965:89). It is the density level "beyond which degeneration leading to ultimate collapse is bound to set in" (1965:76). In the same way, critical population density is defined as "the human carrying capacity of an area in relation to a given land-use system expressed in terms of population per square mile" (1965:89).

The calculation of CPD involves a fairly complicated procedure based on the following basic information: (a) adequate land/soil classification and a land map based on that classification; (b) estimate of the proportion of land in each category suitable for cultivation under prevailing technology; (c) data on customary land-use in the area; and (d) average acreage under cultivation per head of the population. The actual calculation of CPD involves fitting these information into a fairly long and complicated formula.

From a few examples worked out by Allan, the practical utility of this measure of density seems apparent and his claim that "it is clearly of great importance to an understanding of African agrarian problems" appears justified (1965:8). Some of the advantages of this measure have been pointed out by

O. Ojo (1968). According to him, it takes account of as many as possible of all the variable factors governing man's numerical strength and his use of the resources of the land. It is a more precise term than such vague terms as overpopulation and population pressure. It tends to point out the danger points in the relationship between man and land. Finally, it makes for a more meaningful cross-national, cross-cultural comparison of density data.

These good qualities notwithstanding, CPD has its deficiencies which largely account for why it has received so little attention and has had very limited application in demographic research. For one thing, its evaluation depends on the availability of a number of basic data (see above) some of which are difficult to obtain. For instance Ojo (1968) has pointed out that the assessment of the cultivatable percentage of land "is the most puzzling and intractable of all problems" involved in the calculation of the CPD (1968: 313).

As a theoretical contribution to the CPD concept, O. Ojo (1968) made a detailed analysis of socio-cultural factors which tend to raise, as well as those that tend to lower the CPD in tropical African countries.

In the continuing search for a simple method of density analysis, William Hance (1972) proposed the use of what he called "Density Range" methods. By this method, the density of a given unit is analyzed in terms of the percentage of the total area. Some of the limitations of this technique are easily observable. As Hance himself is quick to admit, because political units vary greatly in size from country to country, and even in the same unit density is by no means even, the comparability of density range figures across national boundaries is impaired (1972:45). With this in view, Hance postulated that "the utility of density range varies inversely with the size and directly with the number of the subdivision for which density data was available (1972:45).

A full assessment of the utility of density range method is yet to be made. However, the author's experience in applying it to the analysis of population density in Nigeria (see Table 2 and Appendix II) is that for units with comparable subdivisions, it has a demonstrable superiority over crude density measures. Where the size of the subdivisions are not comparable, it is not better than the latter.

Both the CPD and the national crude density measures consider density at a point in time. Both are static measures and so fail to account for time-bound variations in population size and distribution. To remedy this situation, McGreevey (1973) introduced the concept of "Density-Growth Co-efficient." According to him, this statistic (the product of crude density and annual growth-rate), provides a dynamic measure or index of the pressure of population on land and other resources. Because it takes the growth rate into account, it seems to provide a sounder basis for planning than any other density measures already discussed.

#### Density as a Sociological Variable

Except for purely analytical purposes, it is often superficial to treat density as an independent entity apart from the population from which it is derived. In this section, therefore, the terms population, population size, and population density will be considered coterminous.

In whichever way the subject matter of sociology is defined--whether as the science of society or as the study of social organization--the concept of population forms one of its most fundamental elements. To elaborate, social organization is generally accepted as the core problem of sociology (Duncan and Schnore, 1959:132). And, from the ecological perspective, social organization arises when a population attempts to adapt to its environment using available technological knowledge to obtain resources necessary for

ensuring survival as well as achieving other goals. As Amos Hawley puts it, "Only as population increase multiplies the frequency and variety of meetings between elements of population does it lead to the development of (social) organization" (1950:196). Population is therefore central to social organization and so to sociology.

The above statements go to explain what appears to be a natural affinity between sociology and demography culminating in the tendency, according to Kingsley Davis, for the latter to "become more closely identified with sociology: or as it has become more often the case, for it to be treated as a specialty within the field of sociology (1959:309). A little probing into sociological literature reveals that this tendency is not just a recent development.

In 1900 Durkheim wrote a paper entitled "Sociology and its Scientific Domain." In this paper, he classified the concern of the new discipline into two broad areas which he named social morphology and social psychology. The term social morphology was proposed to cover

. . . studies focusing on the physical form of societies. That is, on the number and nature of their parts, the way in which they are geographically distributed, internal and international migrations, the spatial patterns of settlement and agglomerations. (Halbwachs, 1960:3).

Similarly, Charles Cooley, An American contemporary of Durkheim, proposed a division of sociology into two general areas of "territorial demography" and "social psychology." In his monograph "The Theory of Transportation" (1930), Cooley presented the rationale as well as the domain for territorial demography:

The analysis of the territorial relations of society . . . brings to view an important field of social research that has been much neglected . . . I know of no comprehensive and connected investigation of that branch of demography or demographic sociology that treats of the forces and laws that determine the



territorial distribution of persons and wealth. Little is understood concerning the theory of the location of towns and cities, the theory of settlement, or the laws that determine their size, the density of their population and their internal structure.

The end result of this age-long interaction between Demography and Sociology is the emergence of "Population Studies" as a subdiscipline within sociology. According to Hauser and Duncan (1959), Population Studies are concerned with not only demographic variables but also with the relationships between population changes and other social, economic, political, geographical and biographical variables (1959:2). Thus, it has become necessary to make distinction between demography used in the strict and narrow sense to mean "formal demography" and the broad sense to encompass "both demographic analysis and population studies" (Hauser and Duncan, 1959:3). It is on this broad definition of demography implicit in Durkheim's idea of social morphology, Cooley's demographic sociology, Hauser and Duncan's population studies, Goldschieder's social demography and Wallace's demographism that the present study finds its orientation.

#### Population Density Theories

Demographism (Wallace, 1969) as a theoretical viewpoint has a respectable ancestry in the history of the social sciences. According to Dennis Wrong, Robert Malthus, an early nineteenth century economist, is generally considered to be the father of population study as a field of scholarship (1956:100). The substance of Malthus' (1830) theory is that human population tends to increase at a more rapid rate than food supply needed to sustain it and that "population invariably increases where the means of subsistence increase unless prevented by some very powerful and obvious checks" (Wrong, 1956:101). Implicit in this proposition is a relationship between population size and the societies' resources.

In the field of sociology, the relationship between population variates (age-sex composition; size, density, etc.) and social organization has been the subject of a number of theoretical formulations. About a century ago, Herbert Spencer stated as one of the "sociological truths" the "general fact that along with social aggregation there always goes some kind of organization" (1961:54). Drawing an analogy from the "principle of physics", he postulated that as the number and size of a group increases, it tends to develop social organization to absorb the greater strain implied (1886:281).

In the same vein, Georg Simmel postulated that "a group reaching a certain size must develop forms and organs which serve its maintenance and promotion but which a smaller group does not need" (1950:87).

It is, however, Emile Durkheim who has provided what is now regarded as the classic statement on this relationship between population and social organization. In his Division of Labor in Society he postulated that social complexity varies directly with the size and density of population; and further that it is density that determines the form of social organization. As he put it, "we say not that the growth and condensation of societies permit, but that they necessitate a greater division of labor. It is not an instrument by which the latter is realized; it is its determining cause" (1933:262).

Considering population density specifically, Durkheim's student and disciple Maurice Halbwachs held that it is social values and customs that determine a people's distribution in a given terrain which gives rise to a particular pattern of settlement. It is then this settlement pattern, once established that induces the development of a certain form of economic and political organization. Concluding his long and persuasive argument Halbwachs said,

It is custom . . . which keeps men in places where they have lived up to now . . . The economic constitution of a group and its national character should be considered here as effects, rather than causes. If men form stable economic groups it is because they are distributed geographically in a certain manner (1960:91-92).

In short, population density is a social fact explainable in terms of societal norms and values.

In summary, various social science theories of population density may be grouped under three broad headings.

#### Techno-Environmental Deterministic Theories

These theories seek to explain population distribution and density on the basis of technology and/or the prevailing environmental conditions.

Two distinct perspectives may be distinguished within the techno-environmentalist school. First are those who hold that surplus food (and implicitly agricultural technology) brings about increase in population size and density. In this group may be placed Robert Malthus and the classical economists. In more modern times, the work of Joseph Weiner (1972) represents an excellent exposition of this viewpoint. Weiner divided the modes of agricultural technology prevalent in the world's tropical regions into two types, shifting cultivation and wet-rice cultivation. Then proposing a direct relationship between the type of agricultural technology and population density in the tropical zones, he said,

. . . The population figures point clearly to the overall importance of productivity of the two contrasting technical modes of exploiting the tropical habitat . . . The population densities (therefore) should be taken as indicators of the major modes of cultivation involved (1972:400-01).

The food surplus--agricultural technology--theory has not gone unchallenged. George Dalton (1960) holds that Malthusian economics provides no more than an ex-post-facto explanation of social phenomena. According to him the use of surplus to explain some complex social structure is a mere logical

construct. ". . . surplus implies a one-way causational sequence: material surpluses somehow arise which then induce more complex social organization" (1960:489). The position taken by Dalton is that the form of social structure may actually contribute in bringing the surplus into existence.

An empirical refutation of Weiner's agricultural technologism theory is presented in Bender's (1971) study of population and productivity in Ondo province of Western Nigeria. The results of that study led him to conclude:

It would seem, then, that technoenvironmental factors as they relate to food production may not account for the population densities actually achieved, at least in tropical forest habitats exploited through bush fallow cultivation of food crop staples. . . . Ex-post -facto explanations of population sizes and densities on the basis of technoenvironmental factors may therefore be wrong. (1971:35-6)

The second group of technoenvironmentalists are those who hold that it is purely geographical conditions (climate, topography, soil fertility) that account for population density and distribution. Advocates of this view are to be found mostly among human geographers. The geographic determinism theory is fully developed in the works of Friedrich Ratzel (1882) and Ellen Semple (1911) whose work is also based on Ratzel's. The following citation from Semple is particularly relevant:

Most systems of sociology treat man as if he were in some way detached from the earth's surface; they ignore the land basis of society. The anthro-geographer recognizes the various social forces, economic and psychologic, which sociologists regard as the cement of societies; but he has something to add. He sees in the land occupied by a primitive tribe or a highly organized state, the ultimate basis of their fundamental social activities, which are therefore derivatives from the land.

(1911:53)

The geographic explanation of social phenomena explicit in the above quotation brings out clearly the major points on which Hugo Engelmann's criticism of all forms of technoenvironmental determinism are based. In his words,

The social scene described has sometimes been so completely stripped of people that the impression is unintentionally rendered that there are disembodied forces afoot, able to realize their ambitions apart from human action.

(1968:2)

In an explicit criticism of Ratzel, Maurice Halbwachs pointed out that

The human population does not act like a mass of inert dust whose particles would be dispersed by the wind to the four corners; nor does it act like a liquid mass that would spill over a vast area; nor even like so many species of vegetables or animals that have taken root or multiplied wherever the earth presents them with a favorable environment . . .

(1960:90)

On the contrary, man in society has developed a set of normative values and customs and it is these which determine his relative willingness and reluctance to relocate even when conditions in his present habitat so dictate.

#### Cultural Deterministic Theories

These theories seek to explain variations in population density on the basis of social-cultural differences and practices. Advocates of this view are mostly sociologists and anthropologists of whom Durkheim, Dalton, and Halbwachs are prototypes. Halbwachs (1960:12) quoted Durkheim as saying , that it is "the tendency of a society to live in a concentrated or dispersed pattern that explains its density." This may be interpreted to mean that population distribution and density are determined by forces generated by life in and operating within the society. These forces are to be found in societal values, norms and institutions. Elaborating on this Halbwachs said that unlike plants and inanimate objects, man's distribution on earth is not governed by physical forces but by customs and traditions. As he put it,

Man obeys social forces . . . it is custom--economic, custom, national custom--a principle of inertia, which keeps men in places where they have lived up to now.

(1960:91)

It is pertinent here to mention a slightly different perspective taken by

Hugo Engelmann (1968); a perspective that may best be described as interactionist or social psychological. Engelmann sees his position as opposed to Durkheim's postulated relationship between population size and societal complexity. He asserts that "social organization in all its aspects exist only in terms of the behaviors by which interacting participants generate such organization" (1968:2). He agreed that in the long run frequency of interaction (Durkheim's moral density) correlates positively with population increase, but argues that such an increase in size may give rise to simplified, stereotyped interactional experience. In such a situation, "population increase does not give rise to increase in societal complexity but to a shift from one type of technology to another" (1968:2).

It would appear that the actual difference between the positions of Durkheim and Engelmann lies in their definition of societal complexity. While the former defines complexity by the number of organizational units, the latter defines it by the extent of personal involvement in interpersonal relations.

#### Evolutionary Deterministic Theories

The evolutionary deterministic theory holds that increases in the size of population are but stages in the process of societal evolution. Herbert Spencer represents this viewpoint.

According to this theory, the invariable path of evolution is from simple to more complex forms. Because increase in size of population brings about complexity of social organization, the volume of population achieved by a given society marks its position on the ladder of societal evolution. Thus, taking his cue from the physical principle that the power with which a body maintains "its integrity becomes relatively less as its mass becomes larger" (1886:449), Spencer concluded that "as population augments, divisions and subdivisions become more numerous and more decided: (1886:450).

In a nutshell, the evolutionary deterministic theory postulates that because path of evolution is from the few to the many; from simple to complex structure, human population has a natural tendency to increase. Because societies do not evolve at the same rate, the size and density of population varies from one society to another. The density of a given society therefore is an index of its evolutionary advance.

#### An Assessment

As would be expected, none of these theories by itself offers a complete explanation of population density. However, the author rejects the evolutionary determinism theory as lacking a scientific base. He does not completely agree with both the physical environmental determinism as espoused by Ratzel and Temple and the interactionist perspective as presented by Engelmann. He is, however, totally in agreement with views expressed by Durkheim, Halbwachs and Dalton. Nevertheless, he recognizes that other factors--technological, geographical, historical, etc.--affect population density besides socio-cultural ones. This study, therefore, adopts a relativistic stance while emphasizing the effect of socio-cultural factor.

#### Studies on Population Density of Eastern Nigeria

While publications that carry bits of information on population density of Eastern Nigeria run literally into thousands, actual empirical studies on the subject are relatively few. Of these studies, four deserve special consideration because of their relevance to this study.

The expressed objective of Yuhuda Karmon's (1966) monograph A Geography of Settlement in Eastern Nigeria is to explore the conditions that account for the extraordinary population density in Eastern Nigeria. After considering a number of geographical, demographic, social and historical factors, he arrived at the conclusion that ease of bush clearing and road construction are the

principal factors that determine population distribution and density in Eastern Nigeria (1966:50-10). As he puts it, "the factors influencing the spread of population were . . . not connected with fertility of soils or with the existing vegetation, but mainly with the ease of movement and of clearing the bush" (1966:42). By the phrase, ease of clearing the bush, he seems to mean that on sandy, well-drained soils or in areas with long dry seasons as contrasted with water-logged, clayey heavily-soil areas, burning of the undergrowth and leaves affords a very easy method of clearing the bush for cultivation or for roadmaking.

The merits of such an explanation notwithstanding it sounds too simplistic and too ad hoc to be satisfactory. For one thing, if the ease-of-bush clearing hypothesis is accepted, one would then expect even higher population density in Northern Nigeria which has a longer spell of dry season and where the vegetation comprises mainly of grass. It is hardly necessary to say that this is not the case. In the author's opinion, Karmon has offered no more than an ex-post-factor explanation of population density in Eastern Nigeria.

Stevenson's (1968) Population and Political Systems in Tropical Africa is intended to produce empirical evidence to refute the claim by M. Fortes and Evans-Pritchards (1940) that there is no relationship between population density and the formation of "state-like" political organizations in Africa. After demonstrating that there is a "significant general relationship" between areas of high density and the formation of indigenous states in Africa, he observes that there is

. . . one very important high density area . . . which did not conform to this pattern, the Ibo region in Southeastern Nigeria, a region both large in area and among the highest in tropical Africa in density.

(1968:189)



In the final and crucial chapter of this book, he gives a detailed analysis of the development of population density and pre-colonial political organization in Eastern Nigeria. He postulates that the development of trade in slaves and later in palm oil stimulated the development of city-states and high population density in Eastern Nigeria. According to him,

The densities which developed both in Iboland and the Delta during the slave trade were partly a response to the pressures from states and slave raiding to the north and partly the result of the stimulation of growing trade on the coast. The trade as it developed stimulated the development of city-states along the coast. At the same time, it both induced and made possible higher densities in the interior.

(1968:225)

The adequacy of this explanation of population density in Eastern Nigeria, based as it is on historical factors, may be challenged on a number of grounds.

First, his conclusions quoted above tie population density in this region to the inception of trans-Atlantic slave trade. But historical evidence shows that the high population density here ante-dated European contact and trade. Stevenson himself provides part of the evidence. According to him, "the very nature of the density and the large area involved bespeak of a rather respectable antiquity" (1968:190). This is further supported by the account of Captain John Adams' voyages to Africa between 1786 and 1800 referred to earlier.

In effect, while not denying that overseas trade may have had some favourable effect on the population of this region, the author holds that high population density has existed before the inception of the trans-Atlantic trade and cannot be explained by it.

Secondly, if trade is the stimulant of the population density in this region, one would expect highest densities at the principal trading centers along the coast. This would particularly have been the case since large numbers of people were constantly being transported from the hinterland to

these coastal centers; and no evidence of a counter movement, i.e., from the coast inland exists. On the contrary, one finds that Calabar, Degema and Brass Divisions in which these trading centers were located have comparatively very low population densities. Figures from the earliest (1911) to the latest (1963)<sup>1</sup> Nigerian population censuses support this statement. In other words, in spite of the influx of slaves to these trading centers--at one time the population of slaves in Opobo far out-numbered that of the freeborn natives (Anene, 1966)--the Delta area falls within low density zone (Chapter I) as contrasted with the inland areas from where the slaves were drawn.

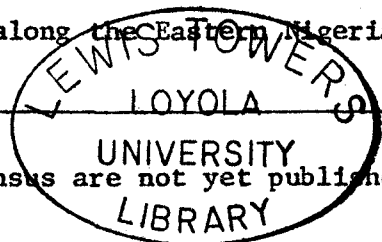
Thirdly, the trade theory fails to explain why equally high population densities could not be stimulated in Dahomey, Gabon, Darkar and Western Nigeria (Yoruba) areas of West Africa where equally vigorous trade in slaves and other forest products were known to have been established even before that of the Eastern Nigeria coasts.

Finally, the trade argument as presented here appears very lopsided in the sense that it overlooks completely the overwhelming evidence of the devastating effects of slave trade on this part of Africa (Jones, 1949; Dike, 1956). It was estimated that by 1800 over 370,000 slaves were exported annually from Eastern Nigeria ports (Adams, 1832); not to talk of the number who were killed during the raids or who died during the long march to the ports (Anene, 1956).

When all the favourable and unfavourable effects of pre-colonial trans-Atlantic trade on the population of Eastern Nigeria are fully considered, the author is of the view that the retarding effects far out-weigh the stimulating effects. The conclusion then is that much as the trade theory may provide some insights into the development of population along the Eastern Nigeria coast,

---

<sup>1</sup>Detailed figures for the 1973 Nigerian census are not yet published.



it does not offer a satisfactory explanation to the unusually high population density found in the hinterland.

W. B. Morgan's Farming Practice, Settlement Pattern and Population Density in Southeast Nigeria (1955) deals with only a section of Eastern Nigeria. It is actually a follow-up of an earlier study by A. T. Grove (1951) which found that population densities in Awka-Orlu uplands are much higher than the current land-holding pattern can support. In this paper, Morgan replicates Grove's study in an area with different topography and ethno-dialectic background. He chose the low-lying, flattish Ngwa and Ikwere clan areas for his study and found some differences in the pattern of settlement and agricultural practice in the two sample areas. He also found a correlation between the pattern of settlement and population densities in those areas. Ngwa areas with dispersed pattern of settlement were generally denser than Ikwere areas with a nucleated settlement pattern.

Despite a number of significant differences Morgan observed in the social organization of the Ngwa and the Ikwere clans, he concluded that "a large part of the explanation of the various densities of population may be found in the historical evidence" (1955:330-3). The historical evidence presented are the arrival and subsequent conquest of a large portion of the area by the Ngwa, and the effects of slave raiding from Opobo and Bonny on Asa and Ndokki areas.

The historical factors notwithstanding, the author thinks that the full impact of the differences in social institutions and customary practices of these two clans on their respective population densities still needs to be evaluated.

In his Patterns of Population Distribution and Settlement in Eastern Nigeria Reuben Udo (1963) divided Eastern Nigeria into five density zones. On the premise that variations in population density of these zones are a product

of varied and complex factors (1963:81), he proceeded to examine the physical, historical and cultural characteristics of each zone. He found that the highest densities are on the poorest soils; that in the high density areas settlements tend to locate on the interfluves or watersheds (1963:80-85).

Explaining these findings, he postulated that the high density belt was once fertile area and became impoverished as a result of overuse by increased population. The tendency to prefer interfluvial locations, he argued, is explainable by the economic necessity to live as near as possible to the farm lands. In the end, he concluded that "the relationship here of settlement pattern to site is not meant to indicate that physical factors are dominant in the explanation of settlement patterns in Eastern Nigeria. Rather the layout of rural settlements in the region is influenced more by economic and social factors than by physical factors (1963:87).

The author is essentially in agreement with the conclusion reached by Udo. The present study may therefore be seen as an attempt to carry Udo's finding a step further by first identifying these "economic and social factors" and then specifying the relationship among them.

## CHAPTER III

### METHOD

Over half a century ago, Maurice Halbwachs offered some useful advice to those who would attempt a sociological explanation of social events. According to him, in order to explain a phenomenon scientifically, it is necessary "to show its relation to conditions and forces which are not unique, which are repetitive, and which (theoretically at least) can be reproduced" (1910:Section VI).

Guided by this advice, this study is carried out in two stages. The first stage attempts to establish an analytical frame of reference by exploring the nature of relationships between certain socio-cultural variables and high population in traditional African societies. In other words, using a cross-cultural, cross-national sample, the study seeks to answer the questions, what forms of social institutions favor or are associated with high population density in traditional African societies? The second stage applies the findings of the first to the Eastern Nigeria situation. This entails an analysis of the social organization of Eastern Nigeria to see how far its unusually high population density can be explained on the basis of the relationships found in the continental sample.

It is hoped that by adopting this procedure, ex-post-facto and ad hoc explanations of the high density in Eastern Nigeria will be avoided. Further, it is expected to ensure the generalizability of the research findings in the sense of being applicable to other non-Nigerian situations.

The universe, of the study, is non-industrialized rural societies of sub-Saharan Africa otherwise known as traditional African societies. A

traditional society is defined as a pre-industrial society which is organized on the basis of customs and tradition as handed down through the past generations.

Because the study is concerned with traditional societies, the "tribe" is designated the unit of observation and analysis. As employed here, the term tribe corresponds with anthropological use of the word "nation." The term tribe is used preferably in order to avoid confusion with nation-states which, in the African context, are mere political units based on artificial and arbitrary boundaries. A tribe is therefore defined as a group of people occupying a definite geographical area, possessing a common culture, speaking the same or related dialects of the same language; exhibiting some sense of common solidarity but with or without a unified political organization. The study follows Murdock's (1967) delineation of African tribal groups as given in his Ethnographic Atlas (1967).

Two levels of analysis may be distinguished: the general level which corresponds with the first stage of the study discussed above and the particular level corresponding with the second stage. In both levels, the unit of analysis remains the tribe.

Altogether the study utilizes one dependent variable, nine independent variables and three control variables.

#### The Dependent Variable

"Relative" population density is the sole dependent variable. It is derived from the crude or absolute density through a process to be outlined later. Absolute density is defined as the ratio "of the number of people to the area of land they occupy" (Barclay, 1958:28). In this study, the focus is on the rural as opposed to urban population densities.

#### The Independent Variables

The society is conceived as a social system with social institutions as

the constituent parts or subsystems. A social institution is defined as a relatively stable and enduring cluster of social positions, customs and conventions which prescribe the mode of interaction in social situations. Institutions, therefore, arise out of long established norms and traditions.

Certain social institutions are known to be universal to all human societies although their internal structure and function vary from one society to another in accordance with the prevailing customs and traditions. Such institutions may be referred to as core institutions. In this study, four of these core institutions are considered, namely, the economy, polity, family and kinship, and religion. The problem of this study may thus be restated as that of investigating the influence of these social institutions on population density in traditional African societies generally, and the Eastern Nigeria in particular.

#### The Economic Institution

Following Jonathan Turner (1972), the economic institution is defined as that "relatively stable cluster of statuses, general norms and role behaviors revolving around gathering of resources and the producing and distributing of goods and services" (1972:22). This definition distinguishes between three aspects of economic activity: proprietorship, production, and distribution. These distinctions are pertinent because the amount of goods and services available to members of a society depends not only on the quantity of goods produced but also on the system of distribution of products. The quantity produced is in turn, influenced by the system of ownership and allocation of means of production. In general, then, it is postulated that the pattern of economic activities prevalent in traditional societies are determined by societal norms governing the ownership of land; the pattern of work organization and the distribution and consumption of produce.

Further consideration of each of these three elements of the economy is now undertaken.

#### Pattern of Land Ownership

It is necessary to clarify the term "ownership" as used in this context. The use of this term here differs from the legalistic and economic senses in which it is usually applied. The term ownership when applied to land and natural resources (as distinct from personal property) does not imply a right to sell or deal as one pleases. That is, ownership does not permit permanent alienation or outright sale of land. As Schepira and Goodwin put it, ownership merely confers "a prescriptive right over . . . arable land, whether it is still uncleared, being cultivated or lying fallow" (1937:157). Land ownership in the African context is therefore defined as a right to determine how, by whom and how much of a given piece of land will be utilized at any point in time.

Based on this definition, it is possible to distinguish between two forms of land ownership which are encountered so frequently in ethnographic literature. These may be termed "custodial" ownership and "prescriptive" ownership. Custodial ownership is a supervisory right over all land as well as natural resources of a nation, tribe, town, lineage, or any other social unit vested on the chief, king, priest or any other leader of that group as the custodian of the public interest. This places on the leader the responsibility to see that land is equitably allocated to the production units of the society. Thus the often-repeated assertion that all the land belongs to the king will be understood to mean custodial ownership.

Prescriptive ownership on the other hand means ownership as defined earlier, that is, the right to determine how, when and by whom a parcel of land is to be utilized. It is a right which individuals, families or lineages



as social units may exercise severally or jointly over a piece of land.

These two forms of land ownership may and do exist simultaneously in the same society. Thus, as among the Lozi, the king while exercising custodial ownership over all the tribal lands, exercises prescriptive ownership over the royal lands. On the other hand, there are instances, as among the Kafa where the monarch exercises prescriptive ownership over all the tribal lands. In such a case, all the members of the tribe are de-facto tenants-at-will of the king. This is true of the Kafa where, according to Huntingford (1955:109) "people occupied land as the king's tenants and could be turned out at his pleasure."

Patterns of ownership of land in traditional societies vary from locality to locality but may be classified under three categories: individualistic ownership which occurs when ownership is vested on the individual or a nuclear family; kin-group ownership which occurs when ownership rests with a kinship group such as an extended family or a lineage; and communal ownership where ownership rests with the entire community.

With reference to population density and pattern of land ownership, it appears that one of the main functions of prescriptive ownership is the regulation of the amount of land that goes into the production process at any point in time. This means that efficiency in the allocation of land to the production process will vary from one pattern of ownership (individualistic, kin-group and communal) to another. Type of land ownership therefore affects the amount of food produced in a given society and indirectly its population density. For reasons to be explained later, the author holds that the kin-group pattern of ownership is best suited to maximize production in traditional societies. Hypothesis (1) therefore states that in traditional African societies, kin-group system of land ownership is positively associated with high relative population density.

## Patterns of Work Organization

Following Stanley Udy (1970:5), "organized work" is defined as production activity carried on by a group of persons "acting in accordance with a system of roles." Udy (1970:9) distinguished four types of work organization: production determined, technologically determined, socially determined and pluralistic work organizations. Of these, socially determined work organization is most relevant for this study. Three main types of socially determined work organization are identified: familial, political and contractual types. Familial work organization occurs when some kinship unit constitutes the basic work group and participation is "institutionalized as an obligation of kinship" (1970:39). Political work organization is based on a constituted authority capable of compelling work participation independently of kinship obligations. Such an authority may be a chief, king, priest or military boss. In contrast to these, contractual work organization is "based on an explicit agreement to behave (including work behavior) in a specified way for a specified time . . ." (1970:41). Udy found that of these three types, familial work organization is a relatively more efficient mode of manpower allocation in traditional societies (1970:44). Based on this finding, it may be inferred that in traditional societies, kin-group or familial pattern of work organization is best suited to maximize production. Since increased production means more goods available for distribution and consumption, hypothesis (2) states that in traditional African societies, familial or kin-group work organization is positively associated with high relative population density.

## Patterns of Food Distribution and Consumption

Patterns of distribution and consumption mean the institutionalized channels through which food and other services are distributed for consumption. Dalton (1971) mentions taxation or tribute, reciprocity, redistribution,

confiscation and trade as some of the processes for the distribution of produce. In this study, however, attention is focused on the social group which forms the basic unit for the allocation of consumption goods. Three such units may be distinguished: the individual, the kin group and the community. Derived from these are three patterns of distribution and consumption. The first is individualistic consumption with the nuclear family as the basic consumption unit. The second is kin group or corporate consumption with the extended family or lineage group as the consumption unit. Thirdly, there is communal consumption with the entire society as the consumption unit.

Any theoretical statement linking population density to patterns of distribution of produce stems from the assumption that the more evenly distributed the available goods and services are, the greater the number of people which the system can support. It then follows that high population density will be associated with that pattern of distribution which ensures the largest share of the produce to the largest number.

Considering the three patterns of distribution outlined above, under the individualistic system, the resources available to each family unit is limited and rather scanty. Under both kin-group and communal patterns of distribution, the products of individual families are pooled for redistribution or the entire group collectively produces for all its members. But considering the earlier contention that productivity will be maximized under kin-group system of production it follows then that the kin-group pattern of consumption is best suited to ensure the largest possible share of produce to the largest number. Hypothesis (3) therefore states that in traditional societies, the kin-group pattern of distribution and consumption is positively related with high relative population density.

### The Political Institution

Organizations are described as political if they are primarily concerned with the acquisition and exercise of society-wide power and decision-making. Three types of political organization based on the form of decision-making machinery may be identified: those in which an individual is the sole decision-maker, those in which political decisions lie with a constituted or formally organized body such as a council, an age-grade or secret society, and those in which political decisions rest with the entire community acting as a body.

These three types of political decision-making may be regrouped into two broader categories namely, autocratic political systems where decision-making powers rest with an individual. This corresponds with the first type discussed above. As it often happens, the ruler may be advised or assisted by a council or a special group of citizens but the distinguishing factor is that he is under no customary or constitutional obligation to accept the advice. Thus, the ultimate decision still rests with the ruler. The second category may be termed participatory political systems where political decisions rest with either a constituted body, special group of citizens or on the entire community-in-council. Here may be included constitutional monarchies where the ruler is obliged, at least in certain issues, to accept the advice of his council or is otherwise accountable to any other body for his decisions.

The effect of various types of decision-making on group cohesion, cooperativeness, and task-performance has been studied by social psychologists, sociologists, and political scientists. In his pioneering experiment on the effect of group-decision in bringing about desired change, Kurt Lewin (1947) found that mothers who participated in reaching a decision on what items should be included in baby diets showed greater adherence to that menu than those who

did not. In a similar experiment involving groups of workers in a pajama factory, Coch and French (1948) found a positive relationship between the degree of participation in deciding on a needed change and the productivity of the groups. Further, Robert Dahl (1961) has shown that the gradual transformation of New Haven from an oligarchy (with its autocratic type of decision-making) to a plurality (with a participatory type of decision-making) has been accompanied by an increase in the percentage of the population voting in gubernatorial elections from 15 per cent in 1810 to 70 per cent in 1840 (1961: 11-24).

On the basis of these empirical findings it is postulated that social solidarity and group cohesion will be higher in groups and societies with a participatory system of decision-making than in those with autocratic systems.

Since Durkheim (1933) has argued that group solidarity and cohesion reflect the degree of moral density, and that moral density is positively correlated with population density (Division of Labor, 1933); hypothesis (4) states that in traditional societies, participatory form of decision-making is positively associated with high relative population density.

#### Family and Kinship Institution

The family as a social institution may be considered from a variety of perspectives. In this study, three of these are employed, namely, the composition of family unit, the rules of descent, and norms of kinship.

##### Rules of Family Composition

Family systems may be classified on the basis of the composition of their membership. Two such types of family may be identified: (a) the nuclear family consisting of married couple--(monogamous or polygamous) and their children; (b) the extended family which is defined in this study as any type of family larger than the nuclear family. It thus includes both the stem and joint

family types. Compositionally, it consists of a married couple, their children, grand-children, and a number of collateral relatives living together as a corporate group.

In addition to procreation, socialization, and other related functions performed by the nuclear family, the extended family has other economic and political functions in traditional societies. Socially, it provides a wider circle of persons over whom the individual could claim rights, and to who he, in turn, owes obligations. Politically, it defines the range and degrees of jural authority in the society. Economically, it makes possible a larger labor force. Because of the advantages of division of labor which the extended family organization offers, it is postulated that in traditional societies, the extended family system enhances both productivity and a more even distribution of produce. Hypothesis (5) therefore states that in traditional societies, extended family system is positively associated with high relative population density.

#### Rules of Descent

By the rule of descent is meant the institutionalized or socially approved channels for tracing primogeniture. In most societies, it also defines the proper lines of inheritance or transference of property. Finally, the descent rule prescribes the patterns of interaction among persons descended from a common ancestor or ancestress.

Three rules of descent may be distinguished: (1) patrilineal descent under which descent is traceable through the male line only; (2) matrilineal descent whereby descent is traced through the female line only; and (3) bilateral or double descent which permits descent to be traced through both the male and female lines. In contrast to the bilateral descent system, patrilineal and matrilineal descent systems are referred to as unilineal descent systems.

Generally, unilineal descent systems have some advantages over the bilateral system in bringing about unity and cohesiveness in a given society. According to Turner (1972),

. . . unilinear descent rules ensure that the labor pool remain loyal and tied to the familial economic unit. They also insure that capital will remain tied to and concentrated in a particular kin-group (1972:113).

Further, the unilineal descent system avoids the dangers of a failure to strike a proper balance between father-oriented and mother-oriented claims on the individual which the bilateral descent system always entails.

Of the two types of unilineal descent systems, the patrilineal system appears to have less in-built sources of tension and conflict within the structure than does the matrilineal system. From her study of the predominantly matrilineal Bantu peoples of Central Africa, A. Richards (1950) writes

In all these tribes the matrilineal system makes for certain elements of conflict for which some kind of solution has to be found. The problem in all such matrilineal societies is similar (1950:246). . . . Every marriage produces what can only be described as a constant pull-father-pull-mother's-brother, in which the personality, wealth, and social status of the two individuals or their respective kinsmen give the advantage to one side or the other . . . (1950:208).

As she further explains, two major sources of conflict are the husband's ability to gain control over his wife, who, by virtue of matrilineal descent system belongs to the lineage of her brothers and sisters. The second is the way domestic authority (over children) is to be shared between a man and the head of his wife's kinship group.

In view of these conflicts inherent in both the matrilineal and bilateral descent systems, the patrilineal system appears best suited to promote social integration and group cohesion in traditional societies. Since group cohesion and social solidarity are directly correlated with moral density (Durkheim, 1933), hypotheses (6) states that in traditional societies, patrilineal descent

system is positively associated with high relative density.

#### Kinship Organization

"Two persons are kin when one is descended from the other . . . or when they are both descended from a common ancestor" (Radcliff-Brown, 1950:4). This definition is rather narrow since it implies that descent is the only principle that determines kinship. Rules of family composition also help to define kinship boundaries. Thus, in this study, the term "kinship" is used to describe combinations of rules of family composition with rules of descent. For any given society, the system of kinship describes the prevailing combination of family and descent rules.

Considering the various types of family and descent rules earlier discussed, six different systems of kinship may be distinguished: (1) the patrilineal-nuclear kinship system; (2) the patrilineal-extended kinship system; (3) the matrilineal-nuclear kinship system; (4) the matrilineal-extended kinship system; (5) the bilateral-nuclear kinship system, and (6) the bilateral-extended kinship system.

Since it has earlier been argued that (a) the extended family system has some economic and social advantages over the nuclear family system [Hypothesis (5)], and (b) the patrilineal descent system makes for greater group integration and cohesiveness in traditional African societies [hypothesis(6)], it may be concluded that the patrilineal-extended system is best suited, in the words of Radcliff-Brown (1950), to "provide an integration of persons in a set of relationships within which they can interact and cooperate without too many serious conflicts" (1950:83). Hypotheses (7) therefore states that in traditional societies, patrilineal-extended kinship system is positively associated with high relative population density.



## Rules of Settlement

In traditional societies, the kin-group constitutes a closely-knit social and economic unit. The necessity for physical and geographic proximity of members which is implicit in such a situation determines, to a great extent, the location, size, shape, internal space and general arrangement of homesteads within the community. It is this arrangement of homesteads and their connecting pathways that gives the community its unique settlement pattern.

For the purposes of this study, patterns of settlement may be classified under three main types: (1) permanent nucleated villages and towns with or without satellite hamlets. A "nucleated" settlement is defined as one which consists of a more-or-less continuous stretch of homesteads organized around a "central place" such as a market, a shrine, a palace or a play ground. Under such an arrangement, the farm lands are normally located away from the settlement and serve to separate one settlement unit from another. (2) Dispersed settlement pattern. A "dispersed" settlement consists of a group of hamlets or family homesteads scattered over an entire area rather than arranged around a focal point. In most cases, the homestead units are separated by farm lands. (3) Nomadic and semi-Nomadic units. One characteristic feature of this settlement unit is impermanence. The settlement is moved from place to place in quest for pasture or food.

Considering the importance of primary relationships in traditional societies, it is postulated that societies will adopt that pattern of settlement which maximizes contact among kin-group members. Of the three patterns of settlement discussed above it appears that permanent nucleated settlement pattern offers the greatest opportunity for frequent face-to-face contact and interaction among kin-group members. Since the greater the frequency of inter-

action the higher the moral density (Durkheim, 1933), hypothesis (8) states that in traditional societies nucleated pattern of settlement is positively associated with high relative density.

### Religious Institution

Emile Durkheim defined religion as "a unified system of beliefs and practices relative to sacred things" (1965:62). This definition specifies beliefs and practices as two distinct aspects of religion. This study focuses on the belief aspect of religion.

Religious beliefs, according to Turner (1972) usually contain two component parts, a cosmology and a set of values. With regard to the cosmology, traditional societies may fall into two categories: those whose cosmology contain the idea of a "high-god" and those which do not. By a high-god is meant "a spiritual being who is believed to have created all reality and/or to be its ultimate governor" (Murdock, 1967:52). Further, societies whose cosmology contain the idea of a high-god may be grouped into those in which the high-god is believed to be otiose (that is, playing no active role in mundane affairs (Murdock, 1967), and those in which he is believed to participate actively in the daily life of men.

Durkheim (1965) treats the development of religion as an evolutionary process moving from the simple to more complex forms; from totemic origins to modern church organizations. Applying the same notion to the development of religious beliefs and cosmology, anthropologists suggest (Tylor, 1871; Swanson, 1960) that the existence of a belief in a high-god is associated with the development of a complex social organization. This suggests that belief in the existence of a high-god will be found in societies with relatively high population concentration. Therefore, hypothesis (9) states that in traditional societies, occurrence of belief in a high-god is positively associated with high relative population density.

### The Control Variables

A brief review of population density theories (see Chapter II) shows that technological and physical environmental factors have received a great deal of attention in earlier attempts to explain variations in population distribution and density. Although in this study the focus is on socio-cultural factors, it has been thought necessary to include some techno-environmental factors as control variables. Three such variables have been selected namely, technology, temperature and rainfall.

#### The Type of Technology

The term technology, as employed here, means the predominant mode of subsistence activity. Implicit in this definition is the idea that mode of economic activity of a people reflects the type of technology available to its people for the exploitation of the environment.

Five types of technology have been identified (Murdock, 1957): (1) hunting and gathering; (2) fishing; (3) animal husbandry; (4) agriculture; and (5) mixed technology--defined as a combination of agriculture and any one or more of the other types.

#### Relative Temperature

Relative temperature is the mean annual temperature of a given tribe categorized as high or low on the basis of mean temperature of its culture area. Thus, whether the annual temperature of a tribe is considered high or low does not depend on its magnitude but on the mean temperature of its locality--the culture area.

#### Relative Rainfall

As in the case of temperature, the annual rainfall in a given society is categorized as high or low depending on the mean annual rainfall of its culture area.

### Sampling Method

Ethnologists have divided the world into a number of ethnographic regions of which Africa is one (Murdock, 1957). The sample used in this study is drawn entirely from the Africa region. For the purposes of this study, the Africa region is defined as sub-Saharan continental Africa.

The sampling scheme is modeled after Murdock (1957). According to this scheme, Africa region is grouped into twelve "culture areas" each consisting of a number of culture "clusters" or contiguous societies that share some basic cultural traits. Out of these culture areas he drew a representative sample of 136 tribes. The sample for present study consists of a 29 per cent subsample ( $N = 39$ ) of Murdock's original sample. This is made up of six societies or tribes drawn from the Guinea Coast culture area and three tribes from each of the remaining eleven culture areas. The Guinea Coast area is double-sampled because of its importance to this study: Eastern Nigeria is located here. The sampling procedure consists of grouping all the tribes in each culture area into three density categories (high, medium, low) and then drawing one tribe (two tribes for the Guinea Coast area) from each category.

Because population densities vary greatly from one culture area to another, no single universal criterion was utilized for classifying tribes into the three density categories. It is reasoned that using a universal criterion such as the regional mean density would eliminate some culture areas and even whole sections of the continent from the sample. The criterion for deciding what is to be considered a low or high density, therefore, is relative to each culture area. It depends entirely on the density ranges within that culture area. For this reason the dependent variable for the study is labeled "relative" population density. One more advantage in

"relativizing" density variable is that it provides a rough control for geographical differences among the culture areas.

The sample for the second stage of the study consists of all the major five ethnic groups or tribes (Dike, 1956:43) of Eastern Nigeria.

#### Sources and Methods of Obtaining the Data

The Dependent Variable (Relative Population Density). To obtain the data on relative tribal density, it is necessary to ascertain, first the total population of each tribe and secondly, the total area inhabited by that tribe.

Information on tribal population are obtained from two sources. The principal source is the census reports of the respective countries in which the tribes are located. This is supplemented by "informed" estimates of ethnographers, anthropologists and sociologists who have done some work in the area. The latter source is deemed necessary because as late as 1960, some African countries like Ethiopia have had no formal census counts (Lorimer, 1968:5). Secondly, many census reports generally do not carry data on tribal areas, and rarely is such information found in ethnographic writings. The only alternative open to the researcher is to calculate the areas from a tribal map of Africa. Only one such map could be found which delineates the boundaries of each tribe rather than just locating its position. This is the tribal map of Africa accompanying Murdock's (1959) book, Africa: Its Peoples and Their Culture History. There is an advantage in using this map to calculate the tribal areas namely that the same definition of what constitutes an African tribal unit is employed for both the map and the sample for this study.

Because the scale for Murdock's map is given in degrees per inch ( $10^{\circ}$ :4.2 inches or  $1^{\circ}$ :.42 inches), the first step in calculating the tribal

area is to convert the degree to miles. Using the equatorial circumference of the earth (i.e.,  $360^\circ = 24,902.45$  miles) it is calculated that  $1^\circ = 69.17$  miles. The scale of Murdock's map can therefore be given as .42 inches to 69.17 miles. This works out to one inch to 164.69 miles; one square inch to 27,122.8 square miles, and 0.1 square inch to 271.23 square miles. The second step in the calculation is to overlay a graph paper marked out in 0.1 inch squares over the tribal map and count off the number of squares within each tribal boundary. The tribal area is obtained by multiplying the number of squares by 271.23 square miles. To verify the calculations of tribal areas used in this study, three other researchers beside the author made independent calculations. Except for minor discrepancies which were easily adjusted, the results were essentially the same.

With the tribal area thus calculated, it is easy to obtain the "absolute" population density of each tribe by dividing the tribal population by the tribal area. The "relative" tribal density, which is the research dependent variable, is obtained by assigning each tribe to a low or high density category based on the density of its culture area. That is, all cases at or above the mean are classified as high and all those below the mean as low density. By this process the medium density category used in the sampling method is automatically collapsed into one of the two categories.

Table 6 presents a summary of the study data with respect to the dependent variables. The table indicates that the highest population concentration in traditional Africa is to be found in the Guinea Coast Culture Area. The tribe with the highest population density (356 persons per square mile) is located here and the mean density for the culture area (87.4 persons per square mile) is the highest in the sample. Other areas of high population concentration include the Northeast Bantu with a mean area density of 62.4 and the Eastern Sudan with

mean area density of 52.2 persons per square mile. On the other hand, the Khoisan culture area is the most scantily populated. Here the tribal density drops to as low as 0.3 persons per square mile for the Hottentots and the area mean density is 2.5 persons per square mile.

The "absolute density category" (column 6 of the table) is obtained by assigning all cases at or above the sample mean density to a high, and all cases below the mean to a low category. The main difference between the absolute density category and the relative density category is that while the former dichotomy is based on the total sample mean (i.e., 64.3 persons per square mile) that for the latter is based on the mean density of each culture area. The table shows that when absolute density criterion is used, all tribes in five out of the twelve culture areas fall under the low density category. This in a way brings out the "bunching effect" which the study is designed to avoid by employing the relative density approach. Furthermore, a comparison of the absolute and relative density categories show that while 26 tribes (66.6 per cent) are categories as low density when the absolute density criterion is used, only 19 tribes (48.7 per cent) fall under the same category when relative density criterion is used. This means that nine or 23.1 per cent of the cases change their density categories with a switch from one classificatory criterion to the other.

#### The Independent (Socio-Cultural) Variables

Data for the independent variables are obtained entirely from secondary (library) sources. Bearing in mind that there are a great number of books, documents, journals and reports of varying quality and standards which contain some information relevant to this study, it is decided that the range of sources be limited to strictly "social science" literature. The purpose of this is to eliminate journalistic purely and literary sources. Although it is

TABLE 6

## SUMMARY OF DATA ON TRIBAL DENSITY

Culture Area	Tribe	Population (in 1000s)		Area in Square Miles	Density Per Square Mile	Absolute Density Category	Relative Density Category
1	2	3		4	5	6	7
Pygmies	Bergdama	30	(1946)	12,700	2.4	Low	Low
Khoisan	Hottentot	24	(1946)	88,400	.3	Low	Low
	Sandawe	23.4	(1948)	2,500	9.4	Low	High
Southern	Mbundu	1,300	(1940)	38,800	33.5	Low	High
Bantu	Pondo	260	(1936)	4,700	55.3	Low	High
	Zulu	250	(n.d.)	40,900	6.1	Low	Low
Central	Bemba	140	(1933)	20,000	7.0	Low	Low
Bantu	Kongo	2,500	(n.d.)	45,400	55.0	Low	High
	Lozi	67.1	(1934)	17,000	3.9	Low	Low
Northern	Guisi	238	(1950)	4,100	58.0	Low	Low
Bantu	Hehe	85	(1935)	12,000	7.1	Low	Low
	Kikuyu	1,026.3	(1948)	5,100	201.2	High	High
Equatorial	Kpe	50	(1953)	860	58.1	Low	High
Bantu	Nsaw	60	(1931)	840	71.4	High	High
	Nyoro	23.7	(1959)	5,900	4.0	Low	Low
Guinea	Ibibio	1,500	(1953)	6,200	249.0	High	High
Coast	Ibo	5,100	(1953)	14,300	356.0	High	High
	Igbira	250		2,800	89.0	High	High
	Mende	567.8	(1931)	8,400	66.9	High	Low
	Serer	232.4	(1926)	6,100	38.1	Low	Low
	Yoruba	4,992	(1953)	34,600	144.3	High	High



TABLE 6--(Cont.)

Culture Area	Tribe	Population (in 1000s)		Area in Square Miles	Density Per Square Mile	Absolute Density Category	Relative Density Category
1	2	3		4	5	6	7
Western	Dogon	150	(1940)	9,200	16.3	Low	Low
Sudan	Mossi	1,500	(n.d.)	24,500	61.2	Low	High
	Senufo	540	(n.d.)	22,000	24.5	Low	Low
Nigerian	Kadara	28	(n.d.)	1,500	18.6	Low	Low
Plateau	Mumuye	25	(1922)	2,100	11.9	Low	Low
	Tiv	627	(1931)	9,650	64.0	Low	High
Eastern	Azande	750	(1949)	8,700	86.2	High	High
Sudan	Dilling	7.5	(1942)	6,200	1.2	Low	Low
	Mangbetu	500	(n.d.)	4,000	125.00	High	High
Upper Nile	Lango	275	(1947)	5,000	11.9	Low	Low
	Luo	800	(1947)	3,000	266.7	High	High
	Massai	187	(1948)	40,600	4.6	Low	Low
Horn and	Afar	110	(1950)	46,700	2.3	Low	Low
Ethiopia	Amhara	5,500	(1952)	84,860	64.8	High	High
	Kafa	500	(1925)	5,100	98.0	High	High
Moslem	Hausa	5,600	(1953)	80,200	69.8	High	High
Sudan	Songhai	392	(1953)	2,500	15.7	Low	Low
	Soninke	360	(1950)	36,500	9.8	Low	Low

---

 $\bar{X} = 64.3$

realized that a wealth of valuable information may be obtained from the latter sources, the author prefers to eliminate them in order to avoid serious problems of authenticity and data quality which their utilization will raise. It is also considered necessary to make particular mention of three general works which may be regarded as the basic sources of data on the independent variables. These are African Cultural Summaries, George P. Murdock. New Haven: HRAF Inc., 1958 (unpublished manuscript); Human Relations Area Files, 4th Rev. Edition. George P. Murdock, et al. New Haven: HRAF Inc., 1965; Ethnographic Survey of Africa series. Daryll Forde (gen. ed.). London: International African Institute (n.d.).

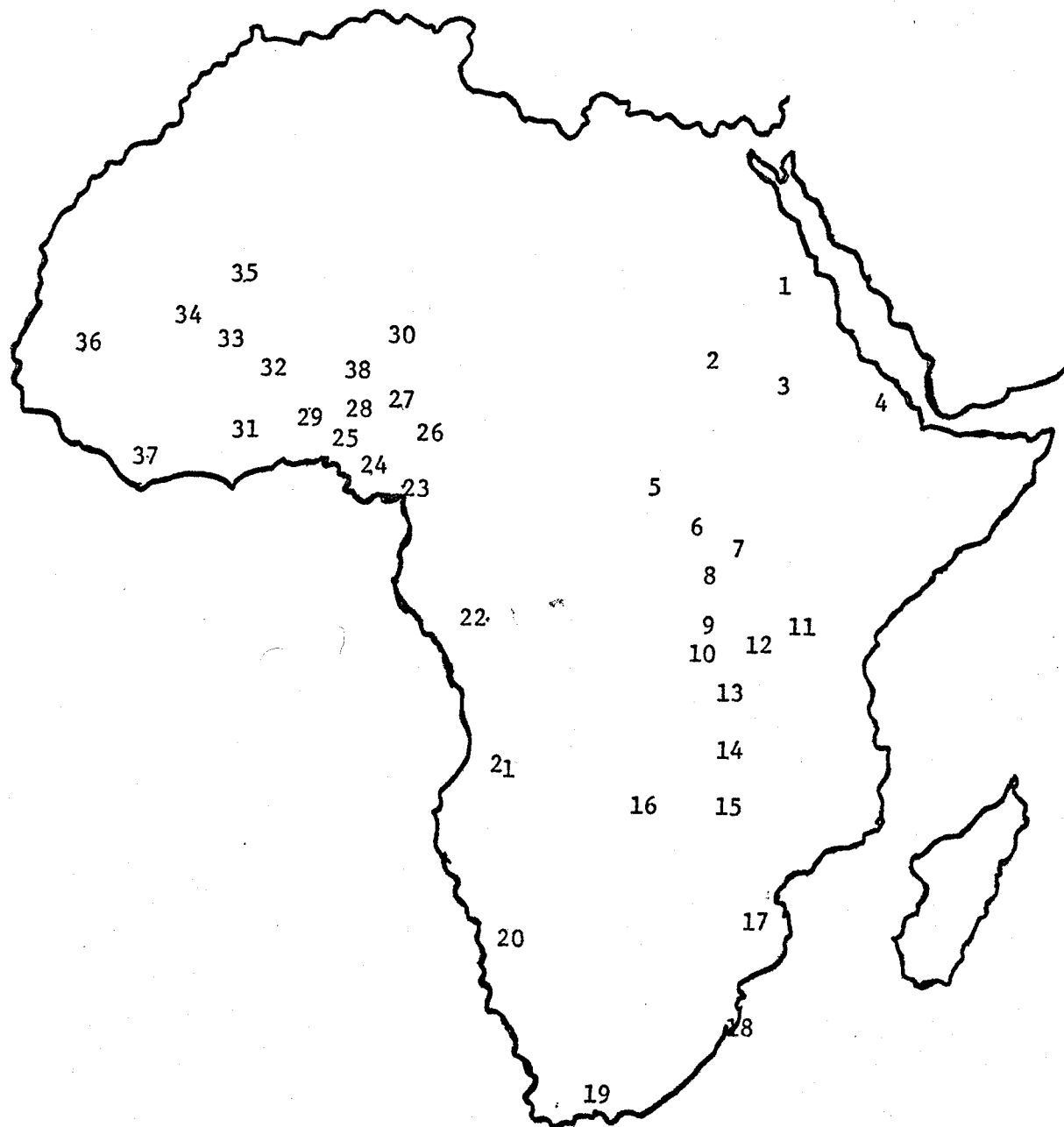
The procedure for obtaining data from these and other sources consists of abstracting the relevant information from the texts.

As an overview of the nature of data on the independent variables, the following brief and general description of each of 37 tribes in the sample according to their respective culture areas (see Chapter VI for descriptions of the remaining two tribes, the Ibo and the Ibibio) is presented. The approach here is expository rather than comparative analysis and emphasis is placed on those aspects of tribal social organization which bear directly on the research variables.

#### Pygmies Khosan Culture Area

##### The Bergdama

The Bergdama are said to be the original inhabitants of South West Africa (Murdock, 1958). They were latter subjugated by the Hottentots and the Bushmen among whom they live today as servants and herdsmen. Unlike the other two racial groups, the Bergdama are a truly negroid race but have adopted Nama Hottentot language. Murdock (1959) estimated their population to be about 30,000 in 1946.



# LEGEND

1. Tigre
2. Dilling
3. Amhara
4. Afar
5. Azande
6. Mangbetu
7. Lango
8. Nyoro
9. Luo
10. Gusi
11. Kikuyu
12. Massai
13. Sandawe
14. Hehe
15. Bemba
16. Lozi
17. Zulu
18. Pondo
19. Hottentot
20. Bergdama
21. Mbundy
22. Kongo
23. Kpe
24. Ibibio
25. Ibo
26. Tiv Nsaw
27. Mumuye
28. Igbira
29. Yoruba
30. Hausa
31. Lobi
32. Mossi
33. Dogon
34. Soninke
35. Songhai
36. Serer
37. Mende
38. Kadara

Fig. 3.-- Tribal Map of Africa

Principally hunters and gatherers, the Bergdama live in small nomadic groups consisting rarely of more than ten huts (Schapera, 1930; Murdock, 1958). They have no political organization above the community level. The polygynous family is apparently the norm though the band has the character of a patrilocal extended family. Local exogamy is practiced (Murdock, 1958). The Bergdama do not believe that the world was created and so their belief system does not include a deity of creation.

#### The Hottentot

The Hottentots are found scattered all over south and southwest Africa. They are much intermingled with the Bushmen with whom they share many racial and cultural traits. Schapera (1950) gives their population at 15,326 in 1926 while Murdock (1959) puts their number at 25,000.

Unlike the Bushmen, the Hottentots are primarily pastoralists. They own long-horned cattle which they obtained from the Bantu (Schapera, 1930) and fat-tailed sheep. Agriculture is not normally practiced and the Hottentot subsists mainly on milk and meat.

The family unit is typically nuclear or polygynous. Residence is patrilocal and king-group exogamy is the rule (Schapera, 1930). Because of their nomadic life, the local group consists of a migratory band. The camp is shifted from time to time in quest for pasture. There are autonomous local groups, each with a hereditary chief and a council of local headman. Inheritance is patrilineal. Their religion includes moon worship, and legends of a famous magician (Hambly, 1930).

#### The Sandawe

Shapera (1930) describes the Sandawe as "settled hunting people living west of the Irangi plateau in Tanganyika (Tanzania) Territory" (1930:28). They speak a click language closely related to that of Bushmen Hottentot. They number about 23,400 in 1948 (Murdock, 1958).

They are primarily agriculturists but have now acquired large herds of cattle and sheep. Hunting is also an important occupation. Monogamy is norm and polygyny is looked upon with disfavor. The family unit is characteristically nuclear and local exogamy is practiced. Inheritance is patrilineal and the settlement unit consists of isolated homesteads of small clusters which includes the huts of a father and his married sons (Murdock, 1958). According to Huntingford (1953), political authority was mainly in the hands of heads of clans with councils of elders. There is a belief in the sun and the moon which are regarded as supreme beings.

### Southern Bantu Culture Area

#### The Mbundu

The Mbundu (Ovimbundu) are a Bantu nation of the Benguela highlands in central Angola. They are estimated at 1,300,000 in 1940 (Murdock, 1958).

Peasant agriculture is the main stay of the economy although supplemented by hunting and animal husbandry. The hoe is the main implement but irrigation is also practiced. The family unit is independent nuclear or polygynous. Residence is patrilocal. Childs (1949) reports local exogamy. The village is normally a patrilocal clan-community. On the plains there are usually circles of households or compounds while on the mountains the dwellings are commonly arranged on parallel ledges (Murdock, 1958). Each village has a headman who has both political and religious functions. The Mbundu have developed a number of independent states each under a king. According to Childs (1949), the king is elected by a body of councillors and "these same councillors may depose an unpopular king" (1949:22).

#### The Pondo

The Pondo are a Nguni-speaking tribe in the Union of South Africa. They numbered about 260,000 in 1935 (Murdock, 1958). They practice agriculture

and animal husbandry both of which appear to be considered of equal importance economically. Custodial ownership of land is vested on the chief while individuals have heritable usufruct right over parcels of land. There are patrilocal extended family units and the rule of exogamy applies with respect to members of the same clan or hamlet. The typical Pondo settlements are neighborhoods of scattered kraals or hamlets. Each group of hamlets is administered by a headman. These are further organized into districts under district chiefs and finally there is the Pondo State under a paramount chief. All offices are hereditary and the paramount chief extracts taxes and royalties through the subchiefs. The chief has the right to dispossess any commoner of his cattle (Hunter, 1936). Hunter (1936) also reports no evidence of any belief in a supreme being before contact with Europeans.

#### The Zulu

The Zulu are of Bantu race and are found mainly in Natal region South Africa. Their number was estimated at quarter of a million (Murdock, 1958).

The Zulu operate a mixed economy based on agriculture and animal husbandry. Animal husbandry is an exclusive male occupation while women do most of the agricultural work. Bryant (1948) reports that the Zulu land-system is communal. Individuals have no land-titles and the king claims ownership of all land as the representative of the nation as a whole.

The Kraal is the unit of settlement. It is semi-permanent, non-nomadic (Murdock, 1958), and consists of a number of patrilocal extended family units. A group of kraals forms a community under a district chief. Succession and inheritance are patrilineal. The whole tribe is organized into a powerful state under a king. According to Kridge (1936), although the Zulu king was assumed to be proprietor of everything, he could neither legislate, make war nor allot land without the consent of the tribe-in-council. The Zulu believe in a creator who is remote and does not get involved in everyday life.

## Central Bantu Culture Area

### The Bemba

The Bemba are a Bantu tribe located in former Northern Rhodesia, now Zambia. They are estimated at 140,000 in 1933.

The Bemba are primarily agricultural although a few domestic animals are kept. The chief as the representative of the people claims "custodial" ownership of all land but each subject is free to clear new land and as Richards (1939) wrote, the chief never claims the right to seize land occupied by others or to allocate land for cultivation to his subjects.

The family unit is matrilineal, matrilineal and extended. Polygyny is general and clan exogamy is practised (Richards, 1935).

The Bemba live in compact villages which are shifted every four to five years. Each village has an appointive headman. The Bemba state is ruled by a king who combines religious with secular functions and acts as supreme judge. The belief systems include a supreme God, Lesa.

### The Kongo

The Kongo are of Bantu race and are found near the mouth of River Congo in Zaire. They were estimated to number two and one half million (Murdock, 1958).

The economy is based on subsistence agriculture with women doing most of the cultivation. The land is collectively owned by the local clan with the members holding usufruct rights.

The Kongo live in fairly compact villages. The typical family unit is polygynous nuclear. There are exogamous matriclans. Each village is under a headman and succession is matrilineal. The Kongo state is ruled by a king. According to Weeks (1919), the "King had full power of life and death." He could kill a man without trial by simply appointing a man to shoot him (1914: 42). The Kongo religion includes belief in a supreme being "Nzambi."

## The Lozi

The Lozi are the most dominant tribal group in Barotseland, Zambia. They are estimated at 67,000 in 1934 (Murdock, 1958).

They are primarily agriculturists though some cattle are kept for meat and milk. Plots of agricultural land are held by individuals and are inheritable. Inheritance is basically patrilineal though often mixed.

The family unit is normally polygynous. Permanent residence is patrilocal, though there is an initial matrilineal residence for a temporary period. According to Gluckman (1943), there is no dominant unilineal kin-group; descent is bilateral. The settlement unit consists of small permanent villages located on mounds in the flood plains. Each village is under a headman with ritual functions. The Lozi nation is politically organized into a complex state under an absolute monarch (Murdock, 1958). The Lozi believe in only one creator-god, the Nyambe.

## Northern Bantu Culture Area

### The Guisi

The Guisi are of Bantu race with a population of about 238,000 in 1950 (Murdock, 1958). They are found in Kenya.

The Guisi are primarily agricultural people although animal husbandry forms an important aspect of the economy. Women work in the farm while men tend the cattle.

The basic family unit is nuclear and polygynous. Residence is patrilocal; inheritance patrilineal and exogamy prevails among patri-clans. The Guisi live in neighborhoods of dispersed homesteads (Murdock, 1958). Each patri-clan forms a politically autonomous unit. The Guisi have no hereditary chiefs or headman and there is no political integration at the tribal level.



## The Hehe

The Hehe, also of Bantu race, are found in presentday Tanzania. They are estimated at 85,000 people occupying an area of 12,000 square miles (Murdock, 1958).

They are primarily agricultural people although large number of cattle are kept. Ownership of land refers only to the right of occupancy and this is vested on the head of each household (Brown and Hutt, 1935). Inheritance is predominantly patrilineal.

The independent polygynous family is the norm. Residence is patrilocal, inheritance patrilineal and patri-kin exogamy is observed. Scattered home - steads are the typical pattern of settlement. A group of adjacent neighborhoods is administered by a district chief assisted by a council. The Hehe developed two powerful states each ruled by a monarch. The king's authority in matters of law and witchcraft is final (Brown and Hutt, 1935). The Hehe have a series of rituals but no well defined religion.

## The Kikuyu

The Kikuyu of Kenya are a Bantu tribe of about 1,000,000 people in 1948 (Murdock, 1958).

Their main economy is peasant agriculture supplemented by important animal husbandry. The entire land is common property of the whole tribe but individuals and family units hold usufruct and "prescriptive rights" over specific portions of the land.

The typical residential unit is a polygynous family household. There is kin-group exogamy and descent is patrilineal.

The traditional Kikuyu pattern of settlement is dispersed polygynous family homesteads. Each community is governed by a council of ruling elders which exercises legislative, judicial and religious functions. On the tribal level, the Kikuyu have no central political organization although various communities

may come together for ceremonial purposes. The Kikuyu religion includes a belief in a high god (Kenyata, 1965).

### Equatorial Bantu Culture Area

#### The Kpe

The Kpe who are located in the Cameroons on the west coast of Africa belong to the Bantu race. Murdock (1958) gives their total population as 38,000 in 1953.

Agriculture is the principal occupation of the Kpe although hunting and fishing are also important. Land is owned collectively by the patrilineages (Ardener, 1956; Murdock, 1958). Inheritance is primarily patrilineal.

Nuclear polygamous, rather than extended family is the typical unit. Residence is patrilocal and Ardener (1956) reports that descent is primarily patrilineal. The Kpe live in small dispersed settlements or villages. Each village constitutes a political unit with a headman and a council of elders. There is, however, no political organization beyond the local level. Their religion includes belief in a creator-god.

#### The Nsaw

The Nsaw is a Nigerian tribe belonging to the Bantu race. They numbered about 60,000 in 1953 (Murdock, 1958).

The economy is primarily agricultural. Some domestic animals but no cattle are kept. Most of the agricultural work is done by women while men hunt and trade. Land is owned by patri-lineages and each lineage head allocates land for cultivation to its members.

An extended family occupying a compound is the basic residential unit. Residence is patrilocal and polygyny is practiced. Inheritance is basically patrilineal.

The Nsaw live in concentrated villages of 300 to 800 inhabitants. Each lineage has lineage head and for the village is also a headman. On the tribal

level, there is a single paramount chief who rules over a group of villages through sub-chiefs. The paramount chief has supreme authority over the land. The Nsaw believe in a high god who receives sacrifices through the ancestors.

The Nyoro

The Nyoro are people of Bantu race who live in Uganda territory. They were estimated at 23,700 in 1959.

They are basically agricultural people although animal husbandry is also practiced. All land and everything in it belong, theoretically at least, to the king. Usufruct rights are held by individuals on condition of the king's pleasure (Taylor, 1962).

The family unit is characteristically nuclear and polygyny is the preferred form of marriage. Residence is patrilocal but local endogamy is preferred.

The Nyoro live in neighborhoods of dispersed homesteads. Each local community has a headman chosen from the dominant sib. On the national level, the Nyoro are ruled by a king with absolute powers and certain divine attributes. There is belief in a remote creator-god named Ruhanga.

#### Guinea Coast Culture Area

##### The Igbira

The Igbira, a Nigerian tribe belong to the Nupe branch of the Kwa sub-family. Meek (1931) estimated their population at 250,000 in 1959.

Peasant agriculture is the mainstay of Igbira economy with yam as the staple crop. The village headman distributes land among the families for cultivation. Inheritance is patrilineal.

Patrilocal extended families occupying a compound is the basic residential unit. Polygyny is the preferred form of marriage and patri-sib exogamy is practiced.

The Igbira live in villages and few walled towns. Each village has a headman as well as a village council. The Igbira were organized into two small states each with a king who had to observe very elaborate taboos. He was assisted by titled councillors. The tribal religion includes belief in a high god.

#### The Mende

The Mende are found in Sierra-Leone and adjacent Liberia. They belong to the Mandingo branch of the Niger-Congo linguistic stock. Their population in 1931 is estimated at 580,000 (Murdock, 1958).

The economy is primarily agricultural with shifting hoe cultivation. There are very few cattle. Land rights are held collectively by the patrilineage and is administered by the head of the lineage. Inheritance is primarily patrilineal.

The extended family is the basis of family organization. Polygyny is preferred and residence is patrilocal. Descent is also patrilineal.

Compact towns and villages are the normal pattern of settlement. Each town has a headman, normally the eldest male in the patrilineal descent line. He is assisted by a council of elders. On the tribal level, the Mende have no centralized authority but there are a number of independent chiefdoms, each with a paramount chief. The paramount chief has a council of elders and highly placed friends and relations. His authority is almost absolute. The Mende religion includes belief in a high-god who created the world and everything.

#### The Serer

The Serer of Senegal belong to the West Africa branch of the Niger-Congo linguistic stock. They numbered about 300,000 in 1931.

Agriculture is the basic economy with spade cultivation. Land is owned collectively by matrilineal families. Each male member of a matrilineal family receives some parcel of land for cultivation to support his conjugal family.

The family unit consists of matrilineal extended units although residence is primarily patrilocal.

The Serer live in dispersed compounds with cultivated fields between them. The compounds are grouped into villages with headman assisted by a council of compound heads. The Serer have organized a number of states each under a paramount chief or a king. The ruler in each case is assisted by a council of officials who have special functions. There is a belief in a high god.

#### The Yoruba

Yoruba speaking peoples are found in both Nigeria and Dahomey on the west coast of Africa. They belong to the Kwa subfamily of the Niger-Congo linguistic stock. They were estimated at 3,166,000 in 1931.

Agriculture is the basic occupation although trade and industry are also important. Land is generally held by patrilineages and administered by their heads. Inheritance is patrilineal.

Residence is patrilocal and the basic unit is an extended family. One or two extended families occupy a compound; a number of compounds being grouped into a quarter. The Yorubas live together in concentrated urban towns. Each town has a chief or headman usually a patrilineal descendant of the founder of the town. The Yoruba have built up a number of small independent states each ruled by a paramount chief or a king (Oba). The ruler is usually assisted by a council of chiefs. The Yoruba believe in a supreme creator.

#### Western Sudan Culture Area

##### The Dogon

The Dogon of Mali belong to the Mossi-Grunchi branch of the Niger-Congo linguistic stock (Murdock, 1958). Pauline (1940) estimated their population at 150,000.

Their economy is basically agricultural with hoe as the main implement.

few cattle are kept. Land is collectively held by lineages and administered by the lineage head. Inheritance is bilateral.

Although polygyny is permitted, the basic family unit is the nuclear family. Residence is patrilocal and local exogamy prevails.

The Dogon live in compact and sometimes walled villages. Each village consists of a number of lineages. Each village or group of hamlets has a headman who exercises religious and judicial functions. There is, however, no indigenous political organizations on the tribal level.

#### The Senufo

The Senufo belong to Voltaic sub-family of the Niger-Congo linguistic stock. They are found today in Mali and Upper Volta and are estimated at 541,000 in 1940 (Murdock, 1958).

The Senufo are primarily agricultural and only few cattle are kept. The district chiefs exercise custodial ownership of the land and he distributes it among the constituent lineages in inheritable usufruct rights.

Extended family units are the rule and polygyny is preferred. Residence is patrilocal.

Compact villages surrounded by mud walls are the typical settlement pattern. Each village has a chief who controls the land and also a secular chief who presides over political affairs. There are small quasi-independent states and some Senufo acknowledge the sovereignty of other Mande states (Murdock, 1958). Goldwater (1964) reports evidence of belief in a high god.

#### The Mossi

The Mossi, closely related to the Dogon are found in Upper Volta. They are estimated at 1,950,000 in 1921 by De Martonne (Murdock, 1958).

The economy is primarily agricultural with hoe cultivation. Cattle are kept by the Fulani. All land comes under the supervision of the Mossi chiefs who

assign it for cultivation to heads of extended family units (Skinner, 1964).

Inheritance is patrilineal.

Polygynous extended family is the unit of residence. Residence is patrilocal and the descent is patrilineal.

The Mossi live in scattered neighborhoods or village groups. Each village group has a headman who supervises the allocation of land. On the tribal level, the Mossi are organized into three independent states. These in turn are centralized under a king who wields unlimited powers of confiscation (Murdock, 1958).

### Nigerian Plateau Culture Area

#### The Kadara

The Kadara belong to the semi-Bantu branch of the Niger-Congo linguistic stock. They are found in Nigeria and Gunn (1956) reports their population as 28,000 in 1953.

The economy is primarily agricultural and cattle are very rare (Murdock, 1958). The lineage is the basic land-owning unit, individuals obtaining inheritable usufruct rights on the basis of lineage membership (Gunn, 1956).

The extended family unit is the norm. Residence is patrilocal; polygyny prevails and local endogamy is the rule.

The Kadara live in small, often walled villages. The villages are grouped together to form community. Each village or village group has a headman. The Kadara, however, have no political organization at the tribal level. There is a belief in a creator high god.

#### The Mumuye

The Mumuye are a Nigerian tribe. They belong to the Adamawa branch of the Eastern sub-family of the Niger-Congo stock. Meek (1925) estimates their 1921 population at 25,000.

They are primarily agricultural and cattle are kept as one of the domestic

animals. Individual family units hold usufruct right over land for cultivation. Inheritance is patrilineal.

There are extended family units made up of a number of nuclear families. Polygyny is practiced. Residence is matri-patrilocal. A husband lives with the wife's lineage until the birth of the first child at which the couple move over to the husband's lineage group. There is strict local exogamy.

The Mumuye live in concentrated villages varying in size from 30 to 250 (Tample, 1922). There is no centralized administration at the tribal level but in each village the government is carried on by village headmen and a body of elders. Their religion includes belief in a creator god.

#### The Tiv

The Tiv are a semi-Bantu tribe of the Niger-Congo stock. They are found in Northern Nigeria and number 627,000 in 1951 (Meek, 1931).

Tiv economy is primarily agricultural with hoe cultivation. Only few cattle are kept. Right over land is vested on the head of the compound and he allocates farming plots to his compound members (Bohannon, 1953). Inheritance is patrilineal.

The family unit is the extended, polygynous group occupying a compound. Descent is patrilineal.

The Tiv live in compounds scattered more or less evenly throughout the countryside. There is no centralized government at the tribal level. But within each local unit, authority is vested on a council of elders representing the various lineage groups. The Tiv believe very much in magic but they also recognize the existence of a high god.

#### Eastern Sudan Culture Area

##### The Azande

The Azande are found in Zaire, the Sudan and Central African Republic.



Altogether, they were estimated at 750,000 in 1949 (Murdock, 1958). They belong to the Eastern branch of the Niger-Congo stock.

The Azande are primarily agricultural people. The chief exercises custodial ownership over land while individuals hold usufruct rights. Inheritance is patrilineal.

The normal unit of residence is a polygynous nuclear family. Residence is pstrilocal although at times it is neolocal (Murdock, 1958). Descent is generally patrilineal.

The settlement pattern is dispersed homesteads grouped into local neighborhoods. At the local level, there are local leaders or "deputies" who manage local affairs. At the tribal level, Baxter and Butt (1953) report that the Avungara controlled all Zande law and constituted the only authority in Zandeland. The Azande worship a supreme being known as Ubori (Baxter and Butt, 1953).

#### The Dilling

The Dilling, more of Arabs than Negroes are part of the Nuba Hill tribes. They are found in Eastern Sudan and number about 7,500 in 1942 (Murdock, 1958).

The Dilling are primarily agricultural although animal husbandry is also important. According to Murdock (1958) all cultivated land is individually owned and can be leased or solc. Uncultivated land, however, belongs to the community as a whole. Inheritance is strictly patrilineal.

A nuclear family occupying a compound is typical and polygyny is permitted (Nadel, 1947). There are exogamous patri-sibs and residence is strictly patrilocal.

The settlement pattern is dispersed "hill communities." consisting of a group of hamlets. There are local headmen but the tribal level authority lies in the hands of the king and his council. The king is elected by the council (Nadel, 1947).

### The Mangbetu

The Mangbetu who are of central Sudanic stock are found in the Northeast region of Zaire. Their population is estimated at 500,000 (Murdock, 1958).

They are primarily agricultural and cattle are normally not kept. Land is collectively owned by the entire community (Murdock, 1958). The pattern of inheritance is from father to son, that is, patrilineal.

The independent family is the basic family unit. Polygyny is practiced. Residence is patrilocal and local exogamy could be inferred (Murdock, 1958).

Scattered family homestead is the pattern of settlement. Each community has a headman. As a nation or tribe, the Mangbetu are organized into two kingdoms each under an absolute monarch. Their religion does not include belief in a high god.

### Upper Nile Culture Area

#### The Lango

The Lango are of East Sudanid linguistic stock and are found in Northern Uganda. They numbered about 275,000 in 1947 (Murdock, 1958).

The Lango operate a mixed economy based on agriculture and animal husbandry. The village or the community is the land-owning unit. Inheritance is patrilineal.

The nuclear family is the basic residential unit. Polygyny is generally preferred. Residence is patrilocal and local exogamy is a possibility.

The Lango live in compact villages each with a local headman. They have no state organizations at the tribal level. There is no record of belief in a high god.

#### The Luo

Numbering about 800,000 in 1947 (Murdock, 1958), the Luo are found in Kenya, East Africa.

The economy is principally agricultural but animal husbandry is also very

important. Land ownership is vested on lineage groups or clans, individual members of which acquire usufruct rights. Inheritance is patrilineal.

The family unit consists of patrilineal extended group of parents, married and unmarried children. Polygyny is generally practiced and postmarital residence is patrilocal. Clan exogamy is the rule (Butt, 1952).

The Luo live in clustered hamlets and villages, each constituting an autonomous local community. Each community has a "father of the land" who settles disputes and performs religious functions as well. He is usually assisted by a council of elders selected from the minor lineages (Murdock, 1958). Religious beliefs of the Luo include a belief in a supreme god whom they call the Nyasi (Butt, 1952).

#### The Massai

The Massai are a "nilo-hamitic" tribe inhabiting territories in both Kenya and Tanzania. They numbered 187,000 by the 1948 census (Murdock, 1958).

The Massai are almost exclusively a pastoral people and their life is built around cattle. Men herd and women milk the cattle. Because of their pastoral mode of economy, there is no individual or lineage property in land. Land is owned by sub-tribes all members of which have equal right to pasture (Huntingford, 1953).

#### Horn and Ethiopia Culture Area

##### The Affar

The Affar peoples of the Horn of Africa are found in the territories of Eritrea, Ethiopia and Somalia. They were estimated at 110,000 in 1950 (Murdock, 1958). They are of Hamitic-Semitic linguistic group.

The economy is principally pastoral but there is also little agriculture by irrigation. Land is owned by the king though individuals hold usufruct rights. Inheritance is patrilineal.

The family is extended and polygynous and descent is patrilineal. Post-marital residence is patrilocal.

Settlements are temporary and migratory following pasture availability. There are local headmen who preside over community affairs. On the tribal level, there is a paramount chief but his powers are limited by the general tribal assembly (Lewis, 1955). The Affar have a Cushitic religion and one of its tenets include a belief in the "sky-god" (Lewis, 1955).

#### The Amhara

The Amhara are a Semitic people found in the highland of Ethiopia. They number about five million in 1952 (Murdock, 1958).

The Amhara are an agricultural people who employ both the ox, the plow and the irrigation methods. They also keep some cattle. The land is owned by the Coptic Church and the feudal nobility. Inheritance is patrilineal.

The family is extended but officially monogamous. Descent is patrilineal and post-marital residence is patrilocal (Messing, 1957).

The Amhara live in compact towns and villages (Murdock, 1958). A group of villages is placed under a nobleman who administers it for the king. The king rules over the whole land and his powers are almost absolute. The Coptic Church of Abyssinia which is the state religion contains belief in a Creator-god.

#### The Kafa

The Kafa are a people of Hamitic-Semitic linguistic stock found in Ethiopia. Their population in 1905 is put at 500,000 (Murdock, 1958).

They are primarily agricultural with plow and ox cultivation. They also keep some cattle. All land belongs to the king in the sense of its being his private property. According to Huntingford, "People occupied land as the king's tenant and could be turned out at his pleasure" (1955:109).

Polygamous nuclear family is the rule with neolocal post-marital residence. Descent is patrilineal.

The Kafa live in neighborhoods of dispersed family homesteads. Each community is headed by a state official appointed by the king. The king is the overall ruler of the people and according to Huntingford (1955), he has power of life and death over his subjects. The Kafa believe in a supreme deity, Yaro.

#### Moslem Sudan Culture Area

##### The Hausa

The Hausa belong to Chad branch of Hamitic-Semitic linguistic stock but of pure negroid race (Murdock, 1958). Although the heaviest concentration in the Hausa is found in Nigeria, there are also members of this tribe in Niger and Upper Volta. Meek (1931) put their population in Nigeria at 3,604,000.

The Hausa are primarily agricultural but animal husbandry is also important. Irrigation is practiced. Land belongs to the community although individuals hold usufruct rights (Temple, 1965)

Polygynous extended family is the basic residential unit. Post-marital residence is patrilocal and king-group exogamy is the rule.

The Hausa live in compact villages and cities. Each community is under a Fulani headman. Before the Fulani conquest, the Hausas were ruled by kings who were elected and could be deposed (Murdock, 1958). Their indigenous religion contains belief in a creator-god.

##### The Songhai

Spread over the territories in Niger, Upper Volta and Mali, the Songhai are of Negroid race. Their population in Mali Republic in 1953 was given as 392,000 (Murdock, 1958).

The Songhai are primarily agricultural with hoe cultivation. The chief exercises custodial ownership over all the land and individuals hold usufruct rights. Inheritance is patrilineal (Miner, 1953).

There is polygynous extended family. Post-marital residence is patrilocal and kin-group exogamy prevails.

The Songhai live in compact villages and towns. There are district chiefs who run the local affairs, and there are paramount chiefs, assisted by the district chiefs, for a group of districts.

The Soninke

The Soninke of Mali are estimated at 360,000 in 1950 (Murdock, 1958).

They are primarily agricultural with shifting cultivation. Some cattle are also kept. The land belongs to the lineage and inheritance generally is patrilineal.

The basic family unit is patrilocal and extended. Polygyny is generally practised.

The Soninke live in compact villages. There are local headmen over each group of villages and paramount chiefs who wield great powers rule over a number of villages. The Soninke are nearly all Moslems (Murdock, 1958).

#### The Control Variables : Temperature and Rainfall

Data on the type of technology is obtained from the same sources and through the same process of abstraction as the independent variables discussed above.

Data on temperature and rainfall are obtained from two sources, a climatic map of Africa supplemented by descriptions of local climatic conditions found in ethnographic reports. The author cannot trace any climatic map of Africa based on tribal units. All available maps are based on national or political units. However, since the location of each tribe in terms of its geographic bearings is known, it is possible to determine the tribal annual temperature and rainfall from a climatic map of Africa or a region of the continent. This is the procedure adopted in this study and the climatic map

used is found in Philips Modern College Atlas for Africa, (Fullard, 1959).

Since the dependent variable is relative rather than absolute density, it is considered necessary that annual temperature and rainfall figures be relativized also. This is achieved by categorizing the mean annual temperature and rainfall of each tribe as high or low based on the average temperature and rainfall of its culture area rather than on that of the entire sample or African region. Thus, tribal annual temperatures and rainfall at or above the culture area mean are categorized as high while those below this mean are categorized as low temperature or rainfall.

## CHAPTER IV

### RESULTS

In the last chapter, a series of hypotheses were made concerning the nature of relationships between each of the nine independent variables and the dependent variable. In this chapter, the research data are presented, analyzed and the hypotheses tested.

Two different though complementary methods of analysis are employed:

(1) the analysis of "fit": according to Zetterberg (1965), this method examines "the extent to which our data fall in the direction predicted by the hypothesis." In this study, therefore, the fit method is employed as an instrument for testing the hypotheses. The procedure consists of comparing the proportion of cases "confirming" the hypothesis with the proportion of cases "not confirming" it. The term "confirm", however, needs to be further clarified. In the present context, a hypothesis of positive association between one category ( $X_I$ ) of an independent variable and one category ( $Y_I$ ) of the dependent variable means that those subjects (here tribes) which exhibit  $X_I$  characteristic are expected also to exhibit  $Y_I$  characteristic; and those subjects which show not- $X_I$  characteristic are expected to show not- $Y_I$  characteristic. Subjects which conform to this model agree with, and are said to confirm the hypothesis while others which deviate from the model are said not to confirm the hypothesis. Thus, a "not-confirming" case may either combine  $X_I$  with not- $Y_I$  characteristics or not- $X_I$  with  $Y_I$  characteristics.

Where the proportion of confirming equals the proportion of not confirming cases (i.e., when there is no difference between the two proportions), the implication is that there is no relationship between the independent and the



dependent variables. Where the confirming exceeds not-confirming cases a positive relationship is implied and the excess of not-confirming over confirming cases implies a negative relationship. It follows then that the proportional or percentage difference between confirming and not confirming cases may be utilized as a measure of the strength of association between the independent and the dependent variables (Davis, 1971:64). That is, the higher the percentage difference, the greater the strength of association.

(2) The statistical method: Since the objective of this analysis is not just to test the hypotheses but more importantly to identify those socio-cultural variables which have the greatest influence on relative population density, it becomes necessary to employ a mechanism for evaluating the magnitude of the relationship between relative density and each of the independent variables. This is achieved by statistical method of analysis. That is, the coefficient of association provides a measure of the influence of each independent variable on relative density. Because the data are in nominal scale of measurement, only the Yule's Q and Phi statistics are employed. All through the study, Davis' (1971) "conventions for describing Q values" are followed with some modifications. Thus, Q values below .10 are described as "negligible." Those between .10 and .39 are described as "low" and those .40 or greater are described as "substantial."

The data and results of the analysis are presented in the same order as the research hypotheses.

#### Type of Land Ownership and Relative Density

The first hypothesis proposes a direct relationship between high relative population density and kin-group pattern of land ownership. This implies that those societies which have kin-group type of land ownership are expected also to have relative density. Conversely, societies which have non-kin-group

pattern of land ownership are expected to have low relative density.

Table 7 presents a summary of the relevant data. It shows that 22 out of the 39 cases (56.4 per cent) confirm the hypothesis while 17 (43.6 per cent) cases do not confirm it. Since confirming exceeds not-confirming cases, a positive relationship is implied.

TABLE 7

NUMBER OF CASES CONFIRMING AND THOSE NOT CONFIRMING HYPOTHESIS ONE

	<u>Number</u>	<u>Per Cent</u>
Cases Confirming	22	56.4
Cases not Confirming	17	43.6
Total	39	100.0
Differences		
(Confirming-Notconfirming)	5	12.8

The percentage difference is 12.8 per cent. The conclusion is that the data indicates a weak support for the hypothesis. This means that in traditional African societies, high relative density is somewhat more likely to be found where land is owned by the kinship group than where it is individually or communally owned. However, the difference between the confirming and not-confirming cases is so small (12.8 per cent) that the observed difference could as well be the result of error in sampling. Further evidence is therefore needed before this result can be treated with great confidence.

For a statistical evaluation of the observed relationship, Table 8 presents a cross-tabulation of the data. The Table indicates that among societies without kin-group type of land ownership, 54.5 per cent have low relative density and 45.5 per cent have high relative density.

TABLE 8

## TYPE OF LAND OWNERSHIP BY RELATIVE DENSITY

Land Ownership	Relative Density		
	Low	High	
Non-kin Group	54.5% (12)	45.5% (10)	100% (22)
Kin Group	41.2% ( 7)	51.3% (10)	100% (17)
Total	48.7% (19)	51.3% (20)	100% N = 39
Q = .26			
Phi = .13			

On the other hand, out of seventeen societies which have kin-group type of land ownership, seven or 41.2 per cent have low relative density while ten or 58.8 per cent have high relative density. These exhibit trends in the hypothesized direction and lend some support to the result of earlier analysis of fit. The strength of association as measured by the Q and Phi coefficients are  $Q = .26$ ,  $\Phi = .13$ . These signify a rather low positive association indicating that pattern of land ownership may not have a considerable influence on population density in traditional African societies. The implication of this for the present study is that pattern of land ownership may not be an important variable in explaining the unusual high population density in Eastern Nigeria.

#### Type of Work Organization and Relative Density

The second hypothesis proposes a positive relationship between familial pattern of work organization and high relative density. This means that

traditional African societies which have familial type of work organization are expected also to have high relative density and those which have non-familial type of work organization are expected to have low relative density.

A summary of the relevant data is presented in Table 9. It shows that 18 or 46.1 per cent of the cases confirm the hypothesis while 21 or 53.9 per cent fail to confirm it. The not-confirming exceeds the confirming cases, thus indicating a negative relationship.

TABLE 9

NUMBER OF CASES CONFIRMING AND THOSE NOT CONFIRMING HYPOTHESES TWO

	Number	Per Cent
Cases Confirming	18	46.1
Cases Not-confirming	21	53.9
Total	39	100.0
Difference		
(Confirming-Notconfirming)	- 3	- 7.8

The percentage difference is -7.8 per cent. The data therefore fails to support the hypothesis. This result indicates that in traditional African societies, high relative density is more likely to be found where work or production activity is politically or contractually organized rather than where it is familially organized. But, as in the hypothesis considered earlier, the percentage difference between the confirming and non-confirming cases is so small (-7.8 per cent) that it may well be a result of error. No definitive statement regarding the relationship between pattern of work organization and relative density can therefore be made on the basis of this data.

For further evaluation of the strength of the observed relationship, a cross-tabulation of the data is presented in Table 10. The Table shows that there are altogether twelve cases with non-familial pattern of work organization. Of this number, five or 41.7 per cent have low, while seven or 58.3 per cent have high relative density.

TABLE 10

## TYPE OF WORK ORGANIZATION BY RELATIVE POPULATION DENSITY

Work Organization	Relative Density		
	Low	High	
Non-familial	41.7%	58.3%	100%
	( 5)	( 7)	(12)
Familial	51.9%	48.1%	100%
	(14)	(13)	(27)
Total	48.7%	51.3%	100%
	(19)	(20)	N = 39
Q = -.19			
Phi = -.08			

Twenty-seven cases have familial pattern of work organization. Of this number, 19 or 48.7 per cent have low and 20 or 51.3 per cent have high relative density. The Q and Phi measures of association yield  $Q = .19$  and  $\Phi = -.08$ . These results are in agreement with that obtained by analysis of fit. The degree of association is so low that it may have resulted from chance. In the context of the study, this means that pattern of work organization, by itself, may not have much effect on population density in traditional African societies and consequently may not be of considerable importance in explaining high population density in Eastern Nigeria.

One question that needs to be answered, however, is why do the data appear to contradict the hypothesized relationship. A review of the theoretical basis for the hypothesis may provide a clue to the answer. The category of non-familial work organization includes "political" and "contractual" types of work organization. It would appear that because "political" work organization operates under the supervision a more or less bureaucratized central authority, more food might be produced per unit of available land than under familial work organization. Further, the very nature of contractual work organization implies some element of constraint on the part of the participants to fulfill some agreed upon production obligations. This element of constraint absent or at least not so pronounced under familial work organization may result in higher productivity for contractual work organization. It would then appear that the combination of these features of political and contractual work organizations may far outweigh the advantages of greater flexibility "through reciprocity arrangements" (Udy, 1970:39) which familial work organization is expected to confer. It then follows that non-familial type of work organization will be associated with greater productivity and, as has been earlier argued, to greater availability of produce and through that to higher population density. This is a possible explanation for the observed negative relationship between familial type of work organization and high relative density. However, since the magnitude of relationship is so small, further evidence is needed before this explanation may be accepted and generalized.

#### Unit of Consumption and Relative Population Density

The third hypothesis postulates a positive relationship between kin-group pattern of distribution and consumption and high relative population density. This implies that traditional African societies in which the kinship group is the basis of distribution and consumption of goods and services are

expected to have high relative population density while those in which the individual or the entire community is the basic consumption unit are expected to have low relative population density.

Table 11 summarizes the research data for testing this hypothesis.

TABLE 11  
NUMBER OF CASES CONFIRMING AND THOSE NOT  
CONFIRMING HYPOTHESIS THREE

	Number	Per Cent
Cases Confirming	22	56.4
Cases Not Confirming	17	43.6
Total	39	100.0
Difference (Confirming, Not-Confirming)	5	13.8

It shows that in 22 out of the 39 cases, the hypothesized relationship is confirmed but fails to be confirmed in seventeen cases. This means a 56.4 per cent confirmation and 43.6 per cent non-confirmation. The difference is five or 12.8 per cent. Since the proportion of confirming exceeds those of non-confirming cases, a positive relationship between kin-group pattern of consumption and high relative density is implied. Thus, the hypothesized relationship appears to be supported by the data. This suggests that in traditional African societies, high relative density is more likely to be found where the kinship group is the basic unit of distribution and consumption than where the individual or the whole community is the basic consumption unit. However, the difference between confirming and not confirming cases is not large enough to warrant much confidence on this result.

Table 12 presents a cross-tabulation of the data for a statistical evaluation of the strength of this relationship.

TABLE 12

## TYPE OF CONSUMPTION UNIT BY RELATIVE POPULATION DENSITY

Consumption Unit	Relative Density		
	Low	High	
Non-Kin-Group	54.2%	45.8%	100%
	(13)	(11)	(24)
Kin-Group	40.0%	60.0%	100%
	( 6)	( 9)	(15)
Total.	48.7%	51.3%	100%
	(19)	(20)	100%

$$Q = .28$$

$$\Phi = .14$$

It shows that of the 24 societies which do not utilize kinship group as the basic unit of distribution and consumption, 13 or 54.25 per cent have low relative population density while 11 or 45.8 per cent have high relative density. Among the fifteen societies with the kinship group as the unit of distribution and consumption, six or 40.0 per cent have low relative density while nine or 60.0 per cent have high relative density. Thus, within both the non-kinship group and kinship group categories, a larger proportion of cases are in the hypothesized direction, thus supporting the result of the "fit" analysis. The strength of relationship as measured by Yule's Q and the Phi is  $Q = .28$  and  $\Phi = .14$ . These Q and Phi values are essentially the same as those obtained between type of land ownership and relative density [hypothesis (1)]. Consequently conclusions drawn about the implications of that result also apply in



this case. In the context of this study, it means that the way consumption is organized may not be considered an important factor in explaining population density in Eastern Nigeria.

#### Type of Political Decision-Making and Relative Population Density

Hypothesis (4) proposes a direct relationship between participatory type of decision-making and high relative density. This means that those traditional African societies which have participatory patterns of political decision-making are expected to have high relative density while those which have autocratic or non-participatory patterns of political decision-making are expected to have low relative density.

Table 13 presents a summary of the relevant data. It shows that nineteen or 48.7 per cent of cases confirm the hypothesis while twenty or 51.3 per cent do not confirm it.

TABLE 13  
NUMBER OF CASES CONFIRMING AND THOSE NOT  
CONFIRMING HYPOTHESIS FOUR

	Number	Per Cent
Cases Confirming	19	48.7
Cases not Confirming	20	51.3
Total	39	100.0
Difference (Confirming, Not Confirming)	-1	-2.6

Since deviant cases exceed those which confirm the hypothesis, a negative relationship is implied. However, the difference between the confirming and not confirming cases (-2.6 per cent) is so small that it seems more reasonable to interpret the result as indicating no relationship between pattern of

political decision-making and relative population density.

Table 14 presents a cross-tabulation of the data for statistical evaluation of the strength of this relationship. It shows that of the fifteen cases which fall under the autocratic or non-participatory category, seven or 46.7 per cent have low relative density while eight or 53.3 per cent have high relative density.

TABLE 14

## TYPE OF POLITICAL DECISION-MAKING AND RELATIVE DENSITY

Type of Decision-Making	Relative Density		
	Low	High	
Autocratic	46.7% ( 7)	53.3% ( 8)	100% (15)
Participatory	50.0% (12)	50.0% (12)	100% (24)
Total	48.7% (19)	51.3% (20)	100% N = 39
Q = -0.07			
Phi = -0.-3			

Of the twenty-four cases which came under the participatory category, twelve or 50.0 per cent have low relative density while the other half have high relative density. The coefficients of association are  $Q = -0.07$  and  $\Phi = -0.03$ . This supports the earlier finding of a negligible degree of association between participatory decision-making and high relative density. This means that pattern of political decision-making could be said to have no effect on population density in traditional African societies, and consequently may have only a negligible effect on population density in Eastern Nigeria.

However, the fact that the data fail to support the research hypothesis

requires some explanation. In Chapter III, it was argued that the participatory form of decision-making enhances group cohesion, social solidarity and moral density. While this has been shown to be true in "modern" gesellschaft situations (Coch and French, 1948; Dahl, 1961), it appears that in traditional societies, social solidarity and group cohesion are achieved and maintained more by kinship ties and lineage obligations than through the political decision-making process. Consequently, the effect of participatory form of decision-making on moral density (and through that on population density) is greatly diminished in traditional societies. The research finding that there is almost no relationship between participatory types of decision-making and high relative density is therefore a reflection of this state of affairs. If this explanation is accepted, then the earlier conclusion that pattern of decision-making may not be an important factor in accounting for high population density in Eastern Nigeria appears at least, theoretically justified.

#### Type of Family System and Relative Population Density

The fifth hypothesis proposes a positive relationship between the extended family system and high relative population density. In other words, traditional African societies which have extended family systems are expected to fall within the high relative density category while those which have nuclear or non-extended family system fall within the low relative density category. Table 15 summarizes the research data for a test of this hypothesis.

The table indicates that the hypothesis is confirmed in twenty-three out of the thirty-nine (59 per cent) cases but is not confirmed in sixteen or 41.0 per cent of the cases. Confirming thus exceeds not-confirming cases by seven or 17.9 per cent. This implies a positive relationship between extended family type and high relative density. Thus, the data support the hypothesized relationship. This means that in traditional African societies, high relative

TABLE 15

NUMBER OF CASES CONFIRMING AND THOSE NOT  
CONFIRMING HYPOTHESIS FIVE

	Number	Per Cent
Cases Confirming	23	59.0
Cases not Confirming	16	41.0
Total	39	100.0
Difference (Confirming, Not Confirming)	7	17.9

density is more likely to be found where there is extended family organization than where there is nuclear family organization. However, the difference between confirming and not-confirming cases (17.9 per cent) is not large enough to justify any generalizations based on these data.

For an evaluation of the strength of the observed relationship, a cross-tabulation of the data is presented in Table 16. From this table, it can be seen that there are seventeen societies with nuclear family organization. Of this number, ten or 58.8 per cent have low relative density and seven or 41.2 per cent have high relative density.

Further, there are twenty-two societies with the extended family system of which nine or 40.9 per cent have low relative density while thirteen or 51.3 per cent have high relative density. In both categories, the trend is toward the hypothesized relationship and the coefficients of association as measured by the Q and Phi are .35 and .18 respectively. These indicate a rather low degree of association, implying that type of family organization, by itself, may have only a small influence on population density in traditional African

TABLE 16

## TYPE OF FAMILY SYSTEM AND RELATIVE POPULATION DENSITY

Family System	Relative Density		
	Low	High	
Nuclear	58.8% (10)	41.2% ( 7)	100% (17)
Extended	40.9% ( 9)	59.1% (13)	100% (22)
Total	48.7% (19)	51.3% (20)	100% N = 39
Q = .36			
Phi = .18			

societies. In relation to the Eastern Nigeria situation this would mean that family composition may be of little explanatory value.

Types of Descent Systems and Relative Population Density

The sixth hypothesis proposes a positive relationship between patrilineal descent system and high relative population density. This implies that traditional African societies which have patrilineal descent systems are expected to have high relative density while those with matrilineal or bilateral descent systems are expected to have low relative density. Table 17 summarizes the data for a test of this hypothesis. The table shows that twenty of the thirty-nine cases confirm the hypothesis while nineteen cases fail to confirm it. Confirming thus exceeds non-confirming cases by only one or 2.6 per cent. The difference between confirming and non-confirming (2.6 per cent) is quite negligible and the result is best interpreted as indicating no relationship.

TABLE 17

NUMBER OF CASES CONFIRMING AND THOSE NOT  
CONFIRMING HYPOTHESIS SIX

	Number	Per Cent
Cases Confirming	20	51.3
Cases not Confirming	19	48.7
Total	39	100.0
Difference (Confirming, Not Confirming)	1	2.6

For a statistical evaluation of the strength of relationship between descent system and relative density, a cross-tabulation of the data is presented in Table 18. The table shows that only six societies in the sample have non-patrilineal descent system. Of this number half have low and half have high relative density. There are 33 societies with patrilineal descent system. Of this number, seventeen or 51.5 per cent have high and sixteen or 48.5 per cent have low relative density. The association coefficients measures by the Q and Phi are 0.03 and 0.02 respectively. The observed strength of association is negligible and the implication is that type of descent system has no effect on variations in population density in traditional African societies. In respect of Eastern Nigeria, this means that descent variable is of no importance in explaining the unusual high population density.

#### Pattern of Kinship Organization and Relative Population Density

The seventh hypothesis proposes a direct relationship between patrilineal extended system of kinship organization and high relative population density.

TABLE 18

## TYPE OF DESCENT SYSTEM AND RELATIVE POPULATION DENSITY

Descent System	<u>Relative Density</u>		
	Low	High	
Non-Patrilineal	50.0% ( 3)	50.0% ( 3)	100% ( 6)
Patrilineal	48.5% (16)	51.5% (17)	100% (33)
Total	48.7% (19)	51.3% (20)	100% N = 39
Q = .03			
Phi = .02			

This implies that those societies which combine patrilineal descent system with extended family organization are expected to have high relative population density while those which combine either patrilineal descent system with nuclear organization or non-patrilineal descent system with extended family organization are expected to have low relative density.

Table 19 presents a summary of the research data for testing this hypothesis. It shows that twenty-four or 61.5 per cent of the cases confirm the hypothesis while fifteen or 38.5 per cent of the cases do not confirm it. Thus, the confirming exceed the non-confirming cases by 23.1 per cent indicating a positive relationship and a support for the hypothesis. This means that in traditional African societies, high relative density is more likely to be found where the kinship organization is a combination of patrilineal descent with extended family system than where it consists of any other combination.

TABLE 19

NUMBER OF CASES CONFIRMING AND THOSE NOT CONFIRMING HYPOTHESIS SEVEN

	Number	Per Cent
Cases Confirming	24	61.5
Cases Not Confirming	15	38.5
Total	39	100.0
Difference (Confirming, Not Confirming)	9	23.1

The percentage difference between confirming and not confirming cases is 23.1 per cent. Although this difference is by no means great, it is higher than any other so far obtained. This may be seen as indicating that kinship organization has a greater influence on population density than any of the variables so far considered.

For further assessment of the observed degree of association, a cross-tabulation of the relevant data is presented in Table 20. It shows that nineteen societies have patrilineal extended kinship organization. Of these, seven or 36.8 per cent have low relative density while twelve or 63.2 per cent have high relative density. This indicates a trend in the hypothesized direction.

Further, of twenty societies which do not have patrilineal extended family organization, twelve or 60.0 per cent have low relative density while eight or 40.0 per cent have high relative density. The coefficient of association between density and kinship organization is  $Q = .44$ ,  $\Phi = .23$ . Besides being in the hypothesized direction, these values of  $Q$  and  $\Phi$  are greater than any coefficient of association so far observed. This implies that, comparatively



TABLE 20

## PATTERN OF KINSHIP ORGANIZATION AND RELATIVE POPULATION DENSITY

Kinship Organization	Relative Density		
	Low	High	
Patrilineal-Extended	36.8% ( 7)	63.2% (12)	100% (19)
Not Patrilineal-Extended	60.0% (12)	40.0% ( 8)	100% (20)
Total	48.7% (19)	51.3% (20)	100% N = 39

Q = .44  
Phi = .23

speaking, kinship organization appears to have greater influence on population density in traditional societies than any other variable so far considered.

It follows, therefore, that in explaining the Eastern Nigeria situation, greater importance will be attached to kinship organization than the earlier variables.

#### Settlement Pattern and Relative Population Density

The eighth hypothesis postulates a positive relationship between nucleated settlement pattern and high relative density. In other words, societies with nucleated pattern of settlement are expected to have high relative density while those with dispersed pattern of settlement are expected to have low relative density.

Table 21 presents a summary of the relevant data for testing the hypothesis.

TABLE 21

NUMBER OF CASES CONFIRMING AND THOSE NOT  
CONFIRMING HYPOTHESIS EIGHT

	Number	Per Cent
Cases Confirming	14	35.9
Cases Not Confirming	25	64.1
Total	39	100.0
Difference (Confirming - Not Confirming)	-11	-28.2

The table shows that the hypothesis is confirmed by fourteen or 35.9 per cent of cases while twenty-five or 64.1 per cent fail to confirm it. Thus, not-confirming exceeds the confirming cases by eleven or 28.2 per cent. This indicates a negative relationship. The implication is that nucleated settlement pattern tends to go with low rather than high; and that dispersed settlement pattern tends to go with high rather than low relative density. The hypothesis, therefore, is not supported by the data. But since the observed percentage difference is comparatively high, the result may be interpreted as implying that settlement pattern per se has a considerable effect on population density in traditional societies, and that it is dispersed rather than nucleated settlement pattern which favors high relative density.

For quantitative evaluation of the relationship, Table 22 presents a cross-tabulation of the relevant data. The table shows that of twenty societies with dispersed pattern of settlement, seven or 35 per cent have low relative density while thirteen or 65.0 per cent have high relative density. Further,

among nineteen societies with nucleated settlement pattern, twelve or 63.2 per cent have low relative density while seven or 36.8 per cent have high relative density.

The degree of association as measured by Q and Phi coefficients is  $-.52$  and  $-.28$  respectively. This confirms the earlier finding of negative relationship between nucleated settlement pattern and high relative density.

The observed degree of relationship ( $Q = -.52$ ) between settlement pattern and relative density is not only substantial in itself but also represents the highest coefficient of association obtained in this study. Considering the objectives of the analysis, this may be interpreted to mean that pattern of settlement has emerged as the socio-cultural variable exerting the greatest independent influence on relative population density in traditional African societies. It follows therefore that settlement pattern is to be considered a crucial factor in explaining the Eastern Nigerian situation. It is pertinent to recall here that Morgan (1955) had identified settlement pattern as an important cultural difference between the high density Ngwa areas and low density Ikwere areas of Eastern Nigeria.

The finding that nucleated pattern of settlement is negatively related to (and conversely that dispersed pattern of settlement is positively related to) high relative density has some important theoretical implications. On the one hand, it calls to question the theoretical basis for the research hypothesis. On the other hand, it calls for a new theory to explain the analysis results. Such a theory is expected to explain why dispersed settlement pattern favors high relative density more than nucleated pattern. The research hypothesis was based on the premise that in any given society, the degree of social solidarity and moral density is directly related to the frequency of interaction, communication and contact among its members (Durkheim, 1933). And

TABLE 22

## SETTLEMENT PATTERN AND RELATIVE POPULATION DENSITY

Settlement Patterns	Relative Density		
	Low	High	
Dispersed	35.0% ( 7)	65.0% (13)	100% (20)
Nucleated	63.2% (12)	36.8% ( 7)	100% (19)
Total	48.7%	51.3%	100%
Q = 0.52			
Phi = 0.28			

since moral density or social volume is also positively related to population density (Durkheim, 1933) it follows that frequency of interaction is positively related to population density.

Given this premise, the analysis result suggests that it is dispersed settlement pattern that enhances group solidarity and moral density in traditional African societies and not nucleated settlement pattern as proposed by the research hypothesis. Why this is the case requires to be explained.

In the discussion that follows, it is essential to keep in mind the distinction between two levels of interaction found among members of any social unit, namely, the intra-group and the inter-group relations. While the former defines the in-group relationships, the latter prescribes the pattern of interaction between in-group and out-group members.

Earlier, a dispersed settlement unit has been described as a group of hamlets or family homesteads separated from other similar units by tracts of farmland, woodland or pasture land. It is therefore more or less a homogenous group of kinsmen. Within such a unit primary type of relationships are the rule.

Interaction is face-to-face and emotive. Communication and contact are more frequent and intense. Collective sentiment and group solidarity are high and the prospect of competition with other units fosters the need for in-group solidarity. Bohannan (1933) has reported that among the Tiv of Nigeria, the principle of fission (to be discussed later) is employed to ensure that the solidarity of the settlement unit is not disrupted. Between settlement units, on the other hand, interaction and contact are limited to specifically defined areas of cooperation in religious ceremonies, economic activities, reciprocal obligations and political action.

In contrast to this, a nucleated settlement unit is described as village or town or more-or-less continuous stretch of houses or homesteads. This implies a more heterogeneous, and comparatively large unit or society. Consequently such a unit may be held together more by a political mechanism than by bonds of kinship. Contact and communication are less frequent and group solidarity and moral density are not as high as within the dispersed unit.

Summarizing, it appears that dispersed pattern of settlement maximizes the frequency and intensity of communication and contact within each settlement unit while keeping inter-settlement contact relatively low. On the other hand, nucleated settlement pattern provides for no such spatial separation of settlement units and contact is rather diffused, not so personal and not as frequent as within each dispersed settlement. In this sense, dispersed pattern of settlement is able to maintain a higher level of solidarity among the members of the unit than does nucleated settlement pattern. The finding of negative relationship between high relative density and nucleated settlement pattern is thus a reflection of this situation.

While the above theoretical explanation may answer the question why the data failed to support the research hypothesis, the question of how this higher

group solidarity within the dispersed settlement unit actually affects relative population density is yet to be addressed. It is taken up later.

#### Type of Religious Belief and Relative Population Density

The ninth hypothesis in this study proposes a positive relationship between high relative density and belief in the existence of a high-god. This implies that traditional African societies whose religious belief or cosmology included the existence of a high-god are expected to have high relative density while those societies in whose cosmology the idea of a high-god is absent are expected to have low relative density.

A summary of the data for testing this hypothesis is presented in Table 23. It shows that out of the 35 cases reported, nineteen or 52.8 per cent confirm the hypothesis while seventeen or 47.2 per cent fail to confirm it. The excess of confirming over not-confirming cases indicates a positive relationship. The percentage difference is 5.6 per cent. Thus, the data are in the hypothesized direction. This means that in traditional African societies, high relative density is more likely to be found where there is a belief in a high-god than where there is no such belief.

TABLE 23  
NUMBER OF CASES CONFIRMING AND THOSE NOT  
CONFIRMING HYPOTHESIS NINE

	Number	Per Cent
Cases Confirming	19	52.8
Cases Not Confirming	17	47.2
Total	36	100.0
Difference (Confirming, Not-Confirming)	2	5.6

However, the difference between confirming and not-confirming cases is so

small that it leaves open the possibility that it may have been a result of error. Further evidence is therefore needed before this finding may be generalized.

For a quantitative assessment of the magnitude of the observed association, Table 24 presents a cross-tabulation of the data. The table shows that there are only nine cases in which a belief in high-god is absent. Of this number, five have low relative density. Of the 28 cases in which the existence of a belief in high-god was reported, thirteen or 48.1 per cent have low relative density while fourteen or 51.9 per cent have high relative density. These are trends in the hypothesized direction. The coefficient of association as measured by the Q and Phi are  $Q = .15$  and  $\Phi = .06$ . These values reflect a very low degree of positive association. This may be interpreted to mean that by itself, the type of religious belief does not have much impact on population density in traditional African societies.

TABLE 24

## TYPE OF RELIGIOUS BELIEF BY RELATIVE DENSITY

Religious Belief	Relative Density		
	Low	High	
High-God Absent	55.6% ( 5)	44.4% ( 4)	100% ( 9)
High-God Present	48.1% (13)	51.0% (14)	100% (27)
Total	50.0% (18)	50.0% (18)	100% N = 35
$Q = 0.15$			
$\Phi = 0.06$			

In relation to the present study, the implication is that type of religious

belief is not an important variable in explaining high population density in Eastern Nigeria.

### Summary

On the whole, the analysis of data has not produced any startling results in the form of very high coefficients of association between the dependent and the respective independent variables. The observed degrees of association are generally low and without much variation. This low range of variations may be explained by the fact that socio-cultural variables, by their very nature, are inter-connected. That is, in any given society, the economic, political, family and kinship and religious systems are interwoven in the same social fabric.

Nevertheless, in terms of the objectives of the study, the analysis has succeeded in establishing an objective basis for arranging the socio-cultural variables considered in some order of importance. Thus, on the basis of the observed Q and Phi values it may be said that settlement pattern ( $Q = -0.52$ ) appears to have the greatest, and type of descent system ( $Q = 0.03$ ), the least independent influence on population density in traditional African societies. The analysis has thus achieved the dual purpose of not only eliminating the less important but also identifying those variables which may be considered crucial in the analysis of the Eastern Nigeria situation. Thus, in subsequent analysis and discussion of population density in Eastern Nigeria, only the two independent variables namely, kinship organization ( $Q = 0.44$ ) and settlement pattern ( $Q = -0.52$ ), which are substantially correlated with relative density will be utilized.



## CHAPTER V

In this chapter, the analysis of the data is continued with an investigation of the effects of the control variable on the observed relationships between the dependent variable and the respective independent variables. It is, however, considered advisable first to ascertain how much influence, if any, each control variable independently exerts on relative population density. This approach is intended to enable the researcher to eliminate variables that are of minor consequence for the study and to concentrate on those which the data show to have considerable impact on population density. To this end, the same statistical procedures employed in the last chapter are utilized to evaluate the relationship between each control variable and the dependent variable. That is, the Q and Phi coefficients are used as measures of the strength of the association. No hypotheses are made and none are tested.

### Technology and Relative Population Density

Defined in this study as the predominant mode of subsistence activity (see Chapter III), technology is considered a physical-environmental rather than a socio-cultural variable because in pre-industrial (traditional) societies, the physical environment sets the limits for the type of technology that develops. To illustrate, in traditional societies, animal husbandry can only thrive in a grassland and not in a mangrove forest area. Similarly, fishing technology presupposes the existence of a body of water and agricultural technology does not normally flourish in the desert.

Of the five types of technology earlier discussed (see Chapter III) agriculture has always been associated with relatively large population size.

This is evident in the works of Weiner (1972) and other techno-environmental determinists discussed in Chapter II. With this in view, the variable, technology is dichotomized into predominantly agricultural and predominantly non-agricultural.

TABLE 25  
TYPE OF TECHNOLOGY BY RELATIVE DENSITY

Technology	Relative Density		
	Low	High	
Non-Agricultural	58.3% ( 7 )	41.7% ( 5 )	100% (12)
Agricultural	44.4% (12)	55.6% (15)	100% (27)
Total	48.7% (19)	51.3% (20)	100% n = 39
Q = .27			
Phi = .13			

Table 25 presents a cross-tabulation of the relevant data. It shows that there are altogether 27 agricultural and 12 non-agricultural societies in the sample. This indicates that sub-Saharan Africa is predominantly agricultural. Among the non-agricultural societies, seven or 58.3 per cent have low relative density while five or 41.7 per cent have high relative density. Of the 27 agricultural societies, twelve or 44.4 per cent have low relative density while fifteen or 55.6 per cent have high relative density. The degree of association is  $Q = .27$  and  $\Phi = .13$ . This indicates a low positive association between agricultural type of technology and high relative density. However, the magnitude of the relationship is so small that the probability that it may have resulted from an error is quite high. On the basis of this analysis, it may be concluded that the influence of technology on population density in traditional African societies is relatively small.

### Temperature and Relative Population Density

As stated before (see Chapter III) it is considered necessary that the mean annual temperature should also be relativized. This is done by the same process as in the case of population density. That is, by categorizing the tribal annual rainfall as high or low on the basis of the mean annual temperature of each culture area rather than that of the entire sample. Any tribal temperature below the culture area mean is classified as low and any one at or above the mean is classified as high.

Table 26 presents a cross-tabulation of the study data on relative density and relative annual temperature. It shows that eighteen societies in the sample have low relative annual rainfall. Of this number eight or 44.4 per cent have low relative density while ten or 55.6 per cent have high relative density. On the other hand, of twenty societies with high relative annual temperature, eleven or 55 per cent have low relative density while nine or 45 per cent have high relative density. The degree of association measured by Q and Phi coefficients is  $Q = .21$  and  $\Phi = -.10$ . These indicate a low negative relationship between relative temperature and relative density. As in the case of technology, the observed coefficient of association is so small that it may possibly have resulted from a sampling error. In terms of this study, such a low degree of association indicates that variations in annual temperature do not have an appreciable effect on the tribal densities in tropical Africa.

This finding is quite understandable in view of the fact there is only a difference of 14°F between the highest (80°F) and lowest (66°F) annual temperatures in the sample.

### Rainfall and Relative Population Density

As in the case of temperature, it is considered necessary that annual

TABLE 26

## RELATIVE ANNUAL TEMPERATURE BY RELATIVE DENSITY

Relative Annual Temperature	Relative Density		
	Low	High	
Low	44.4% ( 8)	55.6% (10)	100% ( 8)
High	55.0% (11)	45.0% ( 9)	100% (20)
Total	50.0% (19)	50.0% (19)	100% N = 38
Q = .-21			
Phi = .-10			

rainfall be relativized. The following contingency table presents the relevant data. It shows that altogether, seventeen societies have low relative rainfall, while 22 have high relative rainfall. Among those with low relative rainfall, twelve or 70.6 per cent have also low relative density while 29.4 per

TABLE 27

## RELATIVE ANNUAL RAINFALL BY RELATIVE DENSITY

Relative Annual Rainfall	Relative Density		
	Low	High	
Low	70.6% (12)	29.4% ( 5)	100% (17)
High	31.8% ( 7)	68.2% (15)	100% (22)
Total	48.7% (19)	51.3% (20)	100% N = 39
Q = .67			
Phi = .38			

cent have high relative density. Of those with high relative rainfall, 31.8 per cent have low relative density and 68.2 per cent have high relative density. The resulting coefficients of association are  $Q = .67$  and  $\Phi = .38$ . These indicate a substantially high degree of positive association between population density and annual rainfall. The implication is that in traditional African societies, variations in annual rainfall have considerable effect on the population density. That means that high relative density is more likely to be found in areas with high relative rainfall than in areas with low relative rainfall. This conforms very closely to reality since the areas of highest population concentration in tropical Africa are found along the Western Coast which also has the highest annual rainfall. On the other hand, low population density areas are found around the Kalahari desert which also has the lowest annual rainfall.

Based on the foregoing analyses it can now be said that of the three control variables employed in this study, only relative annual rainfall has such a substantial independent effect on population density that it is most likely to have considerable affects on the observed relationships between the dependent and, at least, some of the independent variables. However, before deciding whether or not to drop the other two control variables (technology and relative temperature), from further analysis on the grounds that they have rather very low correlation coefficients with the dependent variable, it will be necessary first to evaluate the strength of their relationships with the nine independent variables. If they have equally low level association with the independent variables, they are dropped from fruther analysis. But if they show a high degree of association they are considered relevant for further analysis and so retained.

Table 28 presents a summary of the  $\Phi$  coefficients of association

TABLE 28

THE PHI COEFFICIENTS OF ASSOCIATION BETWEEN TECHNOLOGY AND RELATIVE TEMPERATURE  
AND RESPECTIVE INDEPENDENT VARIABLES

Control Variables	Independent Variables							
	Land Ownership	Work Organization	Consumption Unit	Decision Making	Family	Descent	Kinship	Settlement Pattern Religion
Technology	.25	.24	.30	-.20	.09	.02	.20	.09
Relative Temperature	.19	-.03	-.04	-.18	-.05	-.17	.00	.14
								-.03

TABLE 29

ZERO ORDER AND FIRST ORDER PARTIAL PHI COEFFICIENTS OF ASSOCIATION BETWEEN THE DEPENDENT,  
THE INDEPENDENT AND THE CONTROL VARIABLES

The Correlates	Controlling For				
	Technology			Relative Rainfall	
	Zero Order	First Order	Differential	First Order	Differential
Land Ownership/Relative Density	.13	.01	.12	.00	.13
Work Organization/Relative Density	-.07	-.11	.04	-.16	.09
Consumption Unit/Relative Density	.14	.10	.04	.03	.11
Decision Making/Relative Density	-.03	.00	-.03	.08	-.11
Family System/Relative Density	.18	.17	.01	.08	.10
Descent System/Relative Density	.01	.04	-.03	.09	.08
Kinship Organization/Relative Density	.23	.21	.02	.11	.12
Settlement Pattern/Relative Density	-.28	-.29	-.01	-.27	-.01
Religious Belief/Relative Density	.11	.11	.00	.06	.05

between each of the two control variables and each of the nine independent variables. The table shows that technology has considerably high degree of association with five of the nine independent variables.

Its relationship with the other four are negligible. On the other hand, the degree of association between relative temperature and the independent variables ranges from 0.00 for kinship organization to 0.19 for type of land ownership. Since relative temperature has such a low level of association with both the dependent variable and all the independent variables, it cannot have a substantial effect on the relationship between the dependent and the independent variables. It is, therefore, excluded from subsequent analyses.

With one of the control variables thus eliminated, the question of the effects of the remaining control variables on the relationship between population density and the nine independent variables may now be considered. The possible effect of the introduction of a third (control) variable on the relationship between two given variables may be assessed either by the method of physical control using conditional tables or the statistical method using partial correlation measures. Because the number of cases in this study sample is small, it is preferable to employ the statistical rather than the physical control method. A summary of the results of such a control operation is present in Table 29.

The first order correlation coefficients indicate the degree of association between the independent and the dependent variables after the possible effects of the control variable have been taken out. The differential represents the difference between the original (zero order) and the first order correlation coefficients.

Considering technology first, the table shows that when this variable is controlled, there is virtually no difference in the original relationships

between the dependent and the independent variables. That is, the first order correlation coefficients do not substantially differ from the zero order coefficients. The differentials range from 0.00 to 0.12. However, technology appears to produce the greatest effect on the relationship between type of land ownership and relative density. By controlling for technology, the relationship between the two variables is reduced from 0.13 to 0.01. However, since the original (zero order) correlation is so small that it may have resulted from an error, no valid generalizations will be based on this result. It may be concluded that the type of technology has only a negligible influence on how the socio-cultural variables employed in this study affect relative population density in traditional African societies.

Table 28 also shows that when relative rainfall is controlled for, some noticeable changes occur in the zero order coefficients. However, where, as in seven of the nine cases, both the zero order and the first order coefficients are negligible further discussion of the implications of such control effects is considered unnecessary. Considering the remaining two cases, the data indicate that relative rainfall has virtually no influence on the relationship between settlement pattern and relative density. There is only a difference of  $-.01$  between the zero and the first order coefficients. On the other hand, by controlling for relative rainfall the coefficient of correlation between kinship organization and relative density is reduced from 0.23 to 0.11. This indicates that relative rainfall is an intervening variable and tends to enhance the relationship between kinship organization and relative density. This implies that any explanation of population density in tropical Africa which makes use of kinship organization should also take consideration of the influence of relative rainfall.

Summarizing, the preceding analyses have shown that of the three control



variables employed in this study, relative temperature has a very low degree of association with both the dependent and the independent variables. Technology is substantially correlated with some of the independent variables but its effect on the relationship between the dependent and respective independent variables (partial correlation) proves to be minimal or negligible. Relative rainfall is not only substantially correlated with relative density but also has some effect on the relationship between kinship organization and relative density. Relative rainfall thus appears to be the physical-environmental variable which influences the effect of the socio-cultural variables on population density the most in tropical Africa. The implication of this is that any explanation of tropical African or Eastern Nigerian population density in terms of socio-cultural variables should also take proper account of the effect of relative rainfall.

### Predicting Relative Population Density

#### Regression Analysis

Now that two socio-cultural (independent) variables, kinship organization and settlement pattern, and one physical-environmental (control) variable, relative rainfall, have been identified as influencing relative population density in traditional African societies, the next task is to investigate the extent to which knowledge of these variables can help in predicting relative density in a given African society. Closely tied to this are the problems of assessing the relative contribution of each of the three variables to the total predictive capability. These problems require a multiple regression analysis of the data. Table 30 presents a Phi zero-order correlation matrix of relative density, kinship organization, settlement pattern and relative rainfall. The table shows that with the exception of settlement pattern and relative rainfall there is a high intercorrelation among the four variables.

TABLE 30

## PHI ZERO-ORDER CORRELATION MATRIX

	Relative Density	Kinship Organi- zation	Settlement Pattern	Relative Rainfall
Relative Density	1.0	.232	-.282	.385
Kinship Organization		1.0	.282	.340
Settlement Pattern			1.0	-.074
Relative Rainfall				1.0

Table 31 gives a summary of the result of regressing the three "predictor" variables on relative density. It shows that taken together, the three variables account for 25 per cent ( $R^2 = .253$ ) of variations in the dependent variable. This implies that knowledge of the type of kinship organization, the settlement pattern and relative rainfall of the given traditional African society will enable one to reduce error in predicting its relative population density by 25 per cent.

In other words, given these three variables, one is 25 per cent sure of predicting the relative density of any traditional African society correctly. One possible interpretation of this finding is that the analysis has produced a strong indication that kinship organization, settlement pattern and relative rainfall together account for a substantial amount of the variations in relative population density found in traditional African societies.

The relative contribution of each of the three variables to the prediction package is considered next. Judging from the normalized regression coefficients or the beta weights ( ), settlement pattern appears to make the highest contribution to the prediction equation. It has a beta weight of  $-.324$  which may be interpreted to mean that settlement pattern alone accounts

TABLE 31

MULTIPLE REGRESSION OF KINSHIP ORGANIZATION, SETTLEMENT PATTERN,  
RELATIVE RAINFALL ON RELATIVE DENSITY

<u>Variance Analysis</u>						
Source of Variance		D.F.		Sum of Sqs.		Mean Sqs.
Regression		3		2.464		.821
Residual		35		7,280		.208

<u>Analysis of Regression</u>						
Variable	Multiple R	R <sup>2</sup>	R <sup>2</sup> Change	B	Beta	Std. Error B
Kinship Organization	0.232	0.054	0.054	0.227	0.227	0.166
Relative Rainfall	0.399	0.159,	0.106	0.286	0.284	0.159
Settlement Pattern	0.503	0.253	0.093	-0.324	-0.324	0.155

for 32 per cent of the combined effect of the three variables. Following settlement pattern in order of predictive capacity is relative rainfall ( $\beta = .284$ ) with 28 per cent contribution and lastly comes kinship organization ( $\beta = .227$ ) with a 23 per cent contribution. The finding of that settlement pattern, which is a socio-cultural variable, contributes more than rainfall in predicting relative population density seems to lend some support to the cultural determinism theory and the cardinal thesis of this study, namely, that population density (including that of Eastern Nigeria) may be, best explained in terms of the "social" rather than physical-environmental factors.

#### Path Analysis

Granted, as data have shown, that kinship organization, settlement pattern

and relative rainfall together account for a considerable proportion of variations in relative density in traditional African societies, it still remains to be explained how this happens. That is, it is still to be shown how these variables related to or act upon one another to produce the observed influence on relative density. Such an explanation may be given in the form of a sociological theory specifying the sequential ordering of variable effects. But since several theories can readily be spun to explain the pattern of interaction among any group of variables, there is the need for an objective method of evaluating the appropriateness of these theories. This is one of the functions of path analysis in social research. In this sense path analysis serves as a statistical model for verifying the "fitness" of a proposed theoretical explanation. The researcher's objective in doing a path analysis in the present study, therefore, is not to find what variables cause or produce high relative density, rather to discover the proper pattern of influencing among the three "predictor" variables.

The theoretical frame for the analysis is based on the socio-cultural determinism theory of population density as espoused by Durkheim (1900), Halbwachs (1960, and Dalton (1960). According to Durkheim (1900), "It is the tendency of a society to live in a concentrated or a dispersed pattern (i.e. the settlement pattern) which explains its density." But, one would ask, what determines this tendency? Halbwachs (1960) provides the answer when he said, "man obeys social forces . . . it is custom, a principle of inertia, which keeps men in places where they have lived up to now." Taking Durkheim and Halbwachs together, the theory may be restated as follows: the pattern of settlement influences the relative density and is in turn influenced by custom and tradition which includes kinship and family norms and traditions. In terms of sequential

ordering of effects, it means that in traditional societies, kinship organization exerts influence upon settlement pattern by prescribing whether kin-group members should live, as Durkheim (1900) put it "in a concentrated or a dispersed pattern." Settlement pattern in turn influences relative density, as explained earlier (see Chapter IV), by regulating the volume of interaction (moral density) within the membership of various segments of the society.

The remaining variable, relative rainfall, is a purely physical phenomenon. It happens according to physical laws and is not subject to social influencing. It is exogeneous to the social system. In terms of sequential ordering, therefore, relative rainfall takes precedence over all the socio-cultural variables.

It is possible to draw a number of path diagrams or path models based on the theoretical scheme outlined above. Figure 4 (a, b, c, d) illustrate this point. In these path diagrams, relative rainfall is represented as variable (1); kinship organization as variable (2); settlement pattern as variable (3); and relative density as variable (4). Both the path coefficients and the simple phi correlation coefficients are indicated on each path, the latter being enclosed in parentheses. Path Model 4a suggests that while relative rainfall and kinship organization are associated ( $r = .34$ ) there is no causal relationship between them. Model 4b suggests that rainfall influences kinship organization but that no pattern of influencing exists between rainfall and settlement pattern. Model 4c suggests that rainfall is not causally associated with either kinship organization or settlement pattern. Model 4d agrees with model 4b that no pattern of influencing exists between rainfall and settlement pattern but further suggests that rainfall and kinship organization are merely associated and not causally related. As indicated earlier, the crucial problem is to determine which of these models best reflects the true pattern of influencing

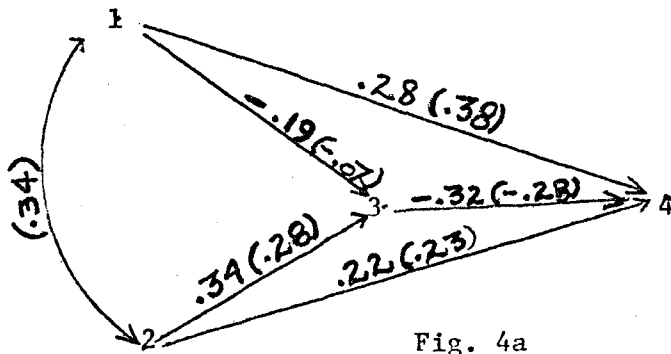


Fig. 4a

$$r_{34} = p_{43} + p_{42}p_{32} + p_{42}r_{12}p_{31} + p_{41}p_{31} + p_{41}r_{12}p_{32}.$$

$$= \underline{-.28}$$

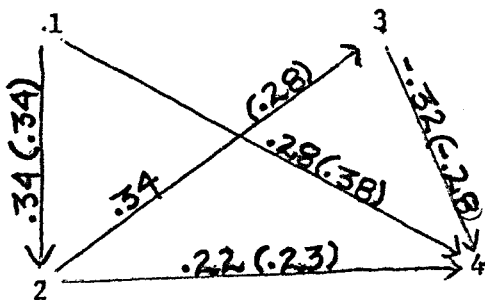


Fig. 4b

$$r_{34} = p_{43} + p_{42}p_{32} + p_{41}p_{21}p_{32}.$$

$$= \underline{-.22}$$

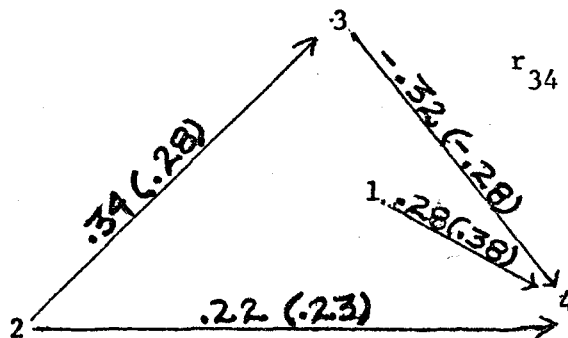


Fig. 4c

$$r_{34} = p_{43} + p_{42}p_{32}.$$

$$= \underline{-.25}$$

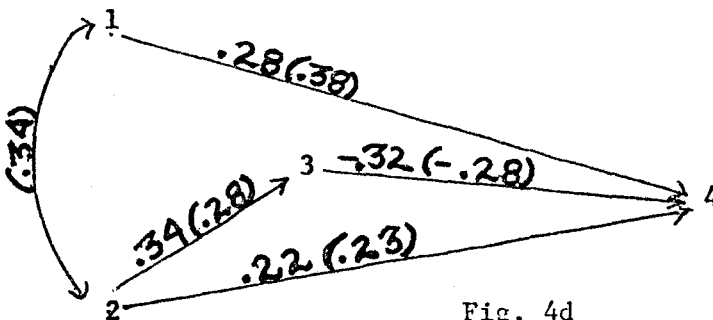


Fig. 4d

$$r_{34} = p_{43} + p_{42}p_{32} + p_{41}r_{12}p_{32}.$$

$$= \underline{-.22}$$

Fig. 4.--Trial Path Models

among the four variables in the system. Where no "fitting" model could be found, it implies that the theoretical frame is faulty. The process of evaluating the models, and indirectly testing the theory that underlies them, consists of the application of an established test rule. This rule is given by the formula

$$r_{ij} = \sum_k p_{ik} r_{jk}$$

where  $i$  and  $j$  denote two variables in the system and the index  $k$  includes all variables from which paths lead directly to  $X_i$ . The principle embodied in this formula states that the correlation between any two variables in a properly constructed path diagram is equal to the sum of the direct (elementary) path and the indirect (compound) paths (Wright, 1960; Land, 1969).

Using this formula, the correlation between settlement pattern and relative density ( $r_{34}$ ) is evaluated in order to test the models. Table 32 summarizes the result of these calculations.

TABLE 32  
COMPARISON OF THE ACTUAL CORRELATION COEFFICIENTS WITH  
THAT CALCULATED FROM PATH MODELS

	Path Models			
	Fig. 4a	Fig. 4b	Fig. 4c	Fig. 4d
Actual Correlation ( $r_{34}$ )	-.28	-.28	-.28	-.28
Calculated from Path Model	-.28	-.22	-.25	-.22
Difference	.00	-.06	-.03	-.06

The table shows that except for model (figure) 4c, the differences are generally small. However, the first model (Fig. 4a) may be considered the most appropriate representation of the actual pattern of influencing among the

variables. This path model is therefore adopted and will be utilized in subsequent analysis. With regard to the initial objective for doing this analysis, it may be said that the close correspondence between the actual and the calculated correlation coefficients suggests that the theoretical explanation of the order of effects among the research variables accords with reality.

The next aspect of path analysis is accounting for the relative contribution of each of the three variables to variance in the dependent variable. (The path diagram, Fig. 15, is reproduced here for easy reference.) Proceeding from the remotest to the most immediate influences, relative rainfall and kinship organization are treated as the "prime movers" or exogeneous variables

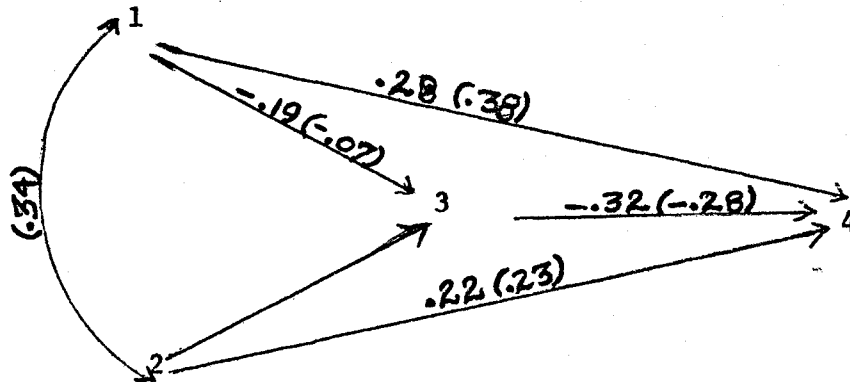


Fig. 5--The Path Diagram

according to Kerlinger and Pedhazur (1973). Taken together, the two variables account for 16 per cent ( $R^2_{4.12} = .159$ ; see Table 31) of observed variance in relative density. To find the proportion of variance due to the third variable, settlement pattern, the proportion of variance due to relative rainfall and kinship organization is subtracted from the total variance due to the three variables. That is  $R^2_{4.3} = R^2_{4.123} - R^2_{4.12} = .253 - .159 = .094$ . Thus settlement pattern accounts for 9 per cent of variations in relative population density. This is a fairly substantial proportion of the total variance and it goes to confirm that settlement pattern is actually a crucial factor in explaining variations in population density found in traditional African societies. The



implication of this is that it will have to feature prominently in any socio-cultural explanation of the Eastern Nigeria situation.

#### Dispersed Settlement Pattern and Relative Density

There is yet one loose end to be tied before the analysis results are applied to the Eastern Nigeria situation. This is the deferred issue of how dispersed settlement pattern operates to favor high relative density.

This study data have among other things, demonstrated that traditional societies with dispersed settlement pattern differ in many respects. Some have agricultural, some have pastoral, and yet others have mixed economy, some have matrilineal, others have patrilineal kinship system; some have a form of national or tribal political organization, others have no form of political organization beyond the village level. These diversities notwithstanding, the study suggests that there are, as Forge (1972) put it, "some sociological constancies" among non-nucleated (i.e., dispersed) societies which would explain their tendency to have relatively high population density. To the researcher's knowledge, there has been no empirical study to discover what those factors might be. The explanations offered here are therefore essentially theoretical although some supportive evidence are cited from related sociological and ethnographic studies.

One structural "constancy" found among "dispersed" societies is that they are marked by a greater degree of inter-group competition and rivalry among the various settlement units. As would be expected, this inter-group competition gives rise to increased intra-group cooperation and solidarity. Inter-group competition, however, does not entail a state of war of all against all. The areas and terms of competition are institutionalized and regulated by law and convention. This has been clearly demonstrated by Forge (1972) when he wrote,

Egalitarian societies can only be maintained at the cost of continuous vigilance by their members. This usually takes the form of highly aggressive competition which takes a wide variety of institutionalized forms in Melanesia but is present in all other (such) societies (1972:274).

Further in his study of the Nuer of Southern Sudan, Evans-Pritchard concludes that "the feud, including the role played in it by the chief (i.e., the leopard-skin chief), is thus a mechanism by which the political structure maintains itself in the form known to us" (1940:293).

A second common feature of dispersed traditional societies is that settlement units generally exhibit greater autonomy and independence than is the case with nucleated settlements. This does not imply that no centralized system of administration may be found among dispersed societies. Rather it suggests that where that exists, it tends to take the form of a loose confederation of quasi-autonomous units with the areas of cooperation and competition well defined by custom and tradition. In this connection, it is illustrative to note that all the three tribes--the Nuer, the Tallensi and the Logoli--which Fortes and Evans-Pritchard (1940) cited as examples of high-density, segmentary (dispersed) societies also have relatively autonomous settlement units. Of the Logoli, Gunther Wagner wrote,

The largest groups, both among the Logoli and the Vugusu, are the exogamous, patrilineal clans or clan groupings, consisting of one larger and several smaller clans, but not the whole tribal society (1940:200).

The third feature of dispersed traditional societies is related to the second. They are generally more equalitarian than nucleated societies. Again the three tribes cited above satisfy this condition. According to M. Fortes, ". . . the Tallensi are a homogeneous, sedentary, equalitarian peasantry" (1940:250). Further, of eighteen dispersed societies included in the present study, thirteen or 72 per cent have participatory rather than autocratic system of decision-making. Finally, in his study of Melanesia Forge has noted

that "the same principles that maintain a more or less equalitarian balance within the basic (settlement) unit are used to maintain the same balance between units" (1972:274).

The fourth common feature of dispersed societies is that they generally have some form of fission mechanism. This is an institutionalized mechanism by which a community or settlement unit continuously trims down its size by letting off some of its adult members to go and start new settlements. According to A. Richards, the practice among the Bantu is "for a man who has married sons to separate off from his father's homestead to start a new community" (1950:210). In some other societies the process is much simpler.

By their very nature, these four structural principles are inter-related and support one another. The principle of fission, however, seems to operate as a coordinating principle and it is through it that population density is eventually affected. A review of some functions of the fission mechanism in traditional societies will bring this out.

(a) It ensures that the size of each settlement unit is kept at a certain level and that its autonomy is preserved. It has been shown that beyond a certain size some form of centralized authority is required to keep a group together (Simmel, 1950). By continuously sending off some of its members to start new units, dispersed societies ensure that this critical size is never attained and the necessity for a centralized authority avoided. In this way the autonomy of the settlement units is preserved. For the same reason, settlement units in dispersed societies are characteristically small.

(b) The fission mechanism operates to ensure the homogeneity and solidarity of the settlement unit. By continuously pruning down the size of the settlement unit, this mechanism ensures that the unit does not extend beyond a few generations of kinsmen. In this way it maintains the homogeneity of the

unit and ensures that group solidarity is not weakened. Since each settlement unit must always compete with other units in order to retain its autonomy, it is imperative that it must maintain a certain level of membership for effective competition. But because it continues to lose membership by fission and by death, what is considered an ideal or optimum community size may never be permanently achieved. For the newly started communities, the need to add new members is even greater if they must hold their own. The result is that while the size of the settlement unit is kept necessarily small, an ever-present need for more and more children is created. This, in the long run, results in an overall increase, not in the community size, but in the number of small communities and therefore the total tribal population and density. In this way the dispersed pattern of settlement favours high tribal population density.

In conclusion, it may be said that the dispersed pattern of settlement is the structural or territorial expression of equalitarian values and the desire for autonomy characteristic of a certain group of traditional African societies. This structural feature together with its value contents is maintained and sustained through inter-group competition and the fission mechanism which are incorporated in, and institutionalized through kinship and lineage norms. It is through the fission principle that dispersed settlement pattern actually affects relative population density.

Viewed from another angle, the dispersed pattern of settlement appears to have an advantage over the nucleated pattern in sustaining a relatively large population without apparent health hazards. Because nucleated settlement pattern concentrates a large number of people permanently on a comparatively small area of land, congestion and overcrowding are experienced even when a large proportion of the society's land still remains uninhabited. The unfavorable effects of over-crowding on both animal and human populations have been well demonstrated.

In this respect, since dispersed settlement pattern spreads out the population over a large area, it appears to provide a healthier environment for a growing population.

#### Summary and Sociological Significance of Finding

The major findings of this study may be summarized under five headings:

(1) The pattern of settlement and kinship organization has been identified as the socio-cultural variables having the greatest effect on relative population density in traditional African societies.

(2) High relative density is associated with dispersed rather than nucleated pattern of settlement.

(3) In terms of ordering of variable effects, kinship organization takes precedence over settlement pattern.

(4) Of the three physical environmental variables considered, only rainfall has a substantial influence on relative population density.

(5) Settlement pattern, kinship organization and relative rainfall together account for 25 per cent of variance in relative density with relative rainfall alone accounting for 11 per cent. The two socio-cultural variables therefore account for 14 per cent of variations in relative density of traditional African societies.

The fact that settlement pattern influences population distribution and density has for long been recognized by demographers, sociologists and other social scientists (Halbwachs, 1960; Cooley, 1894; Bogue, 1950). What distinguishes this study from most of the earlier works in the area of social demography is its focus on rural traditional societies as opposed to urban concentrations.

Urbanization, as a social phenomenon has a unique effect on population distribution and density. One of its essential characteristics is the con-

centration of populations within a limited territory (Hauser and Schnore, 1965; Gibbs, 1961). This factor inevitably gives rise to higher population densities within the urban, rather than in the outlying rural areas. Because of the great demand for space resulting from population concentration, urban settlement pattern is essentially nucleated rather than dispersed. Density studies carried out in urban areas are, therefore, more likely to find a positive association between high density and nucleated settlement pattern. Findings of this type have been reported with such regularity (Duncan and Duncan, 1955; Reckless, 1926; Simons, 1962) that it has become accepted almost as a universal truth that high population density is associated with nucleated settlement pattern both in modern urban and traditional rural societies.

This view has persisted in spite of the fact that there are some studies of rural traditional societies which have found high population density to be associated with dispersed settlement pattern. For instance, in their study of New Guinea tribes of Malanesia, Brookfield and Brown (1963) and more recently Forge (1972) found "plenty of exceptions" to the "suggestion that high density goes with larger (nucleated) settlement units" (1972:368). The most important exception is the Chimbu tribe which has the highest population density (about 320 per square mile) in the area. Other exceptions are the Totali and Kapauka, which have both high density and dispersed settlement.

Further in the introduction to their book African Political Systems, Fortes and Evans-Pritchard (1940) summarized their finding in the following words,

. . . in addition to the material collected in this book, evidence from other African societies could be cited to prove that a large population in a political (or tribal) unit and a high degree of political centralization do not necessarily go together with great density (1940:8).

Finally, in his study of farming practice settlement pattern and population density in south-eastern Nigeria, W. B. Morgan (1955) found high density to be associated with dispersed settlement pattern and low density to be associated with nucleated settlement pattern.

Since this study, unlike those reviewed above, is based on a continental sample, its finding that high relative density is associated with dispersed settlement pattern constitutes a major empirical indication that the relationship found between density and settlement pattern in urban centers may not hold true in rural traditional societies.

Secondly, the finding that rainfall accounts for 11 per cent of the total 25 per cent explained variance indicates that population density cannot be explained by either the socio-cultural or physical-environmental factors alone.

## CHAPTER VI

### THE CASE OF EASTERN NIGERIA

In this second stage of the study, attention is focused once more on the substantive problem with which this study began, namely, the problem of high population density in Eastern Nigeria. As stated in the first chapter, it is the researcher's dissatisfaction with ex-post-factor explanations of this phenomenon that led to the present study.

Analysis of the African continental data has identified the variables which exert the greatest influence on population density in traditional societies. This section analyzes Eastern Nigeria in terms of these variables to see to what extent its high population density is attributable to them. Here, the unit of analysis remains the "tribe" otherwise referred to as ethnic group. The study sample comprises all the major tribes in Eastern Nigeria. Tribes are considered major solely on the basis of their total population. There are four or five major tribes in Eastern Nigeria depending on whether one considers the Efik as distinct from the Ibibio or not. Forde and Jones (1930), Talbot (1926) and Jeffreys (1935) consider the Efik as a sub-tribe of the Ibibio. But according to Dike (1956), "the Efiks disagree with Jeffreys that they are Ibibio . . . Their tradition of origin," he concluded, "indicates that they come from the region of the Cameroons" (1956:24). Aye (1967) himself an Efik, shares this view. The researcher is inclined to agree with Dike and thus treat the Efik as ethnically distinct from the Ibibio. The Ibo, Ibibio, Ijaw, Efik, and Ekoi, therefore, comprise the major tribes of Eastern Nigeria. These five tribes, according to the 1952-53 population census,



account for 87 per cent of the Eastern Nigeria population. A brief outline of the socio-cultural features of these tribes appears in order.

### The Ibo

The Ibo constitute the largest ethnic group in Eastern Nigeria and the second largest ethnic group in Nigeria. Numbering about 5.5 million in 1933, the Ibo occupy approximately half the entire land area of Eastern Nigeria as well as a considerable portion of the Mid-Western Nigeria. They are concentrated in the three Eastern Provinces of Onitsha, Owerri and Ogoja and Asaba Division in the Mid-West. The origin of the Ibo as well as the history of their movements into their present location have remained a matter of academic speculation.

Linguistically, the Igbo<sup>1</sup> language is classified as belonging to the Kwa sub-group of the Niger-Congo stock. However, it contains a number of dialectically distinct sub-groups which generally coincide with cultural subdivisions often referred to as sub-tribes by anthropologists. Five such cultural-dialectical sub-groups are clearly distinguishable. They are the Onitsha or Northern Ibo, the Agu-Ukwu (Nri) or North-Eastern Ibo, the Owerri or Southern Ibo, the cross River or Eastern Ibo and the Ika or Western Ibo (Talbot, 1926).

The Ibo, as Uchendu has said, perceive their world as a dynamic one, "world of moving equilibrium" (1965:12) to which they must constantly adjust. This, in part, may explain their characteristic restlessness and readiness for change. The Ibo are highly individualistic, yet their strong kinship system prescribes a gregarious mode of life. Both qualities are reflected in traditional Ibo social organization. They are commonly described as acephalous

---

<sup>1</sup>Igbo is the language of the Ibo.

since they lack a centralized form of political organization above the village community level. Even at this level community administration follows democratic principles and leadership is achieved and not inherited.

The Ibo are traditionally farmers and a man's wealth and social status correlate positively with the number of yams he planted in a year. According to Talbot and Mulhall, "the main energies of the Ibo were and are devoted to raising as many children and yams as possible, and they seem to have developed their social organization to this end with a considerable measure of success" (1962:5).

Descent is typically patrilineal, the extended family is the rule, and polygyny is favoured.

The Ibo religion includes a belief in a creator god, as well as other minor gods. Ancestor worship is the primary feature of religious practice.

#### The Ibibio

The Ibibio are the next largest ethnic group in Eastern Nigeria. Together with the Efik, they numbered 809,000 in 1953. They are located within the Cross River basin in the south-eastern corner of Nigeria.

The history of the origin of the Ibibio is yet to be fully developed. The Ibibio language is classified as belonging to the semi-Bantu sub-family of the Niger-Congo linguistic group. As in the case of the Ibo, four Ibibio-cultural-linguistic sub-groups may be identified: the Ibibio proper or Eastern Ibibio, the Anang or Western Ibibio, the Eket or Southern Ibibio, and the Enyong or Northern Ibibio.

The social organization of the Ibibio is in many ways similar to those of the Ibo. They lack a centralized political system and generally the administration of the village affairs rests in the hands of the elders supported by

local age-grade and secret society organizations. These assist in executing decisions reached at the general village assemblies.

The Ibibio are mainly agriculturists although those along the coast engage in fishing and trading.

The family is typically extended, descent is patrilineal and polygyny commonly practised. There is a belief in a creator god, Abasi as well as numerous smaller gods. Ancestor worship is practised.

### The Ijaw

The Ijaw are believed to be the first people to settle in Nigeria and their language which is classified as Sudanic, is considered the oldest of Nigeria's over 200 languages. Today, Ijaw speakers are confined to the creeks and islands of the Niger Delta in both the Eastern and Midwestern Nigeria. Like the other languages discussed earlier, Ijaw language has a number of cultural dialectical sub-groups the more important of which are the Brass or Lower Ijaw, the Kalabari Ijaw and the Western Ijaw. By the 1953 census, the Ijaw of Eastern Nigeria numbered some 259,000.

In contrast with the Ibo and Ibibio, hereditary chiefship is a characteristic feature of Ijaw political organization although this appears to be a later development induced by the conditions of the external trade. Extended family units incorporate slaves and other non-kin adherents into socio-political units called "Houses." Each House is under the leadership of a hereditary chief who acts as its spokesman both in internal political affairs and in trade negotiations with the Europeans. In principle, each chief is independent, although, as it often happens, a powerful chief may impose his authority on weaker chiefs thereby reducing them to the state of vasals.

Because of their seaboard location the Ijaw were among the first people of Eastern Nigeria to come in contact with Europeans. The Ijaw were therefore

the pioneers in the trans-Atlantic slave trade and later they became the middle-men in the palm-oil trade. Again, unlike their hinterland neighbors, the Ijaw are not farmers but fishermen and traders, exchanging fish and overseas goods for palm oil and other agricultural produce.

The family is extended, descent is patrilineal and polygyny is favoured. The Ijaw believe in a creator god as well as other minor gods and spirits. Ancestor worship is practised.

#### The Efik

The Efik have so much intermingled with the Ibibio that it is rather difficult to separate them culturally. The Efik are concentrated in Calabar and Enyong Divisions in the extreme south-east corner of Eastern Nigeria. They numbered about 300,000 in 1953.

As indicated earlier, tradition has it that the Efik migrated from somewhere in the region of the Cameroons. The Efik language is a distinct dialect of Ibibio language and with the spread of Western education has become generally accepted as the literary language of Ibibio-speaking peoples.

The Efik social organization is very similar to the Ibibio although remarkable differences exist. Structurally, the Efik "local community tended to be compact and not dispersed villages" as those of the Ibibio (Jones, 1956). Each community "was virtually autonomous and consisted of self-governing segments . . ." (Jones, 1956). Unlike the Ibibio, the Efik have hereditary rulers called "Obong."

Partly resulting from their Atlantic seaboard location, the Efik are primarily traders and fishermen and only secondarily farmers.

The family is extended and descent patrilineal. Polygyny is practiced. Like the other tribes of Eastern Nigeria, the Efik believe in a creator god, as well as numerous other gods. Ancestor worship is practised.

### The Ekoi

The Ekoi comprise a number of sub-tribes inhabiting the Oban highlands in both Calabar and Ikom Divisions.

According to Talbot, that "the Ekoi are mainly of Bantu stock is shown both by their language and the shape of their heads" (1912:317). Their original home was in the lower Nile valley from where they have migrated to their present position.

The Ekoi live together in compact communities. Traditionally each community is administered through a council of elders. "Anyone, from the greatest chief to the smallest child, has the right to summon such a meeting and lay complaints before it" (Talbot, 1912:310). Unlike the Ibibio and the Ibo, however, the Ekoi have hereditary chiefs of varying ranks.

Agriculture and hunting are the main occupation of the Ekoi. Men hunt, women fish and both join in farm work. Some trading is also done with the Efiks and across the Cameroon border.

The family is extended, descent patrilineal and polygyny favoured. The religious beliefs include the existence of a creator god as well as a number of other gods. Ancestor worship is practiced.

### Pattern of Population Density and Social Organization in Eastern Nigeria

In an earlier description of the population distribution pattern (see Chapter I), Eastern Nigeria was divided into three density zones. These are the high density zone, consisting of areas with population density ranging from 400 to 870 persons per square mile; medium density zone comprising areas with 100 to 399 persons per square mile and low density zone for areas below 100 persons per square mile. It was also shown that the density zones do not correspond with, and so could not be explained by variations in such geo-physical factors as (a) fertility and type of soil and (b) topography. For one thing, not only are poor soils found to support the highest population densities,

but also fertile soils have the scantiest population. For another, both high and low density areas are found within the same topographic region such as the Cross River basin.

With this in view, the application of the results of the first stage of the study to Eastern Nigeria boils down to seeking answers to the following twin questions: Do the population density zones of Eastern Nigeria follow tribal boundaries? If so, do tribal variations with respect to those variables that have been found to favour density correspond with variations in tribal densities?

Since the tribes or ethnic groups vary greatly in size, it is deemed necessary to utilize a smaller and comparable unit into which each tribe can conveniently be divided in the following analysis. The administrative "Divisions" of Eastern Nigeria serve this purpose very well because their boundaries, as far as practicable, were drawn along ethnic or cultural cleavages. That is, each Division is intended to be ethnically a homogeneous unit. By 1953 there were 28 administrative Divisions in Eastern Nigeria. Table 33 presents the distribution of these Divisions by the major tribes. The 1953 population density of each division is also shown.

Table 34 shows that the high density zone comprises nine administrative Divisions. Of this number, six or 66.7 per cent are in Iboland and the remaining three or 33.3 per cent are in Ibibioland. Thus, two of the five major ethnic groups in this "region" account for all of the high density Divisions.

The medium density zone is made up of eleven Divisions. Of this number, seven or 63.6 per cent are in Ibo territory, three or 27.3 per cent in Ibibio territory and only one belongs to one of the minor tribes, the Ogoni. Again, the same two tribes account for ten out of eleven medium density Divisions.

TABLE 33

## ADMINISTRATIVE DIVISIONS OF EASTERN NIGERIA BY TRIBES

Tribe	Divisions and Density	Total Number of Divisions
Ibo	Abakiliki (257)	13
	Afikpo (314)	
	Awgu (356)	
	Awka (440)	
	Nsukka (342)	
	Onitsha (405)	
	Udi (309)	
	Aba (413)	
	Bende (389)	
	Okigwe (755)	
	Orlu (873)	
	Owerri (517)	
	Ahoada (143)	
Ibibio	Abak (667)	6
	Eket (327)	
	Ikot-Ekpene (622)	
	Opobo (388)	
	Uyo (670)	
	Enyong (181)	
Ijaw	Brass (38)	2
	Degema (94)	
Efik	Calabar (50)	1
Ekoi	Ikom (50)	1
Others	Obubra (90)	4
	Ogoja (75)	
	Ogoni (388)	
		27 <sup>a</sup>

<sup>a</sup>

Since the study is concerned with rural population, Port-Harcourt Division (area, 4 square miles; density, 14,900 persons per square mile) which is entirely urban is excluded, thus, leaving 27 Divisions for the analysis.

TABLE 34

## DIVISIONAL DENSITY OF EASTERN NIGERIA BY TRIBAL

## (ETHNIC) COMPOSITION

Density per Square Mile	Number of Divisions (Total)	Ethnic Distribution					
		Ibo	Ibibio	Ijaw	Efik	Ekoi	Others
400-850+ High Density Zone	9	6	3	..	..	..	..
100-399 Medium Density Zone	11	7	3	..	..	..	1
Below 100 Low Density Zone	7	..	..	2	1	1	3
Total	27 <sup>a</sup>	13	6	2	1	1	4

The low density zone consists of seven Divisions. Of this number, two are found in Ijawland, one each in Efik and Ekoi territories and the remaining three belong to the minor tribal groups. Thus, no low density Division lies in Ibo or Ibibioland just as no high density Division lies outside these two adjoining tribal groups.

Another way of reading this table is to consider the ethnic groups individually. Thus, of the thirteen Ibo Divisions, six (46.2 per cent) fall within the high density zone, seven (53.8 per cent) fall within the medium density zone and none falls in the low density zone. Similarly, of the six Ibibio Divisions, three (50 per cent) are in the high density zone, three (50 per

<sup>a</sup>Since the study is concerned with rural population, Port-Harcourt Division (area, 4 square miles; density, 14,900 persons per square mile) which is entirely urban is excluded, thus leaving 27 Divisions for the analysis.



cent) in the medium density zone and none in the low density zone. On the other hand, the two Ijaw Divisions fall within the low density zone and so do the one Efik and one Ekoi Divisions respectively. Finally, of the four Divisions that belong to the minor tribes, none is found in the high density zone, only one lies within the medium density zone and the three fall within the low density zone.

The above analysis shows that the high density zone is restricted to the Ibo and Ibibio areas of Eastern Nigeria. It may, therefore, be concluded that the density zones run along ethnic or tribal lines. This implies that any explanation of variations in the population distribution of Eastern Nigeria will best be sought in the socio-cultural differences of the constituent tribes.

The next step in the analysis is to consider annual rainfall, settlement pattern and kinship organization as possible explanations of density variations in Eastern Nigeria.

### Rainfall

Earlier analysis has found a substantial positive association between relative rainfall and relative density. Applied to the Eastern Nigeria situation, this implies that rainfall will be generally higher in the high density zones than in the low density zones. In other words, the low density Administrative Divisions will have low annual rainfall while the high density Divisions are expected to have high annual rainfall. This proposition is now examined taking the major tribes in turn. Rainfall figures for Eastern Nigeria used in this analysis are based on Karmon, 1966:Map No. 2. There are remarkable variations in annual rainfall within the Ibo territories. Nsukka Division which is within medium density zone has an annual rainfall of 55-65 inches. This represents the lowest annual rainfall in Eastern Nigeria. Orlu

and Okigwi Divisions within the high density zone have 90 to 95 inches of annual rainfall while Owerri and Aba Divisions also within high density zone have 95 to 100 inches of rain.

In the Ibibio territories, Opobo Division, which is in the medium density zone, has an annual rainfall of 110 to 120 inches while Abak Division which is within the high density zone has 95 to 100 inches of rain.

Of the two low density Ijaw Divisions, Degema has 120 to 130 inches, while Brass has over 150 inches of rain. The low density Efik and Ekoi Divisions of Calabar and Ikom respectively have annual rainfall of 110 to 120 inches. In contrast to these, the low density Ogoja and Obudu Divisions have only 65 to 75 inches of rain.

Summarizing, the data do not show a definite trend in the relationship between rainfall and population density. In fact, there are more cases of low density areas having very high annual rainfall. The conclusion then is that the facts of Eastern Nigeria situation do not support the proposition. Thus, like all the other physical-environmental factors so far considered, annual rainfall fails to explain the unusual population density in Eastern Nigeria.

#### Settlement Pattern and Kinship Organization

The earlier analysis shows that dispersed pattern of settlement and patrilineal-extended kinship organization are related to high relative density. In the context of Eastern Nigeria, this means that the high density ethnic groups are expected to have dispersed settlement pattern and patrilineal-extended kinship organization while the low density tribes have nucleated settlement pattern and non-patrilineal extended kinship system. Table 35 analyzes the five major tribes of Eastern Nigeria in terms of these two variables.

TABLE 35

MAJOR TRIBES OF EASTERN NIGERIA BY SETTLEMENT PATTERN  
AND KINSHIP ORGANIZATION

Major Tribe	Settlement Pattern	Kinship Organization
Ibo	Dispersed	Patrilineal Extended
Ibibio	Dispersed	Patrilineal Extended
Ijaw	Nucleated	Patrilineal Extended
Efik	Nucleated	Patrilineal Extended
Ekoi	Nucleated	Patrilineal Extended

The table shows that with respect to settlement pattern, the two high density tribes, the Ibo and the Ibibio have dispersed settlement pattern while the other three low density tribes have nucleated settlement pattern. The data thus confirms the proposition and lends support to the result of the analysis of African continent data.

Kinship organization shows no variation among the five tribes. All have patrilineal extended kinship system. This particular pattern of kinship organization appears to be common to tribes of the Guinea Coast area. The data, in this respect, do not accord with the proposition. Differences in the type of kinship organization cannot therefore explain variations in population density found among Eastern Nigeria tribes.

Concluding, this study points out that among all the variables so far considered it is only settlement pattern that adequately explains variations in population density in Eastern Nigeria. It is the dispersed pattern of Ibo and

Ibio settlement that substantially explains the unusually high population density in these tribes.

In explaining how settlement pattern operates to enhance population density in traditional African societies (see Chapter V), it was suggested that dispersed settlement pattern is but a structural expression of certain basic values and norms common to some African societies. These values were identified as equalitarianism, group autonomy (see Chapter V). In the context of Eastern Nigeria, it is particularly important to note that these same values are among the most predominant characteristics of the Ibo and Ibibio tribes (Talbot, 1926; Forde and Jones, 1950; Uchendu, 1965). Of the Ibo, Uchendu wrote, "the Igbo world is based on an equalitarian principle . . . . This is an ideological obstacle to the development of a strong central authority" (1965:19). With regard to group autonomy he wrote, ". . . the village is autonomous in its affairs and accepts no interference or dictation from any other group" (1965:41). Inter-group competition, one of the principles which not only operates to maintain dispersed pattern of settlement but also to enhance high population density is also a predominant feature of these two tribes. The form which the fission mechanism takes in these societies require a special study.

What these sum up to is that in reality, it is the equalitarian values, inter-group competition and the desire for autonomy which are characteristics that explain the unusually high population density of the Ibo and Ibibio tribes. Dispersed pattern of settlement is but a structural expression of these socio-cultural values.

#### Direction for Future Research

Perhaps, the greatest contribution of this study is that it has succeeded in objectively arranging a number of socio-cultural variables in some order of

importance with respect to their effect on population density in traditional African societies. In this sense, it has only prepared the way for a more comprehensive study utilizing a battery of historical, geographic, physiographic, socio-cultural and other variables that do impinge on population density in traditional societies. The objective of such a study is to determine more conclusively which of these factors exert the greatest influence on population density. Thus while making a specific contribution to the understanding of the Eastern Nigeria situation, this study is only exploratory for a more comprehensive research on population density.

## REFERENCES

## REFERENCES

- Adams, John, Captain.  
1823      Remarks on the Country Extending from Cape Palmas to River Congo.  
            London: Frank Cass, Co., Ltd.
- Allan, William.  
1965      The African Husbandman. London: Oliver and Boyd, Ltd.
- Aluko, S. A.  
1965      "How Many Nigerians?" Journal of Modern African Studies, Vol. 3,  
            No. 3 (October).
- Anene, J. C.  
1966      Southern Nigeria in Transition 1885-1906. Cambridge, Mass.:  
            Cambridge University Press.
- Ardener, E.  
1956      The Coastal Bantu of the Cameroons. London: International African  
            Institute, Vol. 1, part 11.
- Aye, Effiong U.  
1967      Old Calabar through the Centuries. Calabar: Hope Waddle  
            Institute Press.
- Barclay, G. W.  
1958      Techniques of Population Analysis. New York: John Wiley and  
            Sons, Inc.
- Baxter, P. T. and Butt, A.  
1953      The Azande. London: International African Institute, Vol. 2,  
            part 9.
- Bender, Donald R.  
1971      "Population and Productivity in Tropical Forest Bush Fallow  
            Agriculture" in Culture and Population, edited by S. Polgar.  
            Cambridge, Mass.: Schenkman Publishing Company.
- Bogue, Donald J.  
1950      The Structure of the Metropolitan Community. A Study in  
            Dominance and Subdominance. Ann Arbor, Michigan: University  
            of Michigan Press.
- Bohannon, L.  
1953      The Tiv of Central Nigeria. London: International African  
            Institute, Vol. 2, part 9.

- Brass, W. I., et al.  
1968 The Demography of Tropical Africa. Princeton, New Jersey: Princeton University Press.
- Brookfield, H. E. and Brown, P.  
1963 "Struggle for Land: Agriculture and Group Territories Among Chimbu of the New Guinea Highlands." Melbourne: Pine Press.
- Brown, G. G. and Hutt, A. B.  
1935 Anthropology in Action. London: Oxford University Press.
- Burns, Sir Alan.  
1969 History of Nigeria. London: Allen and Unwin, Ltd.
- Butt, A.  
1952 "The Luo of Kenya," in The Nilotes of the Anglo-Egyptian Sudan and Uganda, edited by D. Forde. London: International African Institute. Vol. 2, part 4.
- Coch, L. and French, J. R.  
1948 "Overcoming Resistance to Change." Human Relations, Vol. 1: 512-532.
- Cooley, C. H.  
1930 "The Theory of Transportation," in Sociological Theory and Social Research, edited by C. H. Cooley. New York: Henry Holt and Company.
- Dahl, R. A.  
1961 Who Governs? New Haven, Connecticut: Yale University Press.
- Dalton, George.  
1960 "A Note of Clarification on Economic Surplus." American Anthropologist, Vol. 62, No. 3:483.
- 
- 1971 Economic Development and Social Change. New York: The Natural History Press.
- Davis, K.  
1959 "Sociology of Demographic Behavior," in Sociology Today: Problems and Prospect, edited by R. K. Merton, et al. New York: Harper and Row.
- Davis, J. A.  
1971 Elementary Survey Analysis. Englewood Cliffs, New Jersey: Prentice Hall, Inc.
- Day, A. T. and Day, L. H.  
1973 "Cross-National Comparison of Population Density." Science, Vol. 181 (September).
- Dike, K. O.  
1956 Trade and Politics in the Niger Delta 1830-1885. Oxford: The Clarendon Press.



- Duncan, O. D. and Duncan, B.  
1955 "Residential Distribution and Occupational Stratification." American Journal of Sociology, LX (March).
- Duncan, O. D. and Schnore, Leo F.  
1959 "Cultural, Behavioral and Ecological Perspectives in the Study of Social Organization." American Journal of Sociology, Vol. 65: 132-146.
- Durkheim, Emile.  
1900 "Sociology and its Scientific Domain." Originally published in Italian in *Revista Italiana di Sociologia*, Vol. 5 (1900):127. Cited in Maurice Halbwachs, *Population and Society*. 1960:11.
- 
- 1933 *The Division of Labor in Society*. Translated by George Simpson. New York: The Macmillan Company.
- 
- 1965 *The Elementary Forms of Religious Life*. Translated by Joseph Swain. New York: The Free Press.
- Eke, I. I. U.  
1966 "Population of Nigeria, 1952-1965." *The Nigerian Journal of Economic and Social Studies*, Vol. 8, No. 2.
- Engelmann, Hugo O.  
1968 "Population Size and Social Organization." *The Cornell Journal of Social Relations*, Vol. 3, No. 2.
- Evans-Pritchard, E. E.  
1940 "The Nuer of the Southern Sudan," in *African Political Systems*, edited by M. Fortes and E. Evans-Pritchard. London: Oxford University Press.
- Floyd, B.  
1969 *Eastern Nigeria: A Geographical Review*. New York: Frederick Praeger Publishers.
- Forde, D. and Jones, G. I.  
1950 *The Ibo and Ibibio Speaking Peoples of South Eastern Nigeria*. London: International African Institute.
- Forge, Anthony.  
1972 "Normative Factors in the Settlement Size of Neolithic Cultivators (New Guinea)," in *Ecology and Agricultural Settlements*, edited by Ruth Tringham. Andover: Harner Modular Publications.
- Fortes, M.  
1940 "The Political Systems of the Tallensi," in *African Political Systems*, edited by M. Fortes and E. Evans-Pritchard. London: Oxford University Press.

- Fortes, M. and Evans-Pritchard E.  
1940 African Political Systems. London: Oxford University Press.
- Fullard, H. (ed.)  
1959 Philip's Modern College Atlas for Africa. London: G. Philips and Sons.
- Goldscheider, C.  
1971 Population Modernization and Social Structure. Boston: Little, Brown and Company.
- Gibbs, Jack P.  
1961 Urban Research Methods. Princeton, New Jersey: Van Nostrand Co.
- Gluckman, M.  
1943 Essays on Loziland and Royal Property. London: Livingstone Institute.
- Goldwater, R.  
1964 Senufo Sculpture from West Africa. New York: Museum of Primitive Art.
- Goodman, Leo A.  
1965 "Multivariate Analysis of Three Dichotomous Variables." American Journal of Sociology, Vol. 71, No. 3.
- Grove, A. T.  
1951 "Population Densities and Agriculture in Northern Nigeria," in Essays in African Population, edited by K. M. Barbour and Prothero. London: Routledge and K. Paul.
- Gunn, H. D.  
1956 Pagan Peoples of the Central Area of Northern Nigeria. London: International African Institute, Vol. 1, part 12.
- Halbwachs, Maurice.  
1910 L'annee Sociologique, Vol. 11, Section 6.
- 
- 1960 Population and Society. Trans. by O. Duncan and Pfautz  
New York: The Free Press.
- Hance, William  
1970 Population, Migration and Urbanization in Africa. New York: Columbia University Press.
- Hauser, P. M. and Duncan, O. D.  
1959 The Study of Population. Chicago: University of Chicago Press.

Hauser, P. M. and Schnore, Leo F.

1965 The Study of Urbanization. New York: John Wiley and Co.

Hawley, Amos.

1950 Human Ecology. New York: Ronald Press Company.

Huntingford, G. W. B.

1953 "The Massai," in The Southern Nilo-Hamites, edited by G. W. Huntingford. London: International African Institute.

---

1955 The Galla of Ethiopia: The Kingdoms of Kafa Janjero. London: International African Institute, Vol. 6, part 2.

Jeffreys, M. D. W.

1935 Old Calabar. Calabar, Nigeria: Udom Press.

Jones, G. I.

1949 "Ibo Land Tenure." Africa, Vol. 19: 309-323.

---

1956 "The Political Organization of Old Calabar," in Efik Traders of Old Calabar, edited by Daryl Forde. London: Oxford University Press.

Karmon, Yehuda.

1966 A Geography of settlement in Eastern Nigeria. Jerusalem: The Magnes Press.

Kenyatte, J.

1964 Facing Mount Kenya. New York: Random House.

Land, K. C.

1969 "Principles of Path Analysis," in Sociological Methodology, 1969, edited by Edgar Borgatta. San Francisco: Jossey-Bass, Inc.

Lewin Kurt.

1947 "Group Decision and Social Change," in Readings in Social Psychology, edited by Newcomb and Hastley. New York: The Free Press.

Lewis, I. M.

1955 "The Afar," in Peoples of the Horn of Africa, edited by I. M. Lewis. London: International African Institute.

Lorimer, Frank.

1961 Demographic: Information on Tropical Africa. Boston: Boston University Press.

---

1968 "Introduction," in The Demography of Tropical Africa, edited by W. Brass, et al. Princeton: Princeton University Press.

- McGreevey, W. P.  
1973 "Fertility Variables: Population Policy in El Salvador." *Population Dynamics Quarterly*, Vol. 1, No. 3 (Summer)
- Malthus, R.  
1830 "A Summary View of the Principle of Population," in *Three Essays on Population*, edited by F. W. Notestein (1960). New York: New American Library of World Literature.
- Meeck, C. K.  
1925 *The Northern Tribes of Nigeria*. New York: Frank Cass and Co., 2 Volumes.
- 1931 *Tribal Studies in Northern Nigeria*. London: Kegan Paul and Co.
- Messing, S. D.  
1957 *The Highland-Plateau Amhara of Ethiopia*. Ann Arbor, Michigan: University of Michigan Microfilms.
- Miner, H.  
1953 *The Primitive City of Timbuctoo*. Princeton: Princeton University Press.
- Morgan, W. B.  
1955 *Farming Practice, Settlement Pattern and Population Density in South-East Nigeria*. *Geographic Journal*, Vo. 121:320-333.
- Murdock, G. P.  
1957 "World Ethnographic Sample," in *Readings in Cross-Cultural Methodology*, edited by Frank Moore. New Haven:
- 1958 *African Cultural Summaries*. Unpublished manuscript.
- 1959 *Africa. Its Peoples and Their Culture History*. New York: McGraw-Hill Book Company.
- 1965 *Culture and Society*. Pittsburg: University of Pittsburg Press.
- 1967 *Ethnographic Atlas*. Pittsburg: University of Pittsburg Press.
- Nadel, S. F.  
1947 *The Nuba*. Cambridge: Oxford University Press.
- Okonjo, C.  
1968 "A Preliminary Median Estimate of the 1962 Mid-Year Population of Nigeria," in *The Population of Tropical Africa*, edited by J. Caldwell and C. Okonjo. New York: Columbia University Press.

- Ojo, G. J. A.  
1968 "Some Cultural Factors in the Critical Density of Populations in Tropical Africa," in *The Population of Tropical Africa*, edited by J. C. Caldwell and C. Okonjo. New York: Columbia University Press.
- Olusanya, P. O.  
1966 "Adequacy of Existing Census and Vital Statistics for Demographic Research and Planning." *The Nigeria Journal of Economic and Social Studies*, Vol. 8, No. 1 (March)
- Ottenberg, S.  
1959 "Ibo Receptivity to Change," in *Continuity and Change in African Cultures*, edited by W. R. Bascom and M. Herskovits. Chicago: University of Chicago Press.
- Paulme, Denise.  
1940 *Organization Sociale des Dogon*. Paris: Domatmontchrestien.
- Pritchard, J. M.  
1969 *Africa: The Geography of a Changing Continent*. New York: Longman Group, Ltd.
- Radcliffe-Brown, A. R.  
1950 "Introduction," in *African Systems of Kinship and Marriage*, edited by A. R. Radcliffe-Brown and Daryll Forde. London: International African Institute.
- Ratzel, Friedrich.  
1882 *Anthropoleographie*. Leipzig: Duncker and Humbolt.
- Richards, A. I.  
1950 "Some Types of Family Structure amongst the Central Bantu," in *African Systems of Kinship and Marriage*, edited by A. R. Radcliffe-Brown and Daryll Forde. London: International African Institute.
- Reckless, W. C.  
1926 "The Distribution of Commercialized Vice in the City: A Sociological Analysis." *Publications of the American Sociological Society*, XX:164-76.
- Semple, E. C.  
1911 *Influence of Geographic Environment on the Basis of Ratzel's System of Anthro-Geography*. New York: Henry Holt and Company.
- Simmel, Georg.  
1950 *The Sociology of Georg Simmel*. Translated and edited by Kurt H. Wolf. New York: The Free Press.
- Simmons, James W.  
1962 "Relationship Between the Population Density Pattern and Site of Cities." Master's thesis. Chicago: University of Chicago.

Skinner, Elliott.

- 1964 The Mossi of Upper Volta. Stanford, California: Stanford University Press.

Som, R. K.

- 1968 "Some Demographic Indicators for Africa," in The Population of Tropical Africa, edited by J. C. Caldwell and C. Okonjo. New York: Columbia University Press.

Spencer, Herbert.

- 1886 The Principles of Sociology. Vol. 2. London: Appleton and Co.

- 
- 1961 The Study of Sociology. Ann Arbor: University of Michigan Press.

Stevenson, R. F.

- 1968 Population and Political Systems in Tropical Africa. New York: Columbia University Press.

Swanson, G. E.

- 1960 The Birth of the Gods. Ann Arbor, Michigan: University of Michigan Press.

Talbot, Amaury.

- 1912 In the Shadow of the Bush. London: W. Heinemann and Company.

- 
- 1926 The Peoples of Southern Nigeria. London: Oxford University Press.

- 
- 1932 Tribes of the Niger Delta. London: Frank Cass and Company.

Talbot, P. M. and Mulhall, H.

- 1926 The Physical Anthropology of Southern Nigeria. Cambridge: Cambridge University Press.

Taylor, B. K.

- 1962 The Western Lacustrine Bantu. London: International African Institute, Vol. 2, part 13.

Temple, O.

- 1922 Notes on the Tribes, Provinces, Emirates and States of Northern Provinces of Nigeria. London: Frank Cass and Company.

- 
- 1965 Tribes, Provinces, Emirates and States of Northern Provinces of Nigeria. London: Frank Cass and Company.

- Turner, J. H.  
1972 Patterns of Social Organization. New York: McGraw-Hill Book Company.
- Tylor, E. B.  
1871 Primitive Culture. London: J. Murray.
- Uchendu, J. C.  
1965 The Igbo of Southern Nigeria. New York: Holt, Rinehart and Winston.
- Udo, R. K.  
1963 "Patterns of Population Distribution and Settlement in Eastern Nigeria." Nigerian Geographical Journal, Vol. 1, No. 12.
- Udy, Stanley H. J.  
1970 Work in Traditional and Modern Society. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Wallace, W. (ed.)  
1969 Sociological Theory. Chicago: Aldine Publishing Company.
- Walle, Etienne van de.  
1968 "The Availability of Demographic Data by Regions of Tropical Africa," in The Population of Tropical Africa, edited by J. C. Caldwell and C. Okonjo. New York: Columbia University Press.
- Yesufu, T. M.  
1968 "The Politics and Economics of Nigeria's Population Census," in The Population of Tropical Africa, edited by J. C. Caldwell and C. Okonjo. New York: Columbia University Press.
- Zetterberg, H. L.  
1965 On Theory and Verification in Sociology. New Jersey: The Bedminster Press.

## APPENDICES



## APPENDIX A

### A NOTE ON NIGERIAN CENSUS DATA: (THE 1953 VS. THE 1963 CENSUSES)

The history of census-taking in Nigeria is as old as the country itself. "Censuses were taken in Nigeria in 1866, 1868, 1871 and thereafter every ten years up to 1931" (Okonjo, 1968:78). However, it was not until 1952 that, strictly speaking, the first national census was taken in Nigeria. Since then, there have been three more censuses: in 1962, 1963, and 1973. The 1962 count was rejected and nullified while the final results of the 1973 census are yet to be released.

Various aspects of the problem connected with census-taking in Nigeria are well documented (Aluko, 1965; Eke, 1966; Okonjo, 1968; Yesufu, 1968). However, further analysis shows that these problems fall into two broad patterns. While the problems associated with the 1952 census tend to favor undercount and underestimation of the population; those associated with the 1963 census appear to pull in the opposite direction in favor of overcount and inflated population figures.

Among problems associated with the 1952 census may be mentioned: (a) General suspicion as to the purpose of the enumeration: in many rural districts, there was a general suspicion that the purpose of the count was to extend taxation to women; to increase taxation on men and/or collect information for military service (Aluko, 1965). In Eket Division, for instance, opposition to the census resulted in a riot during which the district office was attacked. Generally these suspicions led to a tendency to underreport the female population in particular.

(b) Conflict with local beliefs and customs: The belief that human beings are not to be counted like "objects" and that such an action might bring famine and ill-luck was still current in many areas of the country and their general effect was to encourage evasion of enumeration.

(c) Enumeration method: The group-method of enumeration adopted during this census favoured under-reporting in a situation replete with suspicion.

(d) Poor Communication: Accessibility to certain areas of the country both in the far north and in the southern creeks was hampered by poor communication networks and inadequate transportation facilities.

On the other hand, problems associated with the 1962-63 censuses are more of a political nature than technical or cultural. They fall under two main headings:

(i) Over-enthusiasm: Through political education and propaganda, census has come to acquire a different meaning and significance during the previous years. Because the allocation of seats in both the local, regional and national legislatures, as well as the distribution of necessities like hospitals are based on population, census has come to be seen as an instrument for political bargaining. Consequently, "the more literate people become over zealous about the value of a census and were prepared to do anything, not only to enumerate all their people, but also, if possible, to engage in double or triple counts" (Aluko, 1965:377).

(ii) Organization of the Census: For the 1962 census, each region was empowered within broad guidelines, to plan, execute and analyze its own census and then forward the result to the Federal Office for compilation. This made it possible for Regional authorities, eager to maintain or to increase their strength in the Federal legislature, to overlook or even condone apparent cases of double counting.

On the whole, there seems to be a general agreement among demographers and social scientists that the 1952 census under-estimated the population of Nigeria, while the 1963 census involved some overestimation. The point on which opinions vary is which of the two censuses (1952 and 1963) should be considered a better census and should be used as the basis for national planning.

Arguments, both academic and partisan, have been presented in favour of one census or the other. Arguing for the acceptance of the 1963 census as "of much better quality than those of 1952" Olusanya (1966) maintained that: (a) there was much better preparation for the 1963 than the 1952 counts; (b) educational improvements and increased political awareness created a more enlightened public better able to furnish more accurate information during the 1963 census; (c) the 1960 Ghanaian census provided a shining example for Nigeria to follow.

On the other side, William Hance held that "there is a universal agreement that it (1963 census) was fraudulent, and . . . even allowing for possible undercounting in the 1952-53 census, the 1963 census is thought to contain an overestimation of at least 10 per cent" i.e., '5.5 million (1970:11). Dismissing the 1963 census as "of doubtful scientific value" Okonjo (1968) held that "the 1952-53 census still seems to be the best available source of demographic information for contemporary Nigeria . . ." In the same vein, Etienne van de Walle states that the 1952 census "constitutes the best source of demographic information on Nigeria to date" (1968:516).

These opinions seem to be based mainly on the fact that the rate of population growth (6.3 per cent) yielded by the 1963 census figures is so phenomenal when compared with those of other West African countries, and with

the United Nations' estimate of 2 per cent growth-rate for Nigeria, that it appears to lack any basis in reality. It has been pointed out that apart from Israel, which registered 11.5 per cent annual rate of growth between 1948 and 1955 and Mauritius which showed a 5.9 per cent growth rate between 1851 and 1961, no other country in the world has experienced an annual growth rate up to 5.0 per cent. With this in view a 6.3 per cent growth rate for Nigeria, and 8.3 per cent for the Western Region, in the absence of a wave of in-migration, lacks any scientific basis.

Everything considered, the author is of the opinion that the 1952 census is of superior quality to that of 1963. His reasons are as follows:

(1) The magnitude of error in the 1953 census can be statistically estimated since the errors are primarily technical and methodological in nature. With estimable errors, the census figures can be corrected. On the other hand, the errors in the 1963 census stem from purely political considerations. They are non-technical, non-random errors and so cannot be statistically estimated. They appear to have resulted from some purposeful manipulation of the figures rather than genuine mistakes.

(2) A breakdown of the 1952 census in terms of provinces, administrative Divisions, counties, and even towns and villages throughout Nigeria has been published. Age, sex, and occupational distributions, as far as were collected, are also published. It is, therefore, possible to do a sample or spot-check of the census results. For the 1963 census, on the other hand, no such detailed breakdown or even the age and sex distributions have been published. Bearing in mind the "much better preparation" and "educational improvements" (Olusanya, 1966) that preceeded this (1963) census, the reasons for not publishing these fundamental breakdowns remain a matter of guess. Nevertheless, the unavailability of these compositional details makes an independent cross-

checking of the results impossible. For these reasons, the author agrees with Okonjo (1968) that the 1963 census is of doubtful scientific value, hence, his decision to utilize the 1953 census figures in this study.

# APPENDIX B

TABLE 36

AREA, POPULATION AND DENSITY OF THE THREE REGIONS OF NIGERIA, 1953

	Population		Area		Density Per Square Mile
	Number in (000s)	Per Cent	Number in Square Miles	Per Cent	
Northern Region	17,007	55.9	281,782	79.0	60
Eastern Region	7,218	23.7	29,484	8.2	245
Western Region (Midwest included)	6,088	20.0	45,376	12.7	140
Nigeria	30,417	99.6	356,669	99.9	85

Source: Nigeria Population Census, 1952-53. Lagos, Nigeria.

## APPENDIX C

TABLE 37

RURAL POPULATION DENSITY RANGES OF NIGERIA BY  
ADMINISTRATIVE DIVISIONS 1953

Density Per Square Mile	Number of Divisions	Per Cent of Total Population	Per Cent of Total Area	Cumulative Per Cent Population	Per Cent Area
9 or Less	1	.2	3.1	.2	3.1
10-19	2	1.0	4.4	1.2	7.5
20-29	7	2.9	11.1	4.1	18.6
30-39	8	7.4	19.1	11.5	37.7
40-49	4	3.3	9.6	14.8	47.3
50-59	5	2.0	3.1	16.8	50.4
60-69	2	2.2	3.5	19.0	53.9
70-79	8	14.6	16.5	33.6	70.4
80-89	2	2.4	2.4	36.0	72.8
90-99	6	3.0	2.5	39.0	75.3
100-199	18	18.6	11.0	57.6	86.3
200-299	5	14.0	5.3	71.6	91.6
300-399	10	12.5	2.9	84.1	94.5
400-499	3	3.8	0.8	87.9	95.3
500-599	1	1.8	0.3	89.7	95.6
600-699	3	2.7	0.3	92.4	95.9
700-799	1	1.5	0.2	93.9	96.1
800-899	1	1.2	0.1	95.1	96.2
Total	87	95.1	96.2	95.1	96.2

TABLE 38

## RURAL POPULATION DENSITY RANGES OF NIGERIA BY PROVINCES, 1953

Density per Square Mile	Number of Provinces	Per Cent of Total Population	Per Cent of Total Area	Cumulative Per Cent Population	Per Cent Area
9 or Less	. . .	. . .	. . .	. . .	. . .
10-19	. . .	. . .	. . .	. . .	. . .
20-29	1	2.3	7.9	2.3	7.9
30-39	3	9.1	26.7	11.4	34.6
40-49	1	2.8	4.9	14.2	39.5
50-59	2	9.5	15.5	23.7	55.0
60-69	1	2.2	3.1	25.9	58.1
70-79	2	11.5	13.4	37.4	71.5
80-89	1	2.8	2.7	40.2	74.2
100-199	7	20.6	13.3	62.7	89.3
200-299	2	17.6	6.3	80.3	95.6
300-399	3	12.0	3.0	92.3	98.6
400-499	. . .	. . .	. . .	. . .	. . .
500-599	1	6.8	1.1	99.1	99.7
600-699	. . .	. . .	. . .	. . .	. . .
700-799	. . .	. . .	. . .	. . .	. . .
800-899	. . .	. . .	. . .	. . .	. . .
Total	25	99.1	99.7	99.1	99.7



TABLE 39

RURAL POPULATION DENSITY RANGES OF EASTERN NIGERIA BY  
ADMINISTRATIVE DIVISIONS, 1953

Density per Square Mile	Number of Divisions	Per Cent of Total Population	Per Cent of Total Area	Cumulative Per Cent Population	Per Cent Area
9 or Less	. . .	. . .	. . .	. . .	. . .
10-19	. . .	. . .	. . .	. . .	. . .
20-29	. . .	. . .	. . .	. . .	. . .
30-39	1	1.7	11.4	1.7	11.4
40-49	. . .	. . .	. . .	. . .	. . .
50-59	2	2.5	12.8	4.2	24.2
60-69	. . .	. . .	. . .	. . .	. . .
70-79	1	2.8	9.4	7.0	33.6
80-89	. . .	. . .	. . .	. . .	. . .
90-99	2	3.1	8.3	10.1	41.9
100-199	2	6.3	10.1	16.4	52.0
200-299	1	6.5	6.2	22.9	58.2
300-399	8	31.2	23.0	54.1	81.2
400-499	3	17.0	9.5	71.1	90.7
500-599	1	4.9	1.4	76.0	92.1
600-699	3	12.2	4.2	88.2	96.3
700-799	1	6.1	2.0	94.3	98.3
800-899	1	4.9	1.4	99.2	99.7
Total	27	99.2	99.7	99.2	99.7

## APPENDIX D

### METHODOLOGICAL PROBLEMS AND ISSUES

This section attempts a review of the more important methodological problems which the researcher has encountered. In doing this, he hopes to make explicit the limitations which such problems may impose on the analysis, interpretation of the data, and the utilization of the research results.

#### The Sampling Method

It is to be noted that Murdock's original sample on which this study sample is based is not drawn by random techniques. It was a representative sample and so is this study sample. The implication of this is that the characteristics under study could not be said to be randomly distributed. The data may not therefore permit the use of some high-powered statistical methods of analysis.

However, there are some justifications for using representative rather than random method of sampling. The subject matter of the study--traditional societies--makes it a pragmatic necessity that only those societies on which ethnographic, anthropological or sociological studies are available need be included in the sample. Random method will include in the sample societies for which the required information are non-existent or unreliable. Further, some culture areas have a proliferation of tribal groups while others have relatively few. Utilizing a random sampling method will therefore over-represent characteristics common in the former type of culture areas while under-representing those common in the latter type.

The limitations in the use of statistical methods are not insurmountable. The analysis could be carried out by using non-parametric statistics such as Yule's Q and Phi. Recently Goodman (1965) has shown that such sophisticated

analysis as multiple regression and factor analysis could properly be carried out with the (Yule) Q statistic.

### The Sample Size

The size of this study sample ( $N = 39$ ) is small. Consequently it does not meet the condition for normal distribution on which probability statements are based. In other words, the sample size does not permit a test of statistical significance of the results.

The researcher has met this problem in part by employing a non-statistical method of hypothesis testing, namely, the "fit" method. Further, the prime objective of the first stage of the study is to achieve an objective assessment of the amount of influence each of the socio-cultural variables exerts on relative density. This is to provide the basis for deciding which variables are to be employed in the explanation of the Eastern Nigeria situation. Since the magnitude of coefficients of association between the dependent and each independent variable achieves this goal, statements about statistical significance are considered dispensable for the study. Finally, very definitive statements have been avoided in generalizing the research findings.

### The State of African Demographic Data

One of the greatest problems faced by students of African demography is lack of adequate information. According to Frank Lorimer, "only a fraction of the population of Tropical Africa has been submitted to surveys that permit even the approximate direct estimation of vital rates" (1968:8). In his recent classification of tropical African countries on the basis of the relative completeness of demographic information, Etienne Van de Walle estimated that as much as 45 per cent of tropical African countries have no direct information on fertility and mortality . . ." (1968:29). On account

of these deficiencies, it has not been possible to obtain information on more complex demographic variables--such as birth rate, death rate and migration rate. For this reason, the core demographic variables have not been utilized in the study.

For the present study, the problem of inadequate demographic data has been complicated by the unit of observation and analysis employed, namely, the tribe. The complication arises from the fact that African Census reports do not break down their figures by tribal units.

To overcome this problem, the study has to supplement the census reports with administrative and ethnographic reports on the populations of tribes in the study sample. The use of relative rather than absolute density figures is another device to deal with this problem.

APPROVAL SHEET

The dissertation submitted by Daniel S. Obikeze has been read and approved by the following Committee:

Dr. Jai P. Ryu, Chairman  
Assistant Professor, Sociology, Loyola

Dr. William M. Bates  
Professor, Sociology, Loyola

Dr. Richard Block  
Associate Professor, Sociology, Loyola

Dr. Thomas M. Gannon  
Associate Professor and Chairman, Sociology, Loyola

Dr. Kathleen Norr  
Assistant Professor, Sociology, Loyola

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of the doctor of philosophy.

February 25, 1975  
Date

Jai P. Ryu  
Director's Signature