THE HIERARCHICAL TENDENCIES OF SHOPPING

CENTRES ON THE COPPERBELT OF ZAMBIA

THE HIERARCHICAL TENDENCIES OF SHOPPING

CENTRES ON THE COPPERBELT OF ZAMBIA

BY

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LUSAKA

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DECLARATION

I, Alphonsis Chewe Shinina solemnly declare that this dissertation has been done by myself and that it has not previously been submitted for a degree at this or any other University.

Signed ....

Date ....

A P P R O V A L

THIS DISSERTATION OF ALPHONSIS CHEWE SHININA
IS APPROVED AS FULFILLING PART OF THE
REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE
IN GEOGRAPHY.

EXAMINERS

Signed R. Hemlall   Date 16-9-87

Signed ....   Date 29-12-87

Signed ....   Date 24/12/87

Signed ....   Date 30-12-87

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A B S T R A C T

Hierarchical tendencies among service centres as implied in
the central place theory have been studied and their existence
verified in different regions of the world. The Copperbelt of
Zambia is selected as an ideal area for extending similar
studies to serve as an example in tropical Africa. This is
because the Copperbelt offers a rare opportunity of having a high
rate of urbanisation, a high concentration of population and
a complex set of economies all confined in a small unit of
space. Such a combination of factors is comparable to
metropolitan areas found in developed countries.

The study in its final analysis yields a five level hierarchical
classification of service centres just as has been demonstrated
in studies conducted in other regions of the world.

The dissertation falls in five chapters. Chapter One introduces
the intention of the dissertation. The second chapter reviews
literature on studies conducted in both developed and developing
countries. In both situations, case studies on intra-urban and
regional approaches are reviewed. In the third chapter, the
geography, history and contemporary situation of the study area
are discussed in order to fit the area in the context of the
study. The fourth chapter discusses the methodology of data
collection, analysis of data and discussion of the findings.
Chapter Five is the last one and makes a comparison of the
findings with those of studies reviewed earlier in Chapter Two
and draws the conclusion.

A C K N O W L E D G E M E N T

DEDICATION

To my daughters, Kayula and Mutale

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CHAPTER ONE

INTRODUCTION

This study attempts to examine the hierarchical tendencies of the
shopping centres on the Copperbelt of Zambia as implied in central
place theory. Hierarchical tendencies are a component of this
theory that tries to demonstrate how service centres like shopping
centres can be integrated into a single system of centres. Such an
integrated system is arranged in a hierarchical way from the lowest
to the highest order of centres that reflect the relative importance
of each order of centres in a given geographical setting. The other
component of the same theory though not a major concern of the
present study, deals with consumer behaviour that results in
hexagonal patterns of market areas for tertiary activities
(Beavon, 1977:2). Central place theory was originally developed
by Christaller (1933) and was first demonstrated in Southern Germany.

It has, thereafter, been applied by geographers in different
regions of industrialized countries especially Western Europe and
North America as well as in different regions of third world
countries.

Literature reviewed in Chapter Two falls into two main categories of
importance to this study. The first category is concerned with
review of studies carried out in developed countries. These can be
divided into regional and intra-urban studies. The second category
is on comparative studies both regional and intra-urban which have
been conducted in African countries as examples of similar studies
carried out in developing countries. This literature is a useful

groundwork in drawing parallels or departures from the theory. It
is meant to attempt answering the hypothesis, that "there are no
differences between hierarchical tendencies of the shopping centres
of the Copperbelt and those found elsewhere."

There are basic differences in the structure of settlements,
cultures and economies among and within industrialized countries
and also among and within third world countries as reviewed in the
literature. Despite these differences, however, the central
place theory has offered the best method of explaining the localization
of service centres that could be integrated into a hierarchically
determined system of centres (Henkel, 1979:2).

The Copperbelt as discussed later in Chapter Three does not fulfil
all the assumptions implied in the theory. In fact it is not
possible to find an area in the real world that fulfils the
assumptions. The area is not an isotropic plain. Transport; air,
road and railway is unevely distributed and the same is true for
demand for goods and services. There are seven towns (Chingola,
Chililabombwe, Kalulushi, Kitwe, Luanshya, Mufulira and Ndola)
in the study area (Figure 1.1). These towns and their
economic structures did not evolve organically as did most
towns in the industrialized countries. In the industrialized
countries where the model was developed and later applied extensively,
the settlements had developed gradually through the centuries. On
the Copperbelt, however, the towns (except for Ndola which was
founded as an administrative centre) were a creation of the copper
mining companies in the late 1920s and early 1930s. Despite these
differences the area is ideal for central place studies because of

THE COPPERBELT TOWNS
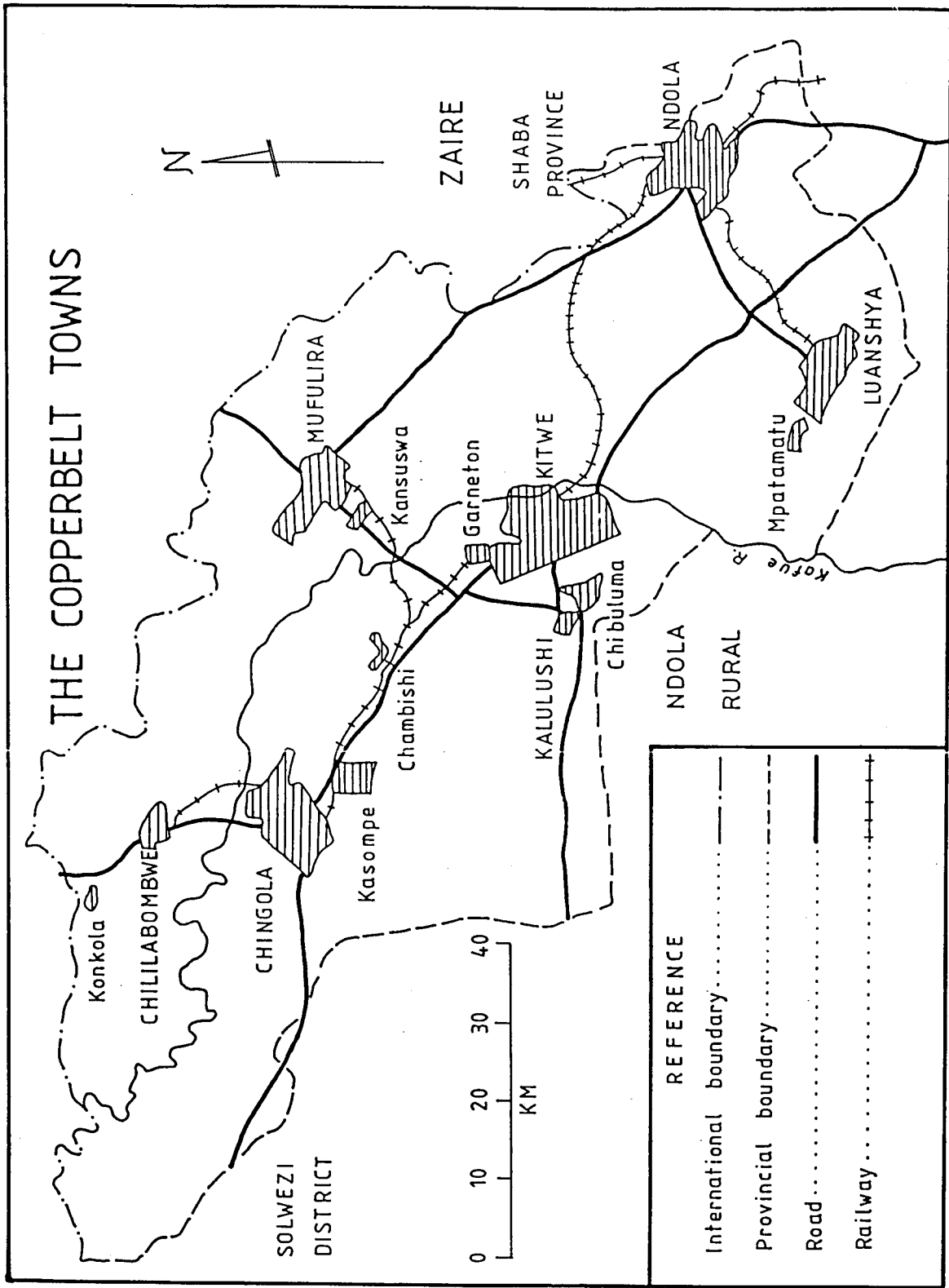
Fig. 1.1 The Copperbelt Towns
Source: The Copperbelt Development Plan (1965)

two major reasons. The first reason is that the Copperbelt has a
relatively high concentration of urbanization in a small unit of
space. The seven towns and their satellite settlements had a
total population of 1,146,185 in 1981 in an area of approximately
7760km² (Central Statistical Office, 1981:9). The other related
reason is that with the increased urbanization as the towns grew,
there was simultaneous growth of secondary and tertiary industries.
These industries and the large concentration of workers with their
families resulted in the development of over sixty-one well
pronounced shopping centres where buying and selling of different
goods and services are conducted today (Table 1.1).

The term "shopping centre" is used to refer to two types of places
found within each town where retail trades are located. These
places are the CBDs and their outlying clusters of shops. The spatial
distribution of such clusters of shops is dependent on the type
of residential area where they are located. The shopping centres
rather than the seven towns are the focus of the study and it is
the shopping centres that are going to be integrated into a
hierarchical single shopping system for the Copperbelt. It is
envisaged that such a hierarchy will reveal the structure of
retailing as is conducted at each shopping centre within individual
towns and between towns as arranged from the highest order to
the lowest order of centres.

TABLE 1.1   Population, number of shopping centres in each town

Town	Population (1980)	Number of shopping centres	(Approx) Population per shopping centre
Kitwe	314,794	17	18,517
Ndola	282,439	15	18,829
Mufulira	149,778	7	21,397
Chingola	145,869	7	20,838
Luanshya	132,164	8	16,521
Chililabombwe	61,928	5	12,386
Kalulushi	59,213	2	29,607
Total	1,146,185	61	

Source: Central Statistical Office (1981:9) and field work

CENTRAL PLACE THEORY AND ITS APPLICATION

Theoretical Foundations

Central place theory is a deductive theory that is concerned with the explanation of economically optimum location, size and number of tertiary activities and is not a general theory of location of towns (Berry, 1968:16; van den Berg, 1981:1). The theory was developed in Southern Germany by Walter Christaller in the 1930s. In his pioneer work, Christaller (1933) sought to find and explain regularities in number, size and distribution of towns. In order to apply this theory he made basic assumptions that relaxed the real spacing, relative sizes and functional relationships of settlements in his study area (Abiodun, 1967:348).

The basic assumptions made in this theory are as follows:

1. that the region where the theory is being applied is an isotropic plain or a plain that is not bounded by mountains and rivers so that accessibility to all places on the plain is same;

2. all parts of the plain are served by some shopping centre;

3. purchasing power and demand for goods and services are evenly distributed;

4. in making purchase or deriving services people minimize their movements;

5. no excess profits may be made by any centre (Haggett, 1983:369-370).

The basic ideas that are implied in the theory may be summarized as follows:

1. settlements serve their areas as trade and service centres. The areas so served could be illustrated by circles with central places in the middle as shown in Figure 2.1. Showing areas served by a central place by means of a circle is just one possible way, there are other less preferred geometrical figures that could be used. The circles, however, do not pack together. They show no overlap and some areas seem not to be covered by the circles and are not served by any central place. In order to include them some overlap is allowed. This overlap problem could, however, be eliminated by constructing hexagons spreading them over the service areas as in Figure 2.2 and 2.3 (Haggett, 1983:370). This becomes theoretically possible because while businesses will compete for consumers within the areas of the overlap, consumers' choice will lead to hexagonal market areas. This is so because consumers tend to shop at the nearest central place (Berry, 1967:62);

2. since central places serve their areas (these may be villages) as trade and service centres the most efficient location of the villages would be at the points of the hexagon. This means that each village would be equidistant from three central places as in Figure 2.4. This arrangement of centres and their tributary areas is referred to as the market principle or K=3 principle;

3. traffic flows are made as straight as possible, the most efficient location of the villages would be on the route patterns that run between two market towns. This optimizes traffic and is known as the traffic principle or K=4 principle and is shown in Figure 2.5;

4. for administrative purposes, it is necessary that all six villages related to each hexagon are tributary to only one market town. This requires that all six villages be located inside each hexagon.

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Fig. 2.1 Settlements and their respective service areas
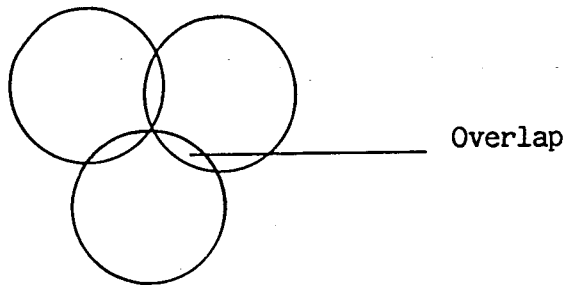
Fig. 2.2 Overlap all areas be served by at least one centre
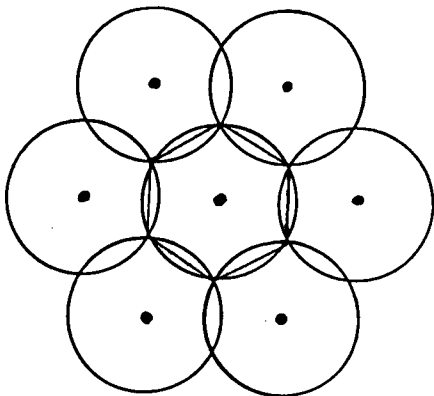
Fig. 2.3 Hexagons eliminate overlap problem
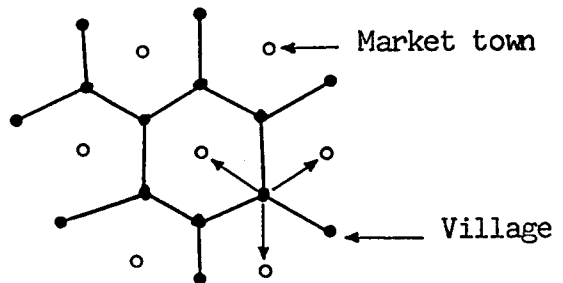
Fig. 2.4 Each village is equidistant from three market towns

This is the K=7 principle or the administrative principle and
is illustrated in Figure 2.6 (Haggett, 1983:371).

Lösch's Contribution

This theory set a precedence for further studies and
extensions that cover other aspects that were not originally
envisaged in Christaller's original works.

August Lösch (1954) contributed to the development of the central
place theory by providing a geometrical principle of fitting in
higher order centres and the inclusion of all sectors of the economy.
He used an implicit model with a notion of K=3 or the market
principle; K=4 or the transportation principle and K=7 or the
administrative principle. By applying a technique of rotating an over
layer over the same basic hexagonal units of Christaller, a far less
rigid hierarchy was produced. This showed an almost continuous sequence
of centres rather than distinct tiers of Christaller (Haggett, 1983:375-376).

Generalization of the theory

Berry and Garrison (1958) introduced into the theory the concepts of
threshold and range plus conditions of entry. These concepts brought
the theory nearer to reality than had previously been the case. They
proposed that there has to be a population threshold to support a
service or a good offered at a central place. The threshold population
is, therefore, the minimum population required to sustain any service
or good. It is also defined as the minimum demand to make such an
offering viable assuming that there is uniform distribution of income,
consumption and taste. The range of a good or service is the maximum
distance people are willing to travel to purchase a good or derive a
service at a central place (Carter, 1981:61). The two concepts are
illustrated in Figure 2.7.

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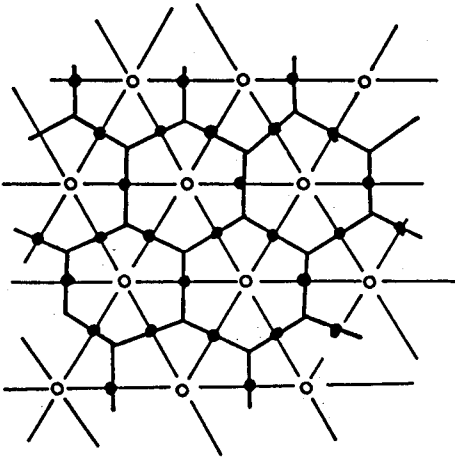
Fig. 2.5 The Transportation Principle
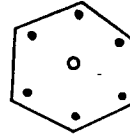
Fig. 2.6 The Administrative
Principle
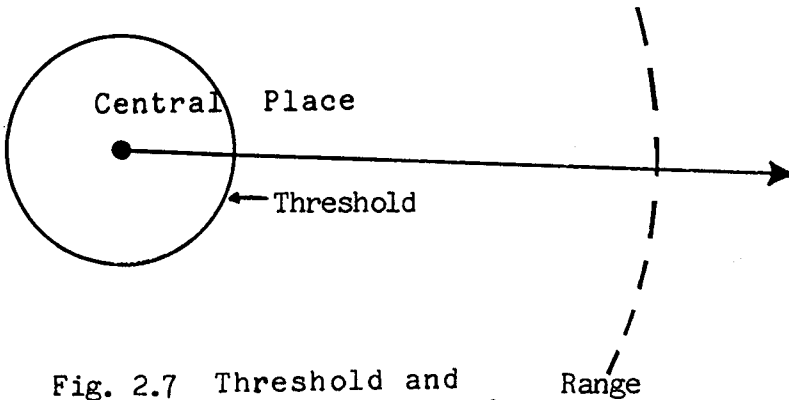
Fig. 2.7   Threshold and
range of a good

Source: Haggett, P. (1983) p. 371 with modifications, Fig. 2.5
         and 2.6
         Carter, A. (1981) p. 61, Fig. 2.7

were based on the services each order provided in that study.
Lambooy (1969:154) carried out an analysis of the city in relation
to the concept of city and city regions. He compared the inter-
relationship of cities and their respective metropolitan areas
of the Netherlands with those of the U.S.A. and Western Europe.
This was done by reviewing the application of the concept of
hierarchy and complementary areas of shopping centres to these
cities. The results showed differentiation of centres into
different levels which were of hierarchical nature. There are
studies based on regional approach which have been conducted
in different countries which are not reviewed in this day.

Intra-urban studies

There are other studies that try to explain the hierarchies of
shopping and service centres within cities. Carol (1960:419-438)
departing from the external or regional approach sought to find
out the functional structure of business centres of a city using
the concepts of central place theory. The results showed a ranking
of the centres in a hierarchy of four main classes. These were
ranked as: (1) CBD or Central Business District, offering high
order goods and services serving the whole city, (2) Regional
Business District, offering middle order goods, (3) Neighbourhood
Business District, offering low order goods, and (4) Local
Business District, a cluster of a few round-the-corner shops,
offering lowest order goods and services.

There are comparative studies on retail centres that reveal
particular noteworthy function structures that do not necessarily
yield a hoerarchical form. The work by Proudfoot (1937:428) shows
a classification of shopping centres within the cities of the
United States into five groups. These were based on the empirica

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Application in developed countries - regional studies

The theory has been applied widely in Western Europe and North America,

particularly in the United States. These applications have been

either regionally oriented in approach or have taken an intra-urban

approach. In the regional approach, Berry, Barnum and Tennant

(1962:65-106) studied nine countries of South-west Iowa in the

USA, for which they investigated the relationship between retail

trade, location and consumer behaviour. In this study, twenty

central places were sampled and use was also made of maps of

delivery lists of supplies to seventy-six selected establishments

located in the twenty sampled areas. Interviews were also

conducted among one hundred and fifty rural families and one

hundred and seventy families residing in the central places.

The results can be summarized as follows:

i.   that a pattern of increase trade with increased size of a

        centre emerges.

ii.   travel and shopping behaviour responds favourably to size,

        shape and arrangement of trade areas.

The conclusion of this study was that spatial aspects of both

retail and service businesses lead to a hierarchy in consumer

shopping and travel behaviour for goods and services.

In an earlier study, Carruthers (1957:371;384) made an attempt

at classifying service centres in England and Wales. He used the

amount and type of traffic flow into a town as an index of

assessing the importance and extent of a service centre in

relation to its hinterland. Carruthers was able to find parallels

of ordering of centres to that of the central place theory that

observations of the city structure and were classified as
follows:

(1) Central Business District, (2) The Outlying Business District,
(3) The Principal Thoroughfare, (4) The Neighbourhood Business
Street and (5) the Isolated Store Cluster.

This classification scheme led to comparative studies elsewhere.
Two such studies outside the United States were conducted in
New Zealand and Australia. Clark (1967:23,32-33) analysed the
metropolitan area of Christchurch. His study was mostly based
on consumer spatial behaviour that was analysed on the basis of
distances consumers travelled and goods and services a centre
offered. He was able to identify a five-level structure of
business centres in his study area. In metropolitan Melbourne,
Johnston (1966:19;20;30) was able to relate the range of centres
to variations in residential density, socio-economic status of
population and the age of development of an area. This study
was able to confirm the absence of the ideal nesting hierarchical
structure mostly upheld by western scholars. He, however, indicated
in his conclusion the possibility of the existence of a different
functional classification similar to that of Proudfoot.

Empirical studies in tropical Africa

There are three themes that are important to point out when applying
the central place theory to tropical and sub-tropical Africa.
Firstly, there is no evidence of organically evolved and functionally
differentiated settlements in most parts of this region. This has
led to differences in the spatial organization of economic
activities between tropical Africa and developed countries.
Secondly, the region lacks spatial and historical continuity in

settlement and economic landscape. This was because pre-colonial

spatial organization of most African societies was based on shifting

and pastoral agriculture and lacked clear-cut division of labour

as populations lived at subsistence level. Also disadvantageous

to development of permanent settlements was that populations lived

in rudimentary defined areas. As a result of all these, it was not

possible to develop an entrenched system of central places as was

the case in developed countries. Thirdly, the social and material

infrastructure is not fully developed as is the case in Western and

other developed countries. As a result of this, there is a generally

inefficient organization and utilization of space (Henkel, 1979:1-2).

There are, however, some societies that developed periodic markets

in the pre-colonial period. These were found in West Africa and in

East Africa to some extent. In West Africa, for instance, the well

organized Ashanti, Dahomey and Yoruba Kingdoms were able to develop

markets while in East Africa the Kikuyu and Coastal Swahili were also

able to develop markets. These, however, did not develop fully into

market towns as could be expected and the reasons for failure to do

so range from low population density to lack of well-developed and

highly organized political units (Hodder, 1965:103). Despite the

themes outlined above, attempts have been made to ascertain the

possibility of applying the central place theory or its implications

in both tropical and sub-tropical Africa. This has been possible

because the economic base and social landscapes of African countries

have changed during and after the colonial period. The colonial

interlude provided rudimental central places that were imposed on

the pre-colonial cultural and economic landscape. These have been

sustained and continued to develop in the post independence and

contemporary periods.

Regional studies

Some empirical studies in tropical Africa have focused on rural
settlements, taking regional approach in attempting to establish
systems of central places. One early study was carried out by Grove
and Huszar (1964:5-6,84). They tried to establish the relative
importance of service centres in Ghana at that time and also their
expected importance in future. They were able to identify hierarchical
tendencies for towns to cluster around definite levels of centrality.
These hierarchies of service centres also showed regularities that
offered economic advantages. Another study in West Africa worth
mentioning is that carried out by Abiodun (1967:348,349). This study
investigated settlements in South-west Nigeria using multivariate
techniques to arrive at her conclusion. In her study, she found five
distinct levels of settlements. An analysis of the distinct levels
led to the conclusion that settlements could be sorted out into
distinct groups or grades by the way in which they serve the
surrounding area. van den Berg (1978), studied the towns and rural
settlements of Southern Province of Zambia. In his attempt to rank
these towns it was found out that the Rank Size Rule could not hold
for that region. However, although the towns were not primarily
market centres it was found out that the region yielded a functionally
defined hierarchy of towns and settlements. Another important study
using regional approach was conducted by Henkel (1979) in Western Kenya.
In his comparative regional study, one hundred and ninenteen places
were investigated on the basis of goods and services offered in
three major spatial economic types as manifested in Western Kenya.

From the study, it was evident that the theory, even in tropical
Africa offers a better method of explaining the location of supply
centres which could be integrated into a system of central places.
It suggested further a three level hierarchy of central places for
spatial planning that could be adopted in future in Western Kenya
(Henkel,1979:4;88;247). The other important study is the one done
by van den Berg in the Northern Province of Zambia. The study was
based on the town of Mpika and its hinterland. This town is an
administrative district centre with central place services serving
as foundations for a central place system for the hinterland. The
study also offers the contributions that central place theory could
have for regional planning in rural areas of Zambia and Africa
(van den Berg, 1981:30-33;58).

Intra-urban studies in Africa

This group of studies falls into two categories; those that look at
shopping centres in towns and those that focus on "open air markets"
found in towns. In the first category, Beavon (1977:2-3,72-74)
studied the retail structure of the white suburbs of Cape Town.
Although this study is not a full presentation of the retail
structure of Cape Town, Beavon attempts to develop an alternative model
for the intra-urban central place system based on taxonomic multi-
property classification of centres. In Nairobi, Kimani (1981:160;170;193)
was able to examine and identify the location and functional structure
of shopping centres of Nairobi. He used existing western based
theories in his study and was able to identify a five level hierarchy
of shopping centres as those of western cities but were on a smaller
scale. Another study was conducted in Lagos by Mabogunje (1964:304-323)

who investigated the retail structure of Lagos including retail
outlets located at strategic centres in residential areas. The
study confirmed the existence of similarities to and departures
from some locational and functional aspects of African towns when
compared to western towns.

The other group of studies have focused on analysis of "urban" or
open air markets as part of urban retailing system that specializes
in provision of foodstuffs to ultimate urban consumers. Three such
studies have been conducted in Mombasa, Kampala and the Copperbelt
of Zambia. In Mombasa, Taylor (1975:175-184) studied the wholesaling
and retailing of foodstuffs in market places of Mombasa. Although
the study claims to be a larger study of central places in the
Coastal Province of Kenya, no attempt was made at categorizing market
centres into hierarchically determined groups. The study by Temple
(1969:346-359) investigated the markets of Greater Kampala by looking
at food supplies to urban Africans in terms of the origins of food,
transportation and structure of this trade. Although the study
included thirty-six markets, no analytical view of the functional
structure in terms of hierarchies was offered. The last study was
done by Miracle (1965) on African markets on the Copperbelt of
Zambia. This is a descriptive study concerned with open air markets.
It does not include other retailing businesses that are found near
the markets and no attempt has been made at ranking these markets.
These three studies, therefore, do not offer useful information on
the business centres of the respective towns because they concentrate
on only one aspect of retailing found at different business centres.

Critique to the theory

Central place theory has been critized on basically four problems
that arise when applied to the real world situation.

These problems are outlined as follows:

1. The central place theory is not a general theory of location
    of towns but rather a theory of location of tertiary
    activities. This means that when applying it to industry
    based towns, supplementary theories have to be sought.

2. The pattern of hexagons have nowhere been found neatly packed
    together and regularities have just been tentatively
    demonstrated. This means that hexagons do not illustrate the
    reality of marketing but can distort reality when applied to
    spatially diverse cultural economic areas.

3. Studies of perception of use of service centres have confirmed
    that consumers do not behave as predicted in the theory.

4. Factors other than economic, for instance, historical reasons
    are not incorporated in the theory despite their continued
    relevance to human settlements.

Other activities performed at the central places that are not part
of economic tertiary or service activities are also not incorporated
thus rendering the theory restrictive (Carter, 1982:138).

Summary

The review of literature has been concerned with the use of the
central place theory in both inter and intra-urban studies in

different parts of the world. In these studies similarities
in the findings between the two groups of studies has established
the existence of functionally determined hierarchies of business
centres. These hierarchies of business centres have demonstrated
that they function in the same way for urban populations as they
do for rural populations. The theory has successfully been applied
in different countries of divergent levels of economic development
and marked cultural differences. For instance, it has been applied
in the USSR, Eastern Europe, Japan and India apart from the
western countries (Berry and Pred, 1961:6-7). In Africa, studies
have also demonstrated the usefulness of the central place theory
in explaining the location, function and distribution of business
centres to both urban and rural populations. It can be concluded,
therefore, that this theory has a universal application and
should not be confined to developed countries but be extended
to developing countries as well.

CHAPTER THREE

THE STUDY AREA

Delimitation

The Copperbelt as an administrative region covers an area of approximately 12,800km². A distinction has to be made between this administrative region and what is termed as "Copperbelt proper." The latter refers to a strip of land within this region that covers approximately an area of about 7,760km². This excludes Ndola Rural, an area covering some 5,040km². Throughout this study, the term Copperbelt will be used to refer to this strip of land excluding Ndola Rural (Figure 1.1, P.3).

Physical structure

The region is not marked by strong physical contrasts. It lies on a gently sloping peneplain ranging from 1,370m in the northeast to 1,330m above sea level in the middle south. The peneplain is broken by low ranges of granite or quartzite hills and infrequent kopjes. The landscape is also characterized by termite mounds which have been overgrown by vegetation. Vegetation is varied in its distribution as it adapts to differences in topography, soil and availability of moisture. Average rainfall is 1,250mm and seasonal in occurence while temperatures range from a maximum of 20°C in October to a minimum of 13°C in June/ July. The winds are light, the prevailing ones are the easterly to southeasterly. The Kafue river served by several large tributaries form the major drainage channel for the Copperbelt (Fanshawe, 1974:33).

Demographic Situation

The seven towns of the Copperbelt taken together with their out-

lying suburbs account for 70% of the population of all large

the
urban areas in Zambia according to/1980 census of population and

housing. This makes it the most urbanized province in the country.

A large urban area defined by population criteria is an area with

a population of over 60,000 inhabitants. In Zambia, therefore, the

other towns that fall in the category of urban area are Lusaka,

Kabwe and Livingstone. The 1980 census of population and housing

shows that the Copperbelt Province has 1,146,185 (1,248,888 including

Ndola Rural) inhabitants. This is 20.2% (22% including Ndola Rural)

of the total national population estimated at six million. In

the previous census it accounted for 15.6% in 1963 and 20.1% in

1969 of the national population respectively. This is an increase

of 6.4% in seventeen years. Table 3.1 gives a summary of the

percentage distribution of population by province. The national

growth rate is 3.1%, but 4.0% for the Copperbelt or 0.9% higher

growth
than the national average/ It has the highest population density

in the country having 148 persons per km². The sex ratio (number

of males per 1,000 females) was 1,089 and 1,060 for 1969 and 1980

respectively. The surplus males in relation to females can be

attributed to sex selective migration of the males to the

Copperbelt from other areas (Central Statistical Office, 1981:1-2,7).

Brief history of the study area

The socio-economic history of the Copperbelt is closely

connected with the development of the copper mining industry in

TABLE 3.1   PERCENTAGE DISTRIBUTION OF POPULATION
IN PROVINCES, 1963, 1969 AND 1980

Province	1980 Census	1969 Census	1963 Census
Central	9.0	8.9	8.9
Copperbelt	22.0	20.1	15.6
Eastern	11.6	12.6	13.7
Luapula	7.3	8.3	10.2
Lusaka	12.2	8.7	5.6
Northern	11.9	13.4	16.2
North-western	5.3	5.7	6.0
Southern	12.1	12.2	13.4
Western	8.6	10.1	10.4
Total	100.0	100.0	100.0

Source: Central Statistical Office (1981), 1980 Census of
of population and housing, preliminary report. (Lusaka).

particular and British colonization of Northern Rhodesia in general. Individual towns except Ndola began as a direct result of the discovery of copper ores worth mining at individual points near the Zambia-Zaire border during 1920s (Figure 1.1, P.3). The area, however, has a longer history of settlement and copper/mining by indigenous Africans, although written records to support this argument are hard to come by. There is some written evidence that mentions the existence of long distance trade in the 19th Century. Commodities of this trade were ivory, slaves and copper particularly mined at present-day Bwana Mkubwa (Roberts, 1976:73). There is further evidence of the existence of local trade based on barter and tribute in many parts of Zambia including the region under study. Like the rest of the country, however, there is no evidence of the existence of market towns or market (shopping) centres that developed naturally before the colonial period (Miracle, 1965:288). This has been attributed to low population density, lack of good natural means of communication and the predominance of subsistence agriculture (Fortman, 1971:190). The Copperbelt towns, therefore, developed as a result of mining operations by mining companies and colonial administrators who ruled the country.

The first towns

Bwana Mkubwa near Ndola was the first copper producing centre in the present-day Copperbelt. By 1903, prospectors had pegged a claim at Bwana Mkubwa but/became operational as an open cast mine in 1916. Another outcrop of copper had been discovered earlier in 1902 at Roan Antelope (Luanshya), but production took a long time to start. Prospecting for copper ores was the major activity

in the 1920s in the surrounding area. Several huge deposits
of copper sulphides were discovered around the headwaters of the
Kafue river. This was made possible because a new technology
in prospecting had been introduced in geological survey. In
the processing of ore, a new method called "floatation process"
was discovered in 1911. This process made mining copper sulphide
ores worthwhile. In the case of Roan Antelope Mine in Luanshya,
although ore outcrops were discovered as early as 1902, drilling
and mining started in 1926. Mining at Nkana shaft in Kitwe
started in the same year. In Mufulira, it started in 1933 and
Nchanga in Chingola in 1939. Other mines (Chibuluma in Kalulushi,
Chambishi and Chililabombwe) started much later (Epstein, 1981:2-4).

The development of these new mining enterprises and the budding
settlements, businesses and services in this area were also
affected greatly by the worldwide economic depression of the
early 1930s. Most mines except for Roan Antelope closed down
due to poor copper prices. This meant a reduction in the number
of employees and consequently a reduction in business and service
activities. The situation remained bleak until in 1936 when
prospects became brighter. Prosperity in the mining industry led
to migration to the Copperbelt by both foreigners and indigenous
Africans. This trend of migration reached its climax during the
second world war (Epstein, 1981:5).

The Case of Ndola

The city of Ndola requires special mention because it is not a
                    is near
mining town but/the oldest mine in the region. Ndola was

established in 1904 as a colonial administrative station. It

derives its name from a small stream called Ndola stream, a
tributary to Itawa stream. In 1909, Ndola became a railway
siding to the main line from Livingstone to Katanga. Its status
was raised to a railway station in 1914 and during the war, it
served as a depot for the British Army engaged against German
East Africa troops. The rise of mining towns in its hinterland
brought new opportunities for Ndola. Administration of the
newly established townships of Kitwe, Luanshya and Mufulira, for
instance, was in the hands of the District Commissioner at Ndola.
In 1935 due to disturbances in these townships, however, each
township was given a separate administrative district. Despite
this development, Ndola remained the headquarters for the
Western Province as the area was to be called. On the economic
front, it was linked by rail ,/Lubumbashi in the north, the
Copperbelt in the hinterland and the south. It subsequently
developed as a depot for various road transport companies, garages,
motor repairs and as well as trade and service centres
(Epstein, 1981:11-15). Today, Ndola is an administrative,
commercial and distributive centre.

Cultural landscape and patterns of residential areas

The cultural landscape of the Copperbelt towns still shows the
influence of mining and colonial interests as manifested in the
land use and type of buildings. Each town has   low density high
cost residential area.   These are residential areas which are
found in close proximity to the CBD and are former residential
areas for the European miners, colonial civil servants and other
categories of European workers. The houses are mostly detached

bunglows occupying a relatively large plot of land. Today, the
area is the home of high income families. These residential
areas are locally known as "kumayadi" and are either owned by the
local council, the mines or private individuals and companies.
There are also medium density, medium cost residential areas.
These are areas with housing units whose rent and size of plot are
in between the low density units and the high density units. They
are either post-independence development or an extenstion to those
that existed before. The next group of residential areas are **the** low
cost, high density residential areas. These have housing units
closely packed together with very small plots of land on which
houses are built. In case of mine townships, they are located very
close to mine plant areas. There are also the site and service
areas which were an effort to discourage squatter settlements by
promoting acceptable self built housing units. These are more
comparable to medium cost housing units in size and structure.
The squatter settlements with all their problems and unpopularity
complete the picture of the major residential areas in these
towns, but there are also farmstead and scattered villages in the
periphery and between these towns.

CHAPTER FOUR

DATA COLLECTION AND ANALYSIS

Methodology of data collection

Fieldwork was conducted on the Copperbelt Province between
October and December, 1983. Before commencement of fieldwork,
lists of commercial goods and services shown in major categories
of business outlets were compiled. The goods and services
available at all shopping centres are shown in Table 4.1. A
list of sixty-one shopping centres was drawn, this was made by
extracting names of the centres from the street maps of each of
the Copperbelt towns. To avoid leaving out some shopping centres
that were not reflected on the street maps, each local authority
was contacted as a sure way of verifying the actual numbers of
shopping centres in their jurisdiction. In this way a rough idea
of the amount of work expected to be done in each town was
assessed. The extracted shopping centres are shown in Table 4.2.

Each town was visited in turn. In each town, all shopping centres
were enumerated. This meant visiting each centre and counting types
of shops and service outlets available that sold goods and services
directly to ultimate consumers. In other words, the list in
Table 4.1 was used against each centre in order to determine the
availability or non-availability of individual category of goods
and services. Those categories that were available were counted,
listed down and total found for that centre accordingly. Public
services like libraries and clinics were excluded because patrons

TABLE 4.1   COMMERCIAL GOODS AND SERVICE OUTLETS (MAJOR CATEGORY)

Commercial Services	Commercial Goods (Shops)	
Banks	Wholesale	Stationery Store/ Office Equipment
Insurance Brokers	Departmental Shop	
Postal Services	General Shop (Mixed)	Hardware Shop (General)
Consultancy Agencies	Men Cloth Shop	
Advertising Agencies	Women Cloth Shop	Neon/General Signs
Travel Agencies	Children Cloth Shop	Auction Floors
Private/Commercial School	Foot Wear	Cycle Supplies
Surgery (General)	Grocery & Delicatessen	Farm Equipment
Optical Shop	Butchery	Car Spares
Dental Shop	Open Air Market	Car Sales
Laboratory	Restaurant	Curio Market
Barber/Hair Saloon	Hotel	Fuel Station
Dry Cleaning/Laundry	Bar	Others (Specify)
Funeral Service Parlour	Bottle Store	
Photocopying, Printing, Graphic, Photo-studio	Jewellery/Gems Trophies	
Cinema/Recreation Hall	Chemist/Pharmacy	
Hire Services (Domestic Rentals - Car Hire)		
Repair Services: Watch, Television, etc.	Sportsgoods	
Tailoring	Furniture Store	

Source: Based on field work

TABLE 4.2   LIST OF SHOPPING CENTRES INCLUDED IN THE STUDY

Location	Shopping Centre	Location	Shopping Centre
	Ndola CBD		Mufulira CBD
	Kansenshi		Kwacha
	Chifubu		Butondo
	Main Masala	MUFULIRA	Topshops
	Mine Masala		Kamuchanga
	Lubuto		Kansunswa
	Twapia A		Zambia
NDOLA	Twapia B		
	Kabushi		
	Sams		Chingola CBD
	Northrise		Mwaiseni
	Kawama		Chiwempala
	Sinia	CHINGOLA	Chikola
	Pamodzi		Nchanga
	Mutamba		Kabundi
			Maiteneke
	Kitwe CBD		
	Parklands		Luanshya CBD
	Buchi		Luanshya 2nd Class
	Chimwemwe		Mikomfwa
	Chambishi		Mpatamatu
	Chamboli	LUANSHYA	Alemu
	Luangwa		Roan
	Buyantanshi		Kawama
	Mindolo		Kalala
KITWE	Zambia		
	Bulangililo		
	Wusakili		Chililabombwe CBD
	Kwacha A		Chililabombwe 2nd Class
	Kwacha B	CHILILABOMBWE	Lubengele
	Garneton		Chililabombwe Main Static
	Nkana East		Chililabombwe 3rd Class
	Ndeke		
		KALULUSHI	Kalulushi CBD
			Kalulushi 2nd Class

Source: Based on field work

were not required to pay money for such services. Because of
difficulties involved in enumerating every single shop or service
outlet at whatever location it was found in any given town,
preference was given only to those shops and service outlets that
formed a cluster of businesses. 'Isolated shops or service outlets
were, therefore, left out. Such a cluster of businesses could
include, for instance, grocery stores, a butchery, a bar, a
tailoring shop and open air market. This collection of such
business types constituted a "shopping centre." The size, quality
and quantity of goods and services offered differed from one
centre to another. The CBD of each town was also taken as a
single shopping centre. At each CBD, enumeration was done by
counting and taking note of every business type that was found
on the ground floors and back alleys, those businesses that
occupied upper floors of high rise buildings were also included
because they revealed their presence by advertisements made at
ground floor levels for the purpose of attracting potential
customers to their businesses. At each town centre, there are
two distinct shopping areas inherinted from the colonial past.
There is the CBD proper (the former first class shopping area)
and the old second class shopping area. In some towns like Ndola,
Mufulira and to some extent Kitwe, these two areas are fused
together and were considered as a single shopping area. In the rest
of the towns (Chililabombwe, Chingola, Kalulushi and Luanshya), the
two former classes of shopping areas are physically separated by a
few kilometres distance. These, therefore, were considered as
separate shopping areas. The towns of Kitwe, Ndola, Mufulira and
Chingola have light industrial areas fusing with parts of former

second class shopping areas. In each individual town where this situation arose, discretion was used in demarcating the end of the shopping area and the beginning of the light industrial area. Outside the CBDs, outlying shopping centres posed no particular problem worth mentioning. Four shopping centres were not

visited. These are Bwana Mkubwa near Ndola, Fisenge near Luanshya, Chibuluma near Kalulushi and Konkola near Chililabombwe. This was an oversight rather than deliberate. Data that were collected at the end of fieldwork consisted of numbers of different categories of shops and service outlets available at each of the sixty-one shopping centres.

Analysis of data

In order to determine hierarchical tendencies among the sixty-one shopping centres, data was summarized thus making it easier to handle and interpret when presented graphically. Classification of centres was done by computing functional complexity scores for every centre that was included in the study. The complexity scores were later used in computing a single linkage tree of distance grouping that linked all the centres together into a single tree system. The tree system gave a visual presentation of the functional relationship shown in hierarchies of the shopping areas of the Copperbelt that could be easily analysed. Further, the complexity scores were also used in plotting a graph on a semi-logarithmic paper. This could show how the shopping centres are related to each other. By analysing the breaks in the slope, groups of centres that are close together could be picked out and the number of such groups established. Once the

groups are established, hierarchical tendencies could be determined by how the groups relate to each other in progression on the graph.

The functional complexity scores were computed as follows:

(a) Add up all businesses in a given category for the whole Copperbelt, e.g. general cloth shop category has one hundred and eighty retail outlets or shops. This is done for all other categories tabulated in Table 4.3 (column 1).

(b) Divide the total (absolute) figure for each category into 1, e.g. $\frac{1}{180}$ = 0.006, in order to obtain a score for the Copperbelt as shown in Table 4.3 (column 2). This gives the value of a single shop in relation to all other shops in the same category.

(c) For each centre , in turn and for each category of business sum up the shops in a given category to find out the total for that category in the respective centre. Multiply the total number found by the total Copperbelt score of that category, e.g. Mwaiseni shopping centre in Chingola has seven outlets of general cloth shops, so the score at this centre on general cloth shops in relation to the rest of the general cloth shops on the Copperbelt is 7.0 x 0.006 = 0.039.

(d) Add up the final score of each category for each centre as tabulated in Table 4.4.

The information given above could also be put into a mathematical formula in the following way:

(i) Take a business (b) in category k, b_k (k=1 to n) where K = business category

TABLE 4.3 ABSOLUTE AND RELATIVE FREQUENCIES OF RETAIL OUTLETS ON THE COPPERBELT

Category	Abs. freq. (C/B total)1	Relative freq. 2	Category	Abs. freq. (C/B total)1	Relative freq. 2
Banks	39	0.026	Hotel	11	0.091
Insurance	18	0.056	Bar	84	0.012
Post Service	29	0.035	Bottlestore	30	0.033
Consultant	37	0.027	Jewellery	17	0.059
Advertisements	5	0.200	Chemist	20	0.050
Travel	46	0.022	Flower Shop	1	1.000
School (private)	17	0.059	Record Shop	18	0.056
Surgery	28	0.036	Bookshop	18	0.056
Optics	2	0.500	Sports Equipment	3	0.333
Dental	2	0.500	Furniture	32	0.031
Laboratory	8	0.125	Stationery	22	0.046
Funeral Parlour	1	1.000	Hardware	27	0.037
Barber/Saloon	52	0.019	Electric Hardware	21	0.048
Dry Cleaner	27	0.037	General Signs	6	0.167
Photo/Point/Copy	44	0.023	Auctions	5	0.200
Cinema	4	0.250	Cycle Supply	6	0.167
Hire Services	10	0.100	Farm Equipment Shop	5	0.200
Repair Services	45	0.022	Car Spares	14	0.072
Tailoring	57	0.018	Car Sales	9	0.111
Department Store	21	0.048	Fuel Station	35	0.029
Wholesaling	44	0.023	Curio Market	1	1.000
General Store	63	0.016			
Cloth Shop (General)	180	0.006			
Men's Cloth Shop	16	0.063			
Women's Cloth Shop	26	0.039			
Children's Cloth Shop	8	0.125			
Footwear	14	0.071			
Grocery Store	455	0.002			
Butchery	96	0.010			
Open Air Markets*	56	0.018			
Restaurant	59	0.017			

* Markets that formed part of a cluster when taken together with retailing shops

Source: Based on field work

b = business

n = number of categories

Sum all shops in the category for Copperbelt = εb_k

Divide this into 1 = $\dfrac{1}{b_k}$ This gives specific importance score of a business category.

(ii) Take a centre = j

Sum all shops in a category = $\varepsilon b_k(j)$

Multiply importance score by number of shops for this

category = $\dfrac{1}{b_k} (b_k(j))$

(iii) Functional index for each centre is sum of all centre

specific importance score for each category k of business

$$F1_j = \overset{n}{\underset{k=1}{\varepsilon}} \left[\dfrac{1}{b_k} (b_k(j)) \right]$$

The information obtained is later used in single linkage analysis (Abler, Adams and Gould, 1971:158; Yeates, 1974:96-97). The rationale behind using functional complexity scores in the linkage analysis is that it makes data easier to handle numerically in the absence of computer based programmes to the researcher. It is, however, a useful method because although it tends to depict centrality as a one dimensional phenomenon it provides a comprehensive summary of data by reducing it to manageable proportions. It has been mentioned by Henkel (1979) in his study of Western Kenya though it was not applied in that study. However, Karl Vorlaufer (1967) used it in his study on functional systems of Greater Kampala. One widely used method is factor analysis (Yeates, 1974:231). This is so because with factor analysis one is able to differentiate between several characteristics of a place and,

TABLE 4.4 FUNCTIONAL COMPLEXITY SCORES FOR ALL SHOPPING CENTRES SURVEYED IN THE STUDY AREA

Shopping Centre	Functional Complexity	Shopping Centre	Functional Complexity
Ndola CBD	16.822	Twapia A	0.090
Kitwe CBD	14.411	Buyantanshi	0.089
Mufulira CBD	4.234	Mindolo	0.085
Chingola CBD	3.515	Nchanga	0.085
Luanshya CBD	2.859	Sams	0.082
Chililabombwe CBD	1.557	Butondo	0.082
Luanshya 2nd Class	1.167	Roan	0.079
Kansenshi	0.661	Zambia (Kitwe)	0.079
Chifubu	0.582	Northrise	0.075
Mwaiseni	0.534	Kabundi	0.062
Chililabombwe 2nd Class	0.410	Lubengele	0.057
Mikomfwa	0.367	Bulangililo	0.054
Kwacha (Mufulira)	0.314	Mine Masala	0.054
Parklands	0.314	Nkana East	0.053
Buchi	0.302	Kawama (Ndola)	0.052
Chiwempala	0.295	Wusakili	0.051
Chimwemwe	0.272	Kwacha B (Kitwe)	0.046
Main Masala	0.262	Kwacha A (Kitwe)	0.042
Top Shops	0.259	Maiteneke	0.041
Chambishi	0.238	Kabushi	0.041
Kamuchanga	0.236	Chililabombwe 3rd Class	0.041
Mpatamatu	0.218	Sinia	0.040
Kalulushi 2nd Class	0.216	Chililabombwe (Main Station)	0.038
Kalulushi CBD	0.190	Pamodzi	0.036
Chamboli	0.186	Kalala	0.031
Alemu	0.181	Zambia	0.030
Lubuto	0.176	Mutamba	0.029
Luangwa	0.163	Garneton	0.023
Kansunswa	0.159	Ndeke	0.020
Chikola	0.141	Kawama (Luanshya)	0.014
Twapia B	0.091		

Source: Based on field work

therefore, with this method centrality is not viewed as one dimensional as it is computed with several dimensions of characteristics of a place (Henkel, 1979:88-89). Using both methods one is able to compute a linkage tree of distance grouping by linking centres that are close together in a stepwise sequence (Abler; Adams and Gould, 1971:158). Construction of a linkage tree is a stepwise classification of data that is based on picking out and linking together neighbouring items or variables in data that show differences. The rationale is to put clusters of data into one group that would be easily interpreted and analysed. Construction is done by looking at differences shown in the data that is ranked from the lowest to the highest array of variables. The smallest differences are picked and linked together first, then the second smallest differences are picked and linked together, the process of picking and linking the next differences continues until all variables are linked together forming clusters. The next major step is to link together groups or clusters that show the smallest differences between them. This is done for all clusters in turn until they are all linked together into one group called a linkage tree of distance grouping. When all centres are linked together the resultant linkage tree is a graphical aid that enables one to identify groups or clusters of centres. Once a linkage tree is computed there is need to make decision on cutting it into graphically defined branches. The cutting points are based on the sequence of the differences that show as gaps in the tree system. A bigger gap indicates a more likely cutting point, this in actual fact reflects the differences between differences, thus indicating disimilarities between groups of variables and in this way different clusters (groups) of centres will be identified. Figure 4.1 is a single linkage tree of distance grouping for the
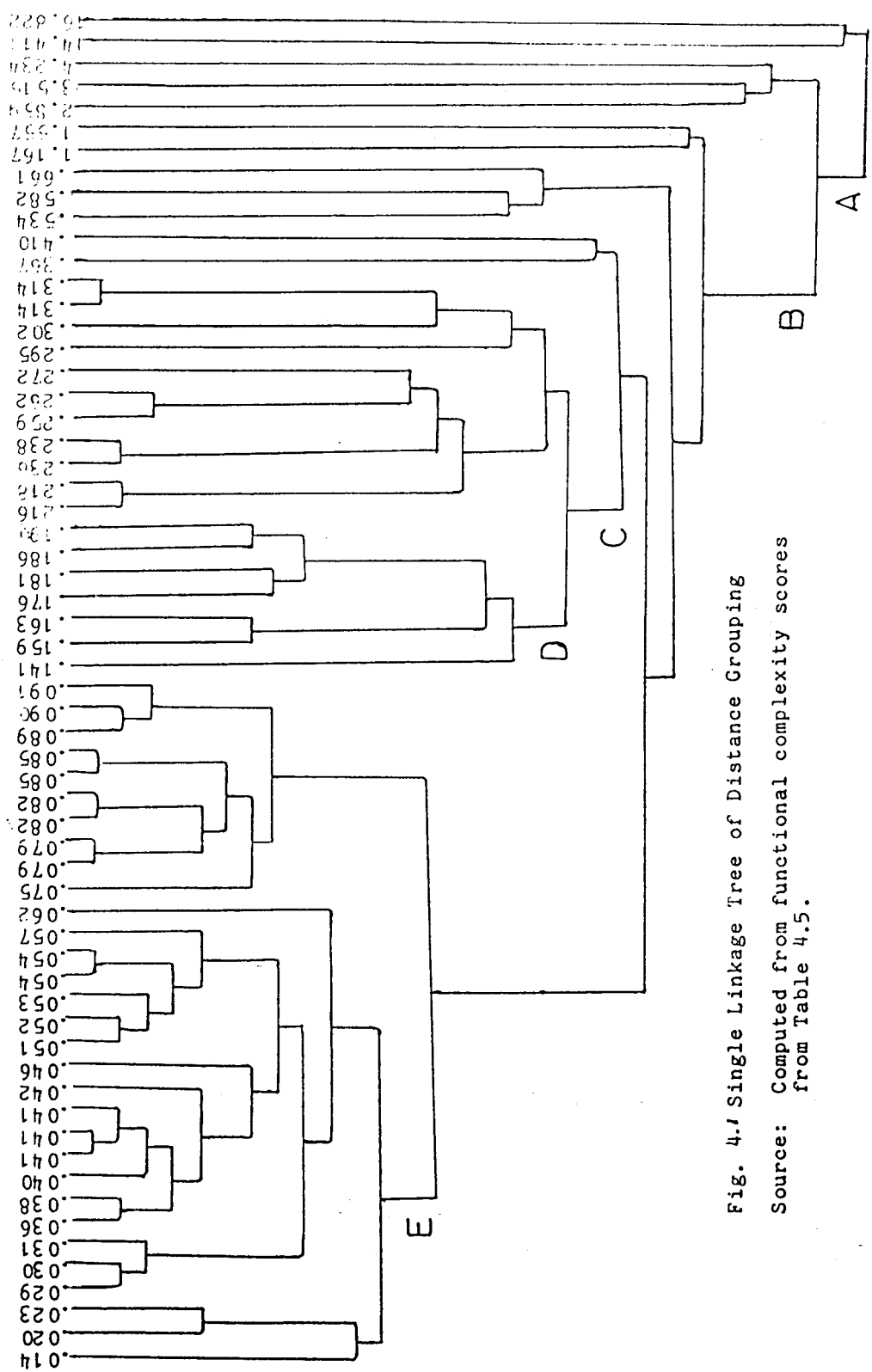
Fig. 4.1 Single Linkage Tree of Distance Grouping

Source: Computed from functional complexity scores from Table 4.5.

TABLE 4.5   DIFFERENCES BETWEEN SUCCESSIVE COMPLEXITY SCORES BASED
ON HIGHEST TO LOWEST ARRAY OF FUNCTIONAL COMPLEXITY SCORES

Place	Functional Complexity score	Difference	Place	Functional Complexity score	Difference
Ndola CBD	16.822	2.411	Twapia A	0.090	0.001
Kitwe CBD	14.411	10.177	Buyantanshi	0.089	0.005
Mufulira CBD	4.234	0.719	Mindolo	0.085	0.000
Chingola CBD	3.515	0.656	Nchanga	0.085	0.003
Luanshya CBD	2.859	1.302	Sams	0.082	0.000
Chililabombwe CBD	1.557	0.390	Butondo	0.082	0.003
Luanshya 2nd Class	1.167	0.506	Roan	0.079	0.000
Kansenshi	0.661	0.079	Zambia (Kitwe)	0.079	0.004
Chifubu	0.582	0.048	North Rise	0.075	0.004
Mwaiseni	0.534	0.124	Kabundi	0.062	0.005
Chililabombwe 2nd Class	0.410	0.043	Lubengele	0.057	0.008
Mikomfwa	0.367	0.053	Bulangililo	0.054	0.003
Kwacha (Mufulira)	0.314	0.000	Mine Masala	0.054	0.000
Parklands	0.314	0.012	Nkana East	0.053	0.001
Buchi	0.302	0.007	Kawama (Ndola)	0.052	0.001
Chiwempala	0.295	0.023	Wusakili	0.051	0.001
Chimwemwe	0.272	0.010	Kwacha B (Kitwe)	0.046	0.005
Main Masala	0.262	0.003	Kwacha A (Kitwe)	0.042	0.004
Top Shops	0.259	0.021	Maiteneke	0.041	0.000
Chambishi	0.238	0.002	Kabushi	0.041	0.000
Kamuchanga	0.236	0.018	Chililabombwe 3rd Class	0.041	0.000
Mpatamatu	0.218	0.002			
Kalulushi 2nd Class	0.216	0.026	Sinia	0.040	0.001
Kalulushi CBD	0.190	0.004	Chililabombwe Main Station	0.038	0.002
Chamboli	0.186	0.005			
Alemu	0.181	0.005	Pamodzi	0.036	0.002
Lubuto	0.176	0.013	Kalala	0.031	0.005
Luangwa	0.163	0.004	Zambia	0.030	0.001
Kansunswa	0.159	0.018	Mutamba	0.029	0.001
Chikola	0.141	0.050	Garneton	0.023	0.006
Twapia B	0.091	0.001	Ndeke	0.020	0.003
			Kawama (Luanshya)	0.014	0.006

Source: Based on field work

FIG. 4.2 : SHOPPING CENTRES PLOTTED ON LOGARITHMIC SCALE

RANK OF SHOPPING CENTRES FROM THE LOWEST TO THE HIGHEST
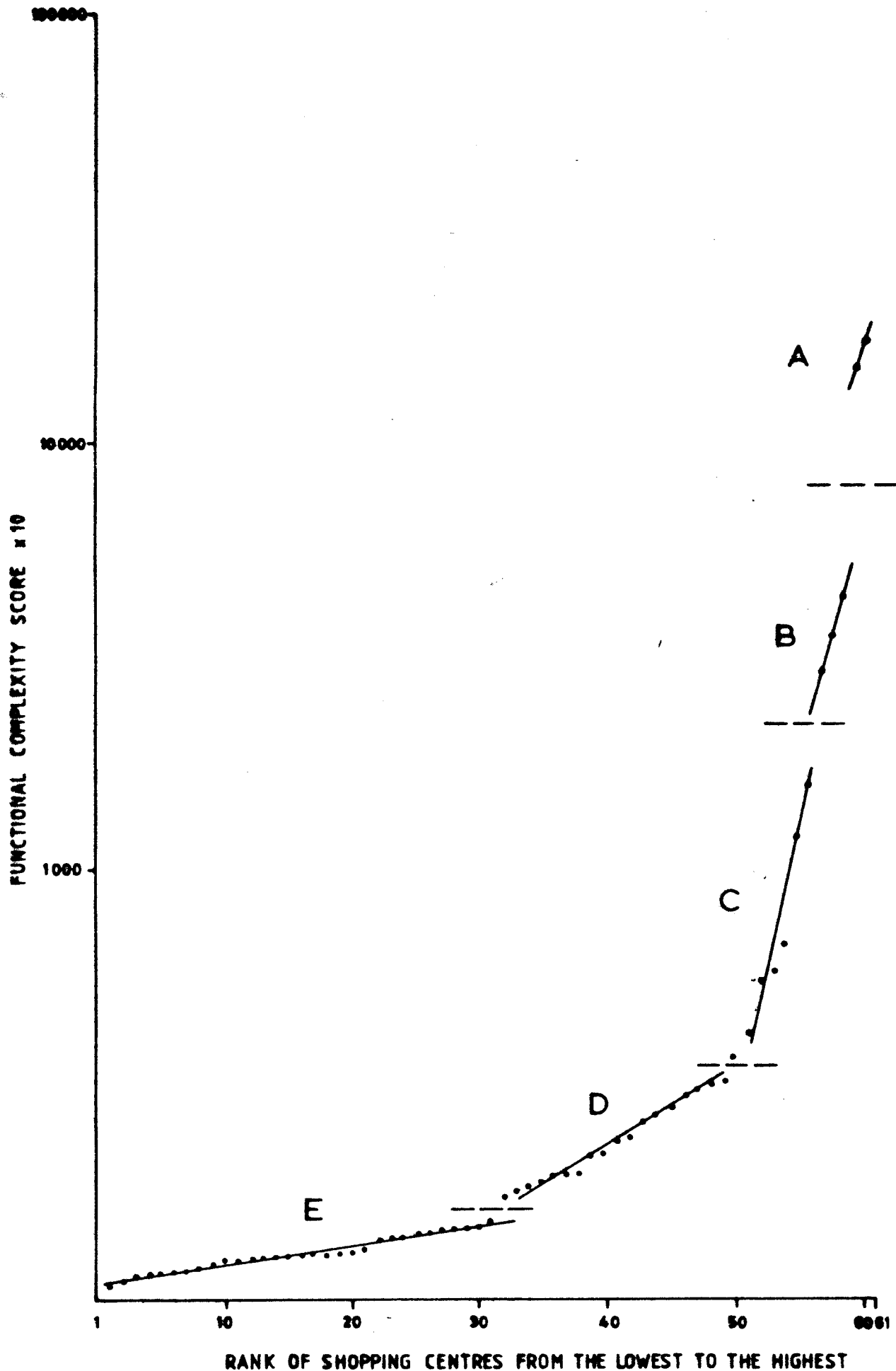
Copperbelt based on the differences between successive scores from the lowest to the highest in the array of complexity scores. This tree is computed from information obtained from Table 4.5. The information from Table 4.5 could also be plotted on a semi-logarithmic graph (Figure 4.2). The graph was plotted on a semi-logarithmic scale by plotting shopping centre ranks on the X-axis from the lowest (1) to the highest (61) rank. The Y-axis was plotted using functional complexity scores that ranged from the lowest (0.014) to the highest (16.822) score. This information would be fitted by multiplying the values by a constant, 10, and plotting the resulting values against the corresponding values on the X-axis. This is done with a view of establishing the difference in superiority between the graph method and the linkage method in showing clusters of shopping centres.

Discussion

Data is shown in two ways, the linkage tree (Figure 4.1) and the graph drawn on a semi-logarithmic scale. The two presentations show five levels of shopping centres. Data plotted on the graph show distinct breaks of slops between adjacent groups of shopping centres. For instance, there is a distinct break of slope between E and D, D and C and between C and B. If lines are drawn between the points they seem to follow more and less five short straight lines that correspond to groups/B, C, D and E. When the same data is computed into a linkage A, tree, five levels of shopping centres are also manifest.
It is, however, more difficult to make distinction of the groups of centres from the linkage tree than it is with the graph. The semi-logarithmic graph, therefore, is a superior way of presenting this data although not all information was accommodated on it.
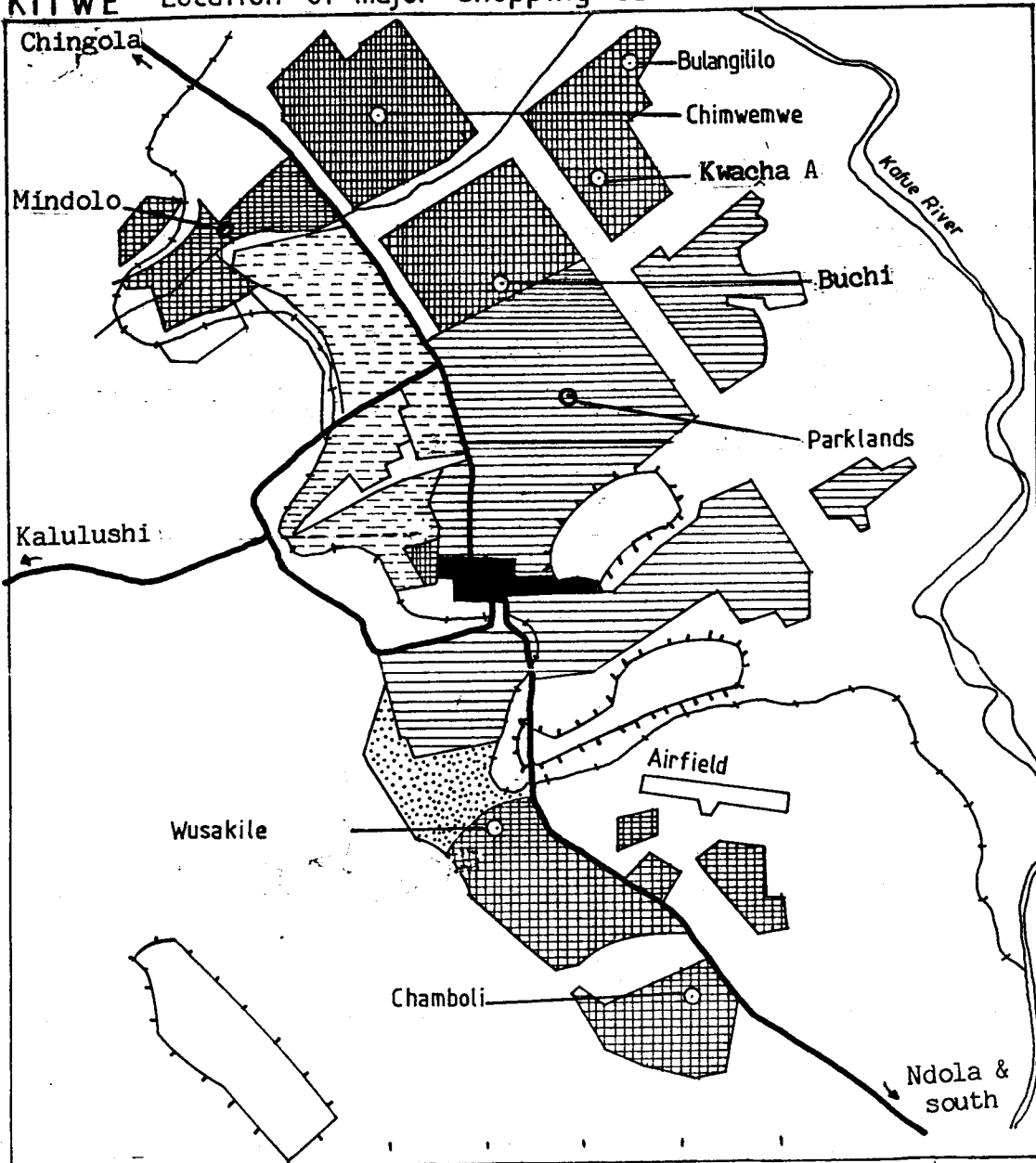
FIG. 4.3

NDOLA : Location of major Shopping Centres
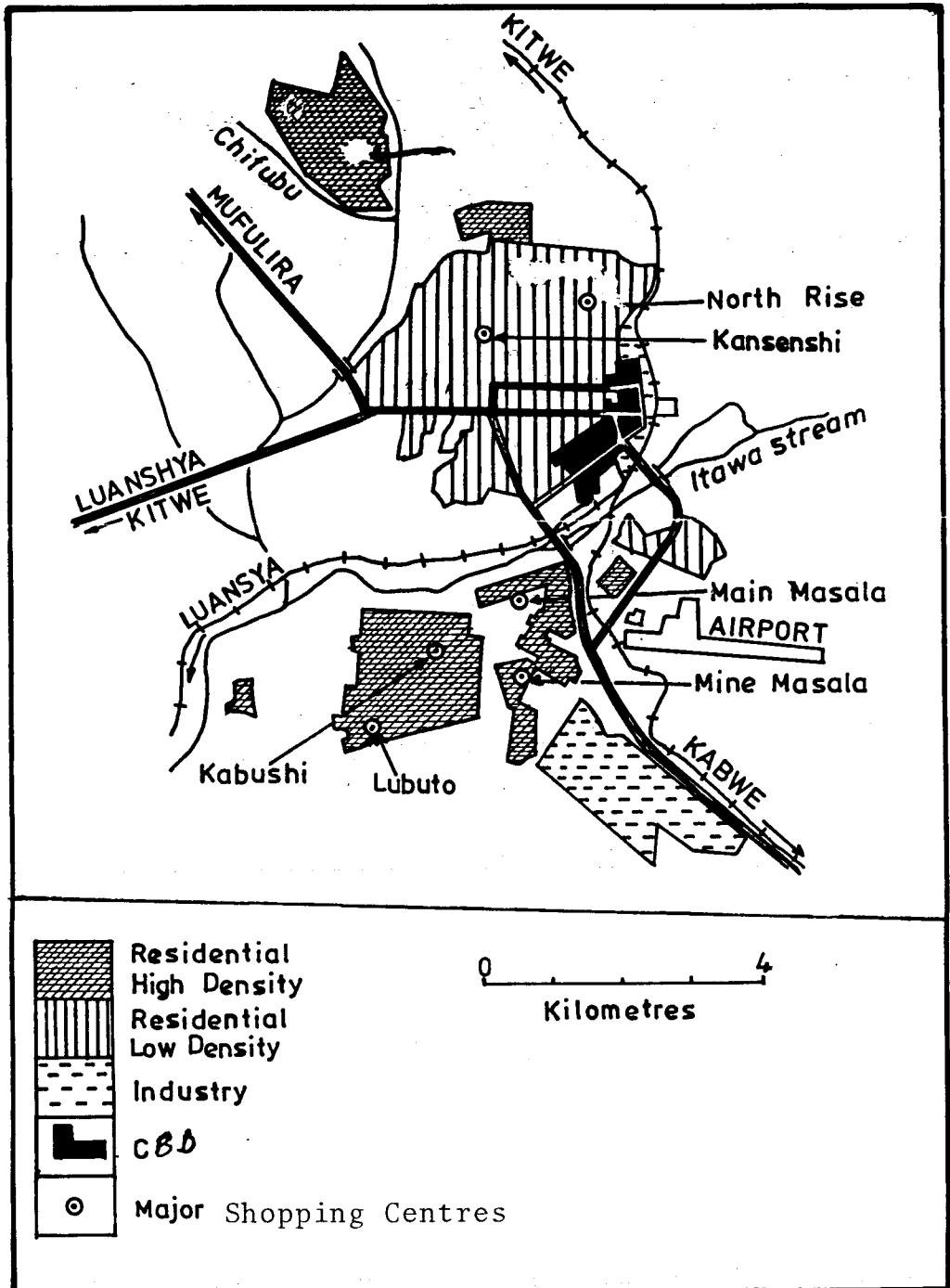
Source: Davies, D.H. (1976). Zambia in Maps. London,
Hodder and Stoughton. p. 85 -
with modifications.

FIG. 4.4

KITWE Location of major shopping centres

Source: Davies, D.H. (1976). Zambia in Maps. London, Hodder and Stoughton. p. 85 - with modifications.

Group A is made up of the CBDs of Ndola and Kitwe. They have functional complexity values of 16.822 and 14.411 respectively. These two shopping centres provide all goods and services under survey to their respective town consumers as well as the rest of the Copperbelt. All specialized (higher order) goods and services are located here because they require high threshold population to support them. They also perform administrative functions like district headquarters in the case of Kitwe and provincial headquarters in the case of Ndola. Figures 4.3 and 4.4 show the CBDs of Ndola and Kitwe as well as the major outlying shopping centres.

Group B consists of three CBDs of the towns of Mufulira, Chingola and Luanshya. These CBDs have complexity value of between 2.859 and 4.234. The three shopping centres provide goods and services of a lower order than those provided by group A but provide all other goods and services of lower groups of C, D and E. They also are district administrative centres for their surrounding areas. Figures 4.5, 4.6 and 4.7 show the location of the three CBDs. Group C is comprised of seven shopping centres whose complexity scores range from 0.367 to 1.557. This group includes the CBD of Chililabombwe, former second class trading areas of Chingola (Mwaiseni) and Luanshya. Other shopping centres in this group are Kansenshi in Ndola, Mikomfwa in Luanshya, Chifubu in Ndola and the second class of Chililabombwe. This group provides lower order goods and services than those done by Group B ito their surrounging residential areas. Only Chililabombwe's CBD provides for the whole town certain high order goods and services that cannot adequately be provided by these centres. They also provide all other goods and services found at all other centres of lower groups of D and E.

FIG. 4.5

MUFULIRA : Location of major shopping centres

REFERENCE

Residential high density

Residential low density

Mine workings

Industry

CBD

⊙ Major Shopping Centres

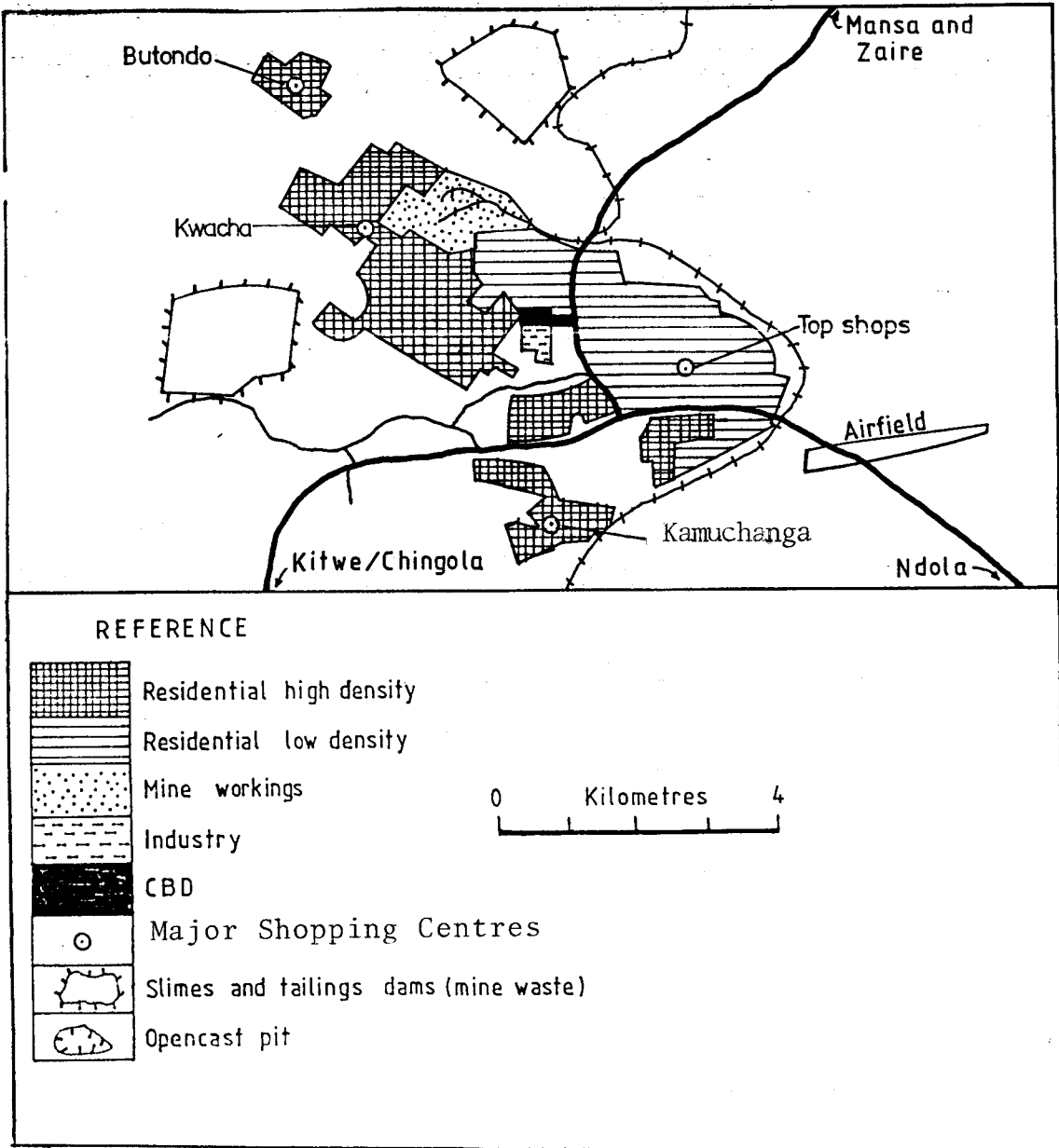Slimes and tailings dams (mine waste)

Opencast pit

0   Kilometres   4

Source: Davies, D.H. (1976). Zambia in Maps. London,
         Hodder and Stoughton. p. 85 -
         with modifications.

FIG. 4.6

CHINGOLA : Location of major shopping centres
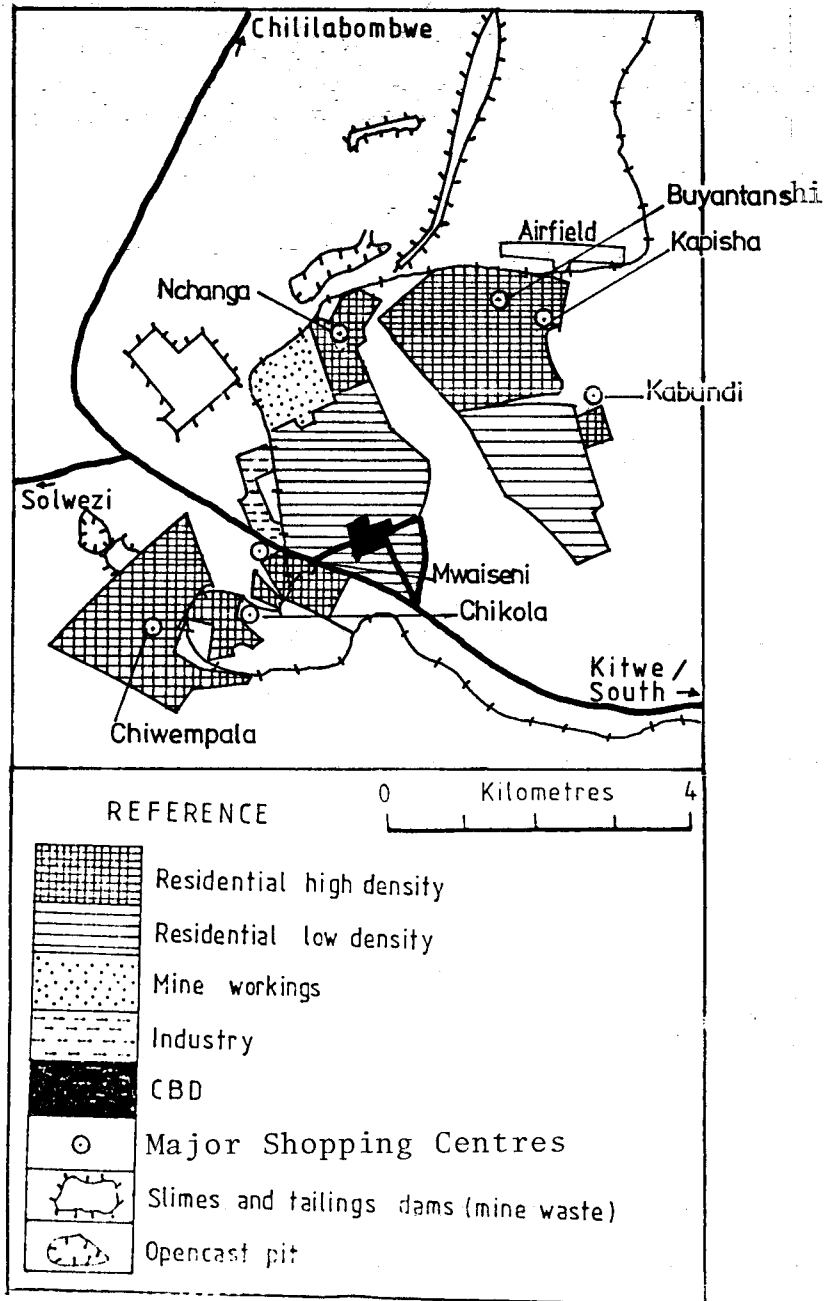
REFERENCE

Residential high density

Residential low density

Mine workings

Industry

CBD

⊙ Major Shopping Centres

Slimes and tailings dams (mine waste)

Opencast pit

0 Kilometres 4

Source: Davies, D.H. (1976). Zambia in Maps. London, Hodder and Stoughton. p. 85 - with modifications.

FIG. 4.7

LUANSHYA: Location of major shopping centres

REFERENCE

Residential high density

Residential low density

Mine workings

Industry

CBD

⊙ Major Shopping Centres

Slimes and tailings dams (mine waste)

Opencast pit

0   Kilometres   4
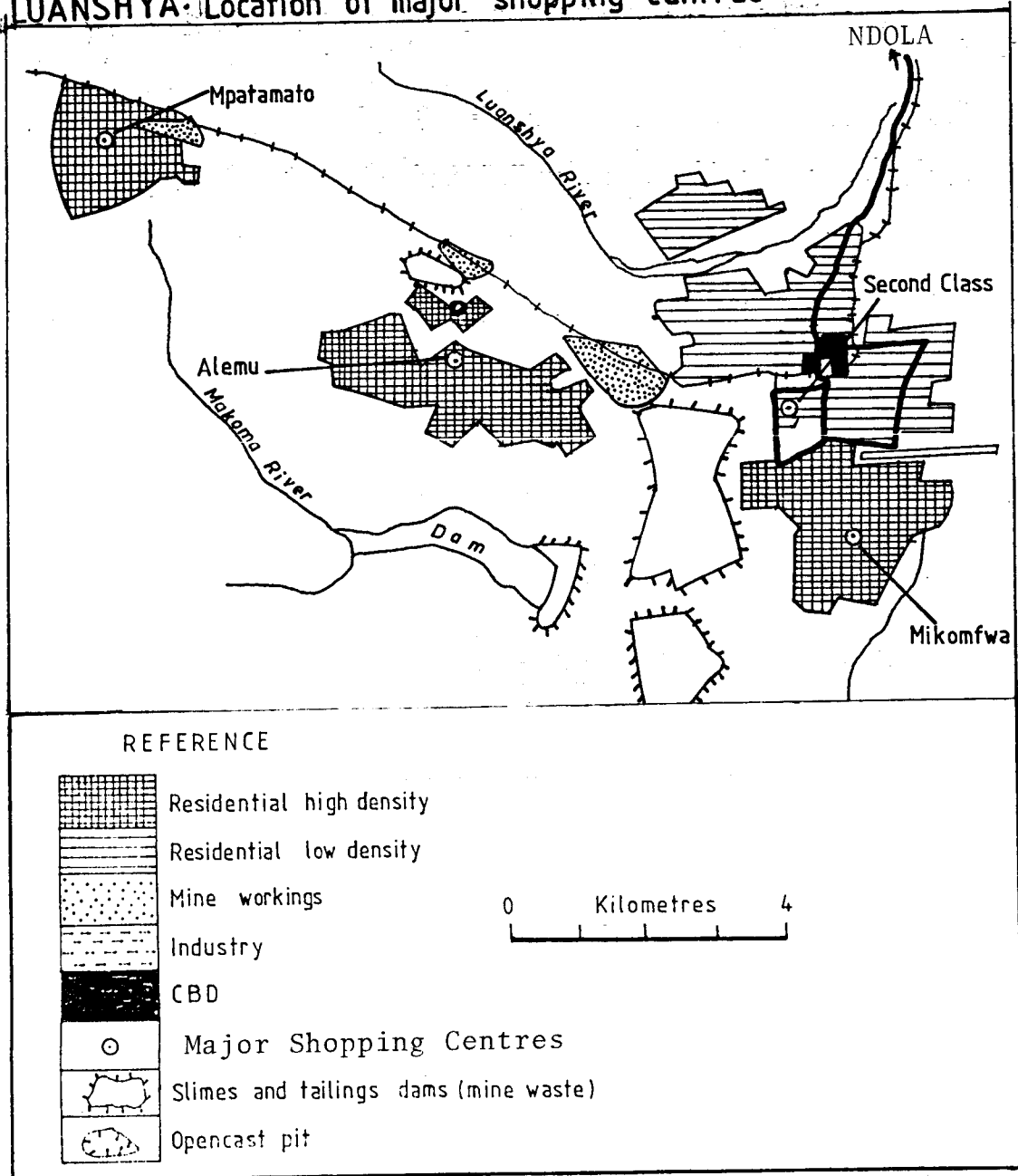
Source: Davies, D.H. (1976). Zambia in Maps. London,
         Hodder and Stoughton. p. 85 -
         with modifications

TABLE 4.6   DISTRIBUTION OF SHOPPING CENTRES BY GROUP

	NDOLA	KITWE	MUFULIRA	LUANSHYA	CHINGOLA	CHILILABOMBWE	KALULUSHI
A	CBD	CBD	-	-	-	-	-
B	-	-	CBD	CBD	CBD	-	-
C	Kansenshi Chifubu	-	-	2nd Class Mikomfwa	Mwaiseni	CBD Chililabombwe 2nd Class	-
D	Main Masala Lubuto	Chimwemwe Parklands Buchi Chamboli Chambishi	Kwacha Top Shops Kamuchanga Kansunswa Butondo	Mpatamatu Alemu	Chiwempala Chikola	Lubengele -	2nd Class
E	Twapia A Twapia B Kabushi Sams Northrise Mine Masala Kawama Sinia Pamodzi Mutamba	Buyantanshi Luangwa Mindolo Zambia Bulangililo Nkana East Wusakili Kwacha B Kwacha A Garneton Ndeke	Zambia	Roan Kawama Kalala	Maiteneke Kabundi Nchanga	Chililabombwe 3rd Class Main Bus Station	CBD

Source: Based on field work

Group D is made up of shopping centres whose complexity scores range from 0.141 to 0.314. There are eighteen centres in this group. The shopping centres are distributed in both high and low density residential areas (Figures 4.3 to 4.7). The names of these centres are given in Table 4.6. These provide goods and services to their residential areas that are of lower order than those found at group E types of centres. Group E contains the largest group of shopping centres whose scores range from 0.014 to 0.191. There are thirty-one shopping centres whose spatial distribution is interesting as they do not conform to any single given type of residential area but all types of residential areas. Table 4.6 gives the names of centres in this group. These centres provide the lowest category of goods and services to their surrounding residential areas. These are shopping centres like Northrise in Ndola and Nkana East in Kitwe which because of their location in low density areas, historical and geographical reasons provide few high order goods to their respective areas. Some of the names in this group of centres are shown in Figures 4.3 to 4.7

CHAPTER FIVE

CONCLUSION

Comparison of hierarchies of shopping centres

This study has tried to verify the existence or non-existence
of the hierarchical tendencies among the shopping centres of
the Copperbelt. It is possible to identify such tendencies
when available data are graphically presented by means of a
linkage tree or semi-logarithmic graph as done in this work.
A closer look at both Figures 4.1 and 4.2 reveal a five level
(group) classification of all the centres surveyed. There are
noteworthy points that go a long way in explaining the
functionally defined relationship between each of the levels or
groups of centres found on the Copperbelt and those levels
found elsewhere like Berry's (1967:14-16) and those reviewed by
Carter (1981:106-110). With these two reviews in mind, the
present levels of shopping centres on the Copperbelt are comparable
to those found in developed countries theoretically. Those found
on the Copperbelt, however, are comparable only in the following
ways. Group E is the largest group with thirty-one shopping
centres. These centres are comparable to the Isolated Store
Cluster or hamlets. They offer the lowest order of goods and
services which are of the same range and threshold. Most of
these shopping centres have an open air market and a few
grocery stores selling daily provisions like bread, milk, tea
leaves, a tailoring stand, a watch or radio repair stand among

50

others. Names of these centres can be derived from Table 4.6.
Group D has eighteen shopping centres performing all the
functions of E in addition to those functions that could not
be performed satisfactorily at E. These offer goods and
services that have relatively higher range and threshold. The
functions performed by this group are higher order than those
of Group E, for instance, there are established postal services
and departmental stores. This group could be comparable to
villages or local business district implied in the central place
studies elsewhere. Group C has seven centres that perform
functions of E and D in addition to higher order functions that
could not be done satisfactorily at both E and D. Two of these are
CBDs of small towns that perform district administrative functions
are Chililabombwe and Kalulushi. These are comparable to county
towns or neighbourhood business districts. Group B has three
CBDs of three relatively big towns of Mufulira, Chingola and
Luanshya. They perform all functions done at E, D and C but
also offer a wider range of higher order goods and specialized
services like banking, insurance and consultancy. They work
as administrative centres for their respective surrounding
districts as well. Figures 4.5, 4.6 and 4.7 show some of the
major shopping centres within the three towns respectively.
These are comparable to smaller cities and county seats or
regional business districts.

The last group is made up of CBDs of two cities, Ndola, the
regional headquarters and Kitwe. Apart from offering goods and

services that other groups of centres can offer progressively
these two cities offer an additional wider range of specialized
goods and services. It is here where car sales, agricultural
machinery, hardware merchandise, dental specialists, opticians,
specialized commercial banks, funeral service parlours,
laboratories, sports goods, advertising, and many more are
found. Most of these goods and services are metropolitan in
nature and will require a special location in relation to the
consumer market if it will be effective. Figure 4.3 and 4.4
show major outlying shopping centres within the two leading
towns respectively. This group is comparable to sub-metropolitan
cities or CBD that serves the whole city.

It is confirmed that there are no differences between hierarchical
tendencies of the shopping centres of the Copperbelt and those
found elsewhere. In conclusion, therefore, the central place
model has been used to demonstrate successfully the existence of
a system of functionally defined levels of shopping centres for
the whole Copperbelt.

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