

MULTIVARIATE REGIONALIZATION OF ECONOMIC
DEVELOPMENT IN TRANSKEI

by

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THIS THESIS IS DEDICATED

TO

MY WIFE AND DAUGHTER,
MY DEAR PARENTS, GEORGE & MERCY,
AND ESPECIALLY, MY DEAR LATE SISTER, GRACE

PREFACE

This Thesis on "Multivariate Regionalization of Economic Development in Transkei" is work done wholly by the author. The Thesis has not been submitted in part or in whole to any other University.

The research was carried out in the Republic of Transkei and was supervised by Mr. Geoff Willis, a Senior Lecturer in the Department of Geographical and Environmental Sciences, and Assistant Dean: Student Affairs of the Faculty of Social Science at the University of Natal, Durban.

Kofi Owusu Acheampong
1992

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The selection and arrangement of material, the balancing of emphasis and the precise form of exposition are my own, and I accept the responsibility for any error.

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ABSTRACT

In recent years, increasing attention has been devoted to the inequalities in development of countries, especially the third world countries, in formulating national development plans. Geographers interested in the regional dimension of development, now take greater cognisance of issues related to inequalities in development. This thesis is a contribution to the growing area of regional development. It investigates the spatial dimension of development and its associated variations. Transkei has been selected for this study because of its historical past as a "child" of separate development policy of South Africa and as a third world country. The separate development policy and its dependence on its former colonial power have contributed in evolving inequalities in the spatial pattern of development. Past development plans have failed to produce balanced development. There is, therefore, a need to evaluate the existing factors that have produced these inequalities to see if a different strategy can be adopted to correct the existing inequalities.

Transkei's 28 districts were used in this study, based on 19 variables. Factor and Cluster Analyses were the analytical techniques used. The investigation's results are as follows:

1. The factors underlying the relationships between the 19 variables were found to reflect three broad factors: Agglomeration, Industrialization and Education factors, with contributions of 72.36%, 8.24% and 6.47% respectively, to the total variance.
2. These factors were observed to owe their existence to institutional and traditional factors with their particular spatial patterns. The districts associated with the agglomeration and industrialization factors were found to be relatively more developed, forming patterns similar to the letter Y. The districts associated strongly with the education factor, have little development potential and forms a continuous belt running from the north west through central to the eastern coast and a compact block to the south.
3. Five major development groups obtained from the application of cluster analysis, represent a broad framework within which the inequalities of development in Transkei could be discussed.

From the findings, it has been proposed that the institutional and traditional factors would have to undergo major changes, if considerable balance in the spatial development of Transkei could be achieved.

TABLE OF CONTENTS

	Page
PREFACE	
ACKNOWLEDGEMENTS	
ABSTRACT	
TABLE OF CONTENTS.....	i
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
LIST OF APPENDICES.....	ix
CHAPTER ONE - INTRODUCTION	
1.1. The Problem.....	1
1.1.1. The Causes of Regional Inequalities.....	2
1.1.2. The Concept of Development.....	4
1.1.3. The Objectives of Spatial Analysis of Development.....	5
1.1.4. The Situation of Regional Inequalities in Transkei.....	7
1.2. Objectives of the Study.....	9
1.3. Justification of the Study.....	10
1.4. The Study Region - Transkei.....	12
1.4.1. The Geography of Transkei.....	12
1.4.2. Historical and Ethnological Background of Transkei.....	14
1.4.3. The Road to Self-Government and Independence.....	16
1.4.4. The Space Economy and Regional Inequalities.....	18
1.5. Organisation of the Study.....	23

CHAPTER TWO - THEORETICAL AND CONCEPTUAL FRAMEWORK AND RESEARCH METHODOLOGY

2.1.	Introduction.....	25
2.2.	Development as a Multivariate Phenomenon...	25
2.3.	Relationships Between Elements of Development.....	27
2.4.	Variables Related to the Basic Needs Approach.....	30
2.5.	The Regional Concept in the Development Process: Types of Regions.....	36
2.5.1.	Uniform or Homogeneous or Formal Region....	38
2.5.2.	Functional region.....	40
2.6.	The Typology of Regions of Development.....	42
2.7.	Regional Inequalities as a Problem in the Development Process.....	46
2.8.	Regional Planning Strategies.....	53
2.8.1.	Development from Above Model.....	55
2.8.2.	Development from Below Model.....	58
2.9.	The Working Hypotheses.....	62
2.10.	Research Methodology.....	62
2.10.1.	Introduction.....	62
2.10.2.	Data Collection.....	63
2.10.3.	Operational Taxonomic Units.....	64
2.10.4.	Variables Selected and their Justification.....	68
2.10.4.1.	Population.....	70
2.10.4.2.	Health.....	71
2.10.4.3.	Education.....	71
2.10.4.4.	Social Pathology (Law and Order).....	72
2.10.4.5.	Transport and Communication.....	73

2.10.4.6.	Power (Energy) Consumption and Water Resources.....	73
2.10.4.7.	Manufacturing Industries and Employment Levels.....	74
2.10.4.8.	Development Projects.....	75
2.10.4.9.	Leisure (Entertainment) Outlets.....	75
2.10.4.10.	Financial Institutions and Commercial Outlets.....	76
2.11.1.	Primary Sources of Data: Procedures.....	77
2.11.2.	Secondary Sources of Data.....	80
2.12.	Analysis of Data.....	81
2.12.1.	Factor Analysis and Regionalization.....	81
2.12.2.	Cluster Analysis.....	87

CHAPTER THREE - IDENTIFICATION OF THE FACTORS UNDERLYING THE RELATIONSHIPS BETWEEN THE VARIABLES

3.1.	Introduction.....	90
3.2.	Nature of Relationships Between the Variables.....	91
3.3.	Communality Estimates of Variables with Other Variables.....	101
3.4.	Identification of the Eigenvalues and Percentage Variances.....	104
3.5.	Deriving the Factors.....	106
3.6.	Naming the Factors.....	108
3.6.1.	Factor One.....	108
3.6.2.	Factor Two.....	110
3.6.3.	Factor Three.....	111

CHAPTER FOUR - SPATIAL MANIFESTATIONS OF VARIATIONS IN DEVELOPMENT OF TRANSKEI

4.1.	Introduction.....	113
4.2.	The Matrix of Factor Scores.....	115

4.3.	Spatial Patterns Associated with the Factors.....	117
4.3.1.	Spatial Patterns Associated with Factor One.....	118
4.3.2.	Spatial Patterns Associated with Factor Two.....	122
4.3.3.	Spatial Patterns Associated with Factor Three.....	125
4.4.	Approaches to Grouping.....	126
4.5.	Euclidean Distances Between the Magisterial Districts.....	128
4.6.	Grouping the Magisterial Districts using the Ordination Technique.....	130
4.7.	Explanations of the Observed Variations in Development.....	132
4.8.	Spatial Distribution of the Groups.....	143

CHAPTER FIVE - CONCLUSION AND RECOMMENDATIONS

5.1.	Introduction.....	146
5.2.	Summary of Findings.....	147
5.2.1.	Multivariate Analysis of Regional Development.....	147
5.2.2.	Relationships Between the 19 Variables.....	148
5.2.3.	Relationships Between the Factors and the Spatial Patterns.....	148
5.2.4.	Causal Links Between the Processes and the Spatial Patterns.....	149
5.2.5.	The Five Broad Groups of Magisterial Districts of Transkei.....	150
5.3.	Problems Resulting from Existing Regional Inequalities.....	151
5.3.1.	The Impacts of Apartheid.....	151
5.3.2.	The Role of Social and Local Factors in the Development Process of Transkei.....	152

5.3.3.	Physical Factors Hindering Economic Activities.....	154
5.3.4.	Lack of Statistical Base.....	154
5.3.5.	Corruption.....	155
5.3.6.	Political Economy of Spatial Development...	156
5.4.	Recommendations.....	158
5.4.1.	Introduction.....	158
5.4.2.	Regional Development Strategies Appropriate for Transkei.....	159
5.4.2.1.	"Development from Above" Strategy.....	160
5.4.2.2.	"Development from Below" Strategy.....	161
5.5.	Future Research Areas.....	164
	BIBLIOGRAPHY.....	168
	APPENDICES.....	184

LIST OF TABLES

	After Page
1.1. The GDP of Transkei by Type of Economic Activity, 1982 (Current Prices).....	7
1.2. The Relationship Between GDP and GNP 1970-82....	8
1.3. Population by Districts, Rural and Urban, and by Sex (Defacto Population), 1985.....	14
3.1. The Correlation Matrix Table.....	93
3.2. The Communality Table of the Variables.....	103
3.3. Table of Eigenvectors/Eigenvalues.....	104
3.4. Sorted Varimax Rotated Factor Loadings [Pattern].....	107
3.5a. Table Showing the Loadings of the Agglomeration Factor.....	109
3.5b. Table Showing the Loadings of the Industrialization Factor.....	110
3.5c. Table Showing the loadings of the Education Factor.....	111
4.1. The Table of Factor Scores.....	115
4.2. Socio-economic Distances Between the 28 Districts.....	128
4.3. Membership of the District Groups Arrived at by Multifactor Classification.....	132

LIST OF FIGURES

After Page

1.1.	Vicious Circles or Downward Spirals Typical of the Periphery.....	4
1.2.	The Geographical Situation of Transkei in Relation to RSA.....	12
1.3.	The 28 Districts of Transkei.....	13
1.4.	Towards Theory of Revolution.....	23
2.1.	Cluster of Variables Showing Conditions of Living of the Population.....	29
2.2.	Relationships Between Variables of High Income Population.....	29
2.3.	Development Regions (the Friedmann Model).....	44
2.4.	South Africa: Development Regions - the Industrial Period.....	46
2.5.	Development from Above Model.....	55
2.6.	Myrdal's Process of Cumulative Causation (Simplified).....	57
2.7.	The Williamson Model.....	68
2.8.	Social Area Analysis, Broadly Defined.....	86
3.1.	Correlation Bonds Associated with Factor One.....	109
3.2.	Correlation Bonds Associated with Factor Two.....	110
3.3.	Correlation Bonds Associated with Factor Three.....	111
4.1.	Spatial Pattern of the Agglomeration Factor.....	118
4.2.	Spatial Pattern of the Industrialization Factor.....	122
4.3.	Spatial Pattern of the Education Factor.....	125
4.4.	Steps in the Grouping of Districts on the Basis of Scores on Two Leading Components of	

Inequalities in Development.....	128
4.5. Grouping of Districts Based on Scores on Two Leading Components of Inequalities in Development.....	131
4.6. The Political Economy of Peripheral Development.....	143

LIST OF APPENDICES

APPENDIX 1: Sources of Data for the Selected Variables.....	184
APPENDIX 2: Questionnaire Used to Collect on Selected Variables.....	186
APPENDIX 3: Matrix Table Showing a Summary of Data Collected on Selected Variables.....	196

CHAPTER ONE

INTRODUCTION

1.1. THE PROBLEM

One of the conspicuous issues of the development process of virtually every country, which is causing great concern to the general public, researchers, planners and governments, relates to that of regional inequalities in development (Friedmann, 1966; Keeble, 1977; Fair, 1981; Coetzee, 1986). Inequalities in development exist between different regions of every country (Williamson, 1965; Hensman, 1975; Chapman, 1979), and since spatial inequalities are diverse, they are not always immediately obvious.

It is, therefore, always necessary to attempt "some kind of categorization as a prerequisite to any adequate discussion of their occurrence" (Runciman, 1966, p.45). The world, for instance, has been categorized into 'first', 'second' and 'third' worlds, 'developed', 'developing' or 'undeveloped' or 'underdeveloped' countries, 'north' and 'south' countries (Coates, et al., 1977, p.83). Some regions within countries could be described as 'developed', while others are

'underdeveloped'. Sunkel (1970), writing on Latin American underdevelopment, marginality and spatial inequalities also describes inequalities in terms of the following four types: inter-regional; urban-rural; inter-urban and intra-urban. Inequalities in development, thus, occur at different regional scales in different countries (Williamson, 1965; Chapman, 1979).

1.1.1. The Causes of Regional Inequalities

The inequalities problem has been attributed to several factors. Fair (1981), believes that the differences in levels of development between regions can be explained not only in terms of their different resource endowments or their favourable or unfavourable locations, but also in terms of their place in the political and economic system of the nation in which they are enmeshed and the international system to which the nation itself is tied. Coates, et al. (1981) look at the increasing international inequality from the pattern of international economic relationships: the tendency for the consumption of rich manufacturing nations to grow more rapidly than the consumption of primary producers, combined with the tendency for population to grow faster in poor countries. This situation, according to Seers (1973), aggravates income inequalities within poor countries. This internal inequality hampers the development of home-based manufacturing activity

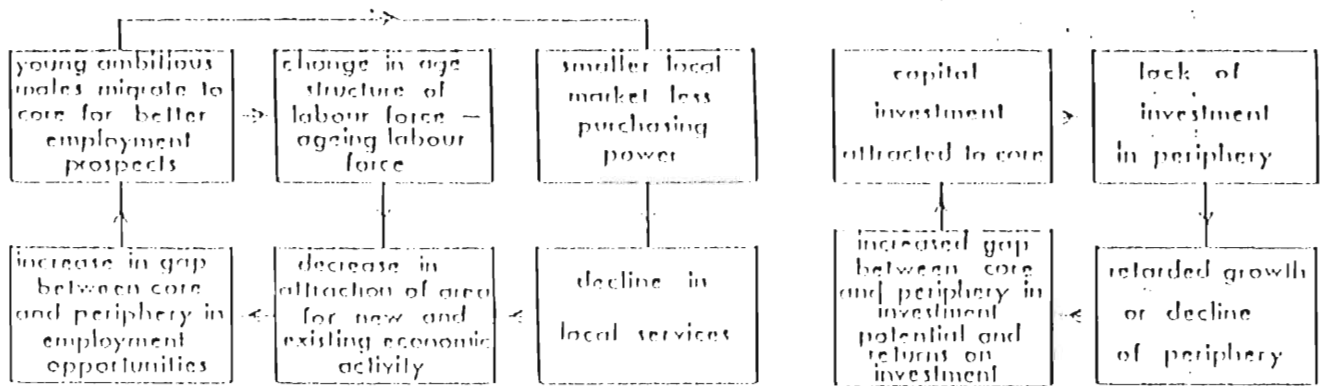
and so re-enforces the international trading relationships responsible for the initial international inequality. Others believe that some regions take the lead in development because they are located in areas where natural resources are available and have the manpower and the needed economic advantages. Inequalities in development can also be created deliberately by the policy-makers to channel resources to particular regions to satisfy certain objectives.

The inequality problem in most countries is the result of starting development efforts in a few centres through investments in the various sectors of the economy. Once development starts in a particular centre, for whatever reason, then that region develops its own momentum of growth through a process of "circular and cumulative causation" (Myrdal, 1957, p.12). This momentum of growth is further sustained and fortified through interaction between the growing centre and other parts of the country. Trade and factor mobility create what Myrdal (1957) calls "backwash effects" on the lagging regions in the sense that they retard their growth and widen the economic gap between the regions. The poorer regions lose their most enterprising and youngest workers; banking systems siphon off the savings of the people in the poor regions and re-invest them in the richer regions. The development of the core regions, therefore, produces "virtuous upward spiral growth in the core regions and vicious downwards growth in the periphery" (Myrdal, 1957, p.26), as

illustrated by Bradford & Kent (1977) in figure 1.1. Myrdal argues further that continuous growth in one region occurs "at the expense of other locations and regions" (p.27). He expounds this view that there is a tendency inherent in the free play of market forces to create regional inequalities, and that this tendency becomes more dominant the poorer a country is. This view is upheld by Browett (1976), who also believes that in a free market system, a convergence in the level of development between regions and the attendant integration of the space economy will necessarily follow from the concentration of development in a few centres. This is because, achieving change in a system where the parameters of that system do not change is never possible.

1.1.2. The Concept of Development

Development, as a concept, has both a more general and a more specific meaning. It may be used in a broad sense to cover the general social, economic and political transformation which affects countries (Gilbert, 1974). It may also be used more and more in a positive sense to refer to the promotion of well-being of individuals or societies either as an immediate objective or as a longer-term prospect. Mabogunje (1980) sees development as covering elements such as the material production of goods and services, structural changes in an economy, modernization, technological and environmental



(a) *labour migration*

(b) *investment*

Figure 1.1: Vicious Circles or Downward Spirals Typical of the Periphery.

Source: Bradford and Kent (1977).

issues, social, economic and cultural organization of society. Thus, it reflects elements like poverty, unemployment and inequality (Seers, 1969). The economic objective of development is related to production, cost and income all of which have a geographical expression and directly affect the level of living of the population, the ultimate beneficiary of development effort (Yirenkyi-Boateng, 1985). Smith (1977) states that if human beings are the object of our curiosity then the improvement of the quality of their lives is of paramount interest. This entails achieving 'the full potential of human personality' (Seers, 1972), or in a broader sense, 'the movement upward of the entire social system' (Myrdal, 1957).

1.1.3. The Objectives of Spatial Analysis of Development

The spatial analysis of development looks at regional patterns of development effort, their underlying factors, problems and their desired state in the future. The information revealed on the variations in the level of development can be useful in formulating meaningful development plans. This makes it crucial to identify region as a concept in any spatial analysis of development.

Hilhorst (1985, p.2) defines 'region' as the "polarized

socio-economic and politico-administrative spaces of urban settlements performing the functions of the second-order cities". The second-order cities were identified as points of regional focalization of interconnecting points with minimum intensity of activities. Grigg (1965), on the other hand, looks at 'region' to mean a part of the earth's surface which is distinguished in some defined way from surrounding areas, based upon single criterion (eg. annual temperature), or based upon a number of criteria, thus distinguishing between single-feature and multiple-feature regions. There are many synonyms of region, and Whittlesey (1954, pp.48-51) suggested the terms locality, district, province and realm to suggest regions of a different order.

Since regions are essentially areal classes, the basic procedures of formal logic and methods customarily used by geographers is regionalization. Many geographers agree that regional systems may be arrived at through processes of either aggregation or subdivision (Whittlesey, 1954; Gilbert, 1960). Regionalization, therefore, implies both the systematic study of areal variations and the sense of identity that persons have with a portion of the earth they inhabit (Steiner, 1983, p.432). It involves an awareness of the special characteristics that distinguish an area larger than a neighbourhood but smaller than a country from other portions of a country. Place-related identity would seem particularly necessary in a country that sprawls across a continent. Potter

(1968, p.4) asserts that "in a vast and diverse country like the United States of America, there is really no level higher than the regional level at which one can come to grips with the concrete reality of the land".

Regionalization, therefore, is a means to an end, not an end in itself. It establishes a system of regions only as a first step in a geographical enquiry. It points the way to the study of how- and perhaps why- the regional variations described have been brought about. The modalities of regionalization as a methodological tool for spatial analysis will be discussed fully at a later stage of this study.

1.1.4. The Situation of Regional Inequalities in Transkei

Using World Bank's Gross National Product (GNP) per capita as a measure of the level of development of countries, Transkei is one of the poorest countries in the world (World Bank, 1980, p.3), with a GNP per capita of only R276 in 1982 (Muller, 1985, p.3). Transkei has a small highly dependent economy as evident in table 1.1, which contains the most recent estimate of Gross Domestic Product (GDP) (Muller, 1985, p.1). The GDP of Transkei was estimated at R 894 052 000 in 1982. About 30.4 per cent of this total was contributed by the subsistence sector, with agriculture, the most important

TABLE 1.1 : THE GDP OF TRANSKEI BY TYPE OF ECONOMIC ACTIVITY 1982 (CURRENT PRICES)

TYPE OF ACTIVITY	SUBSISTENCE ECONOMY (R'000)	MODERN ECONOMY (R'000)	TOTAL (R'000)	% TOTAL
1. Agriculture, Forestry & Fishing	130 077	41 908	171 985	19,2
2. Mining & Quarrying	-	262	262	0,03
3. Manufacturing	15 118	99 983	115 101	12,9
4. Electricity & Water	89 812	2 668	92 480	10,3
5. Construction	18 412	20 040	38 452	4,3
6. Wholesale & Retail Trade, Catering & Accommodation Ser.	-	147 279	147 279	16,6
7. Transport, Storage & Communication	-	21 682	21 682	2,4
8. Financing, Insurance, Real Estate & Business Services	18 207	29 756	47 963	5,4
9. Community, Social & Personal Services				
9.1. Public Administration	-	101 831	101 831	11,4
9.2. Education Services	-	108 153	108 153	12,1
9.3. Health Services	-	44 935	44 935	5,0
9.4. Other Services	-	3 929	3 929	0,4
Total GDP (at factor cost)	271 626	622 426	894 052	100,0
As percentage of Total	30,4%	69,6%	100,00	-

Source : Abedian (1984)

sector, contributing 19,2 per cent to the GDP. The dependent nature of the economy can be seen in the small contribution of modern manufacturing sector (11 per cent) and the dominance of community, social and personal services, which contributed 41.6 per cent of monetized output. Most of this latter figure is the result of budgetary aid, customs union shares, rand circulation compensation and project claims from the treasury of the Republic of South Africa (RSA). Another indication of the dependent nature of the Transkei economy is contained in table 1.2, which shows the relationship between Gross National Product (production by citizens) and Gross Domestic Product (production within Transkei) (Muller, 1975, p.3).

Some positive efforts towards the economic development of Transkei are evident in different places at different magnitude, to such an extent that development has been polarized at specific points, to the detriment of the greater part of this region. For instance, manufacturing industries, infrastructure, education, health and other social amenities are being provided in some centres, with the hope of transmitting some of their developmental impulses to the stagnating peripheral regions. But not much attention seems to have been given to the spatial aspects of development. The cumulative effects of this unbalanced pattern of development is that population continues to drift to the few urban centres of Umtata, Butterworth, Ezibeleni, etc., thus, accentuating disparities in development between these urban and rural

TABLE 1.2 : THE RELATIONSHIP BETWEEN GDP AND GNP 1970 - 1982

	1970	1975	1980	1981	1982
Real GDP (R'000) (1)	136 909	210 356	341 334	366 279	387 216
Real GNP (R'000) (1)	183 251	363 961	729 288	765 340	887 255
GDP % GNP	75	58	47	48	44

Source Abedian (1984a)

(1) Real figures are based on the Consumer Price Index in 1975.

Between 1970 and 1982, the share of GDP in GNP fell continuously from 75% to 44%, Despite rapid growth in both sources of income.

centres. This spatial pattern of development in Transkei, is typical of Third World countries experiencing a period of incipient industrialization, namely: an economic and social core set within a stagnating periphery (Friedmann, 1966). Since the space economy is seen as a system of interdependent parts, it is necessary to halt this trend of parasitic development. This will avoid a situation whereby the existing inequalities can only amplify with time leading to explosive social and economic consequences.

The general public, researchers, planners, etc. have become aware of the need to give attention to the spatial dimension of the development process taking place in Transkei (Muller, 1985). This is reflected by certain policy statements of the government pertaining to the problems of inequalities and the work being done by research institutions (SECOSAF, 1985). It is for this reason that a study of this nature can help bring out a new orientation in the country's planning ideology and strategies, in order to ameliorate the present deficiencies, thereby improving the living standards of Transkei's poorest majority.

1.2. OBJECTIVES OF THE STUDY

The objectives that this study is set to achieve are as

follows:

- (a) To identify the variables that can be used to measure inequalities in the development of Transkei.
- (b) To find the relationships between the selected variables.
- (c) To identify the development regions of Transkei and the nature and the magnitude of the problems of regional inequalities in the country.
- (d) To recommend appropriate regional development strategies for Transkei.

1.3. JUSTIFICATION OF THE STUDY

Arthur Lewis (1955ab) contends that development planning experts now accept the fact that the slow or the outright failure of national development plans, is due not so much to any inherent weaknesses in the formulation of those plans, but rather it is due to the fact that the plans were deficient in identifying sufficient feasible projects for development. It is, therefore, necessary for us to obtain comprehensive analysis of the existing variations in the level of development in Transkei upon which meaningful regional plans could be formulated. This is because:

- (a) There is no detailed study of the spatial patterns of

development in Transkei currently available. Such information is, however, an essential component for the development of the country.

- (b) The Transkei government has been spending considerable time, money and effort in trying to develop this area in order to better the lot of its people. There is, therefore, the need at this stage to study the extent to which equitable development objectives can be realized.
- (c) The general public at large and the Transkei government in particular, are now very much concerned with the issues pertaining to the spatial development of the country, particularly the rural-urban dichotomy (Transkei Government White Paper, 1979). Such a detailed study, therefore, can help reduce these regional inequalities in development and its attendant problems. This has been pointed out by Szentes (1971) that it is impossible to bring about a deliberate and purposeful change in the present without knowing how this state came about. We cannot successfully fight any phenomenon without knowing its roots.
- (d) If increased attention is not seriously given to the spatial manifestation of the development of Transkei, the planning authorities would not be able to steer the economy towards a desirable balanced state. Such a state is only possible when there is information on the existing situation.

1.4. THE STUDY REGION - TRANSKEI

The history of regional development in Southern Africa, to many people is closely intertwined with the evolution of the separate development. But then, the Nationalist Party government's policy of separate development to promote a regional development strategy that will stimulate socio-economic development in the less-developed areas was economically inappropriate. Rather it has produced variations in the levels of economic development, which call for an evaluation of the future development strategies. Transkei has been no exception as victims of this inappropriate development strategy.

1.4.1. The Geography of Transkei

Transkei is situated between latitude 31 degrees 20'; 32 degrees 45' south and longitude 26 degrees 48'; 30 degrees 15' east on the south-eastern corner of Africa (figure 1.2). It is bounded in the north by the Umtamvuna River towards Natal; then by the Great Kei River towards the Cape Province in the south; in the west by Drakensberg, Witteberg Highlands and Lesotho; and at least 270kms. shoreline of the Indian Ocean from the Great Kei mouth to Umtamvuna mouth, bounds Transkei in the east. Transkei consists of a solid block with 26

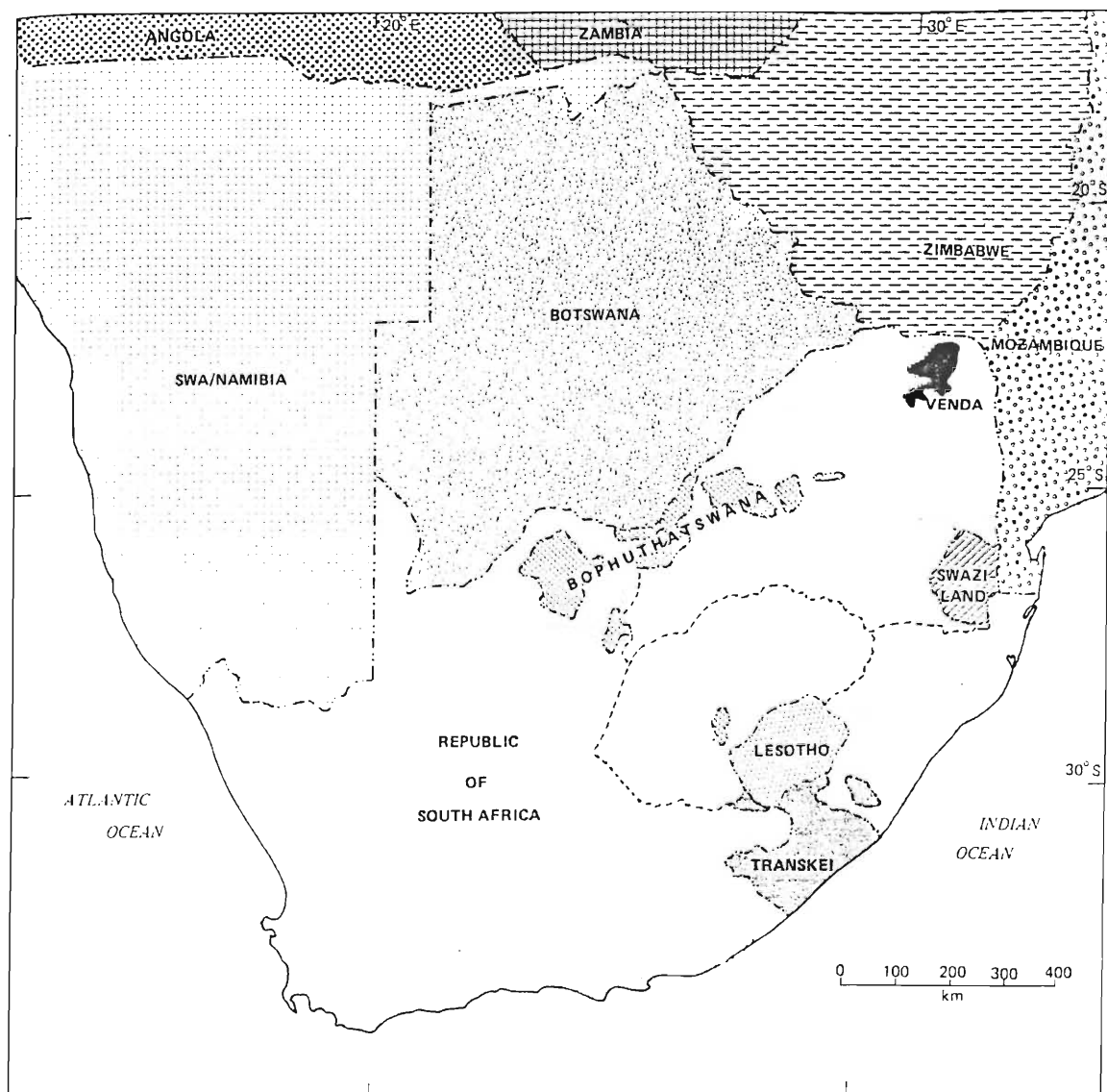


Figure 1.2: Geographical Situation of Transkei in Relation to Republic of South Africa.

districts and 2 enclaves - Umzimkulu (north) and Herschel (west) - (Dischl, 1982) (figure 1.3). The present total area of Transkei according to the Agricultural and Forestry Department is 43 653 sq.kms. (DBSA, 1987).

Transkei is characterized by mountain ranges and deeply incised valleys of rivers that flow eastwards from the Drakensberg, constituting drainage basins for important rivers like the Great Kei, Butterworth (Gcuwa), Bashee, Umtata, Tina, Umzimvubu, Umtamvuna, etc. Approximately 75 per cent of the area is mountainous or hilly, only 11 per cent is either flat or gently undulating. The region has hot summers with average temperatures of between 18 and 22 degrees Celsius; and winter temperatures of between 7 and 15 degrees Celsius. Rainfall is mainly in summer and ranges from a high of 1000mm in mountainous and coastal regions to 625mm in the intervening areas (Swanevelder, et al., 1987). The interior is covered with sourveld types of grass and scattered short scrubs, with forests, mangroves and dune forests in the coastal regions.

Information on vital statistics is scarce, but indications are that the crude birth rate is about 38 per thousand and the crude mortality rate about 13 per thousand. This yields a natural rate of increase of 25 per thousand or 2.5 per cent (Muller, 1985). Considerable difficulty is experienced in establishing the exact population of Transkei due to

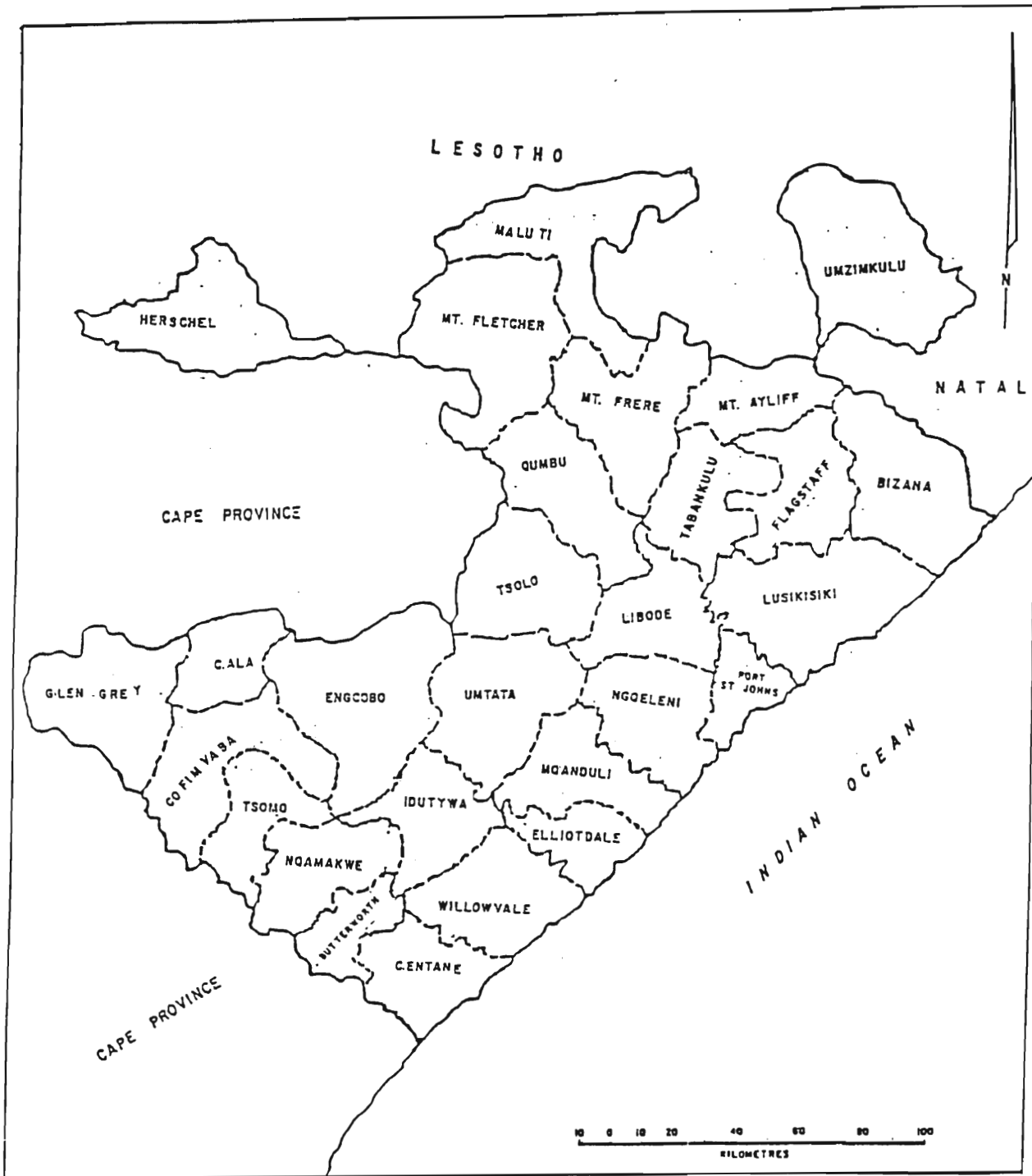


Figure 1.3: THE 28 MAGISTERIAL DISTRICTS OF TRANSKEI

widespread system of labour migration to the industrial areas of South Africa. The last census conducted in 1985 gave a de facto population of 2 876 122 (Transkei 1985 Population Sample Census, September 1987). The breakdown for the enumerated population for the 28 magisterial districts is illustrated in table 1.3.

1.4.2. Historical and Ethnological Background of Transkei

Traces of Nguni tribes (Bantu-speaking people) were found in the present Transkei as early as the fourteenth century. The first to arrive were the Xhosas, who split into the Rarabes in Ciskei, and the Gcalekas in the districts of Centane, Willowvale and part of Idutywa in Transkei. The Thembus followed and occupied the districts of Mqanduli, Umtata and Engcobo; while the Emigrant Thembus settled in Xalanga (Cala) and St. Marks (Cofimvaba). The Mpondos in the districts of Libode, Ngqeleni and Port St. John's (western), Lusikisiki, Flagstaff and Tabankulu (eastern); and their cousins the Mpondomises in the Qumbu and Tsolo districts followed in early 1800s. The upheaval of Shaka wars from 1816, brought the following tribes and clans into Transkei: the Mfengus in the southern districts of Butterworth, Nqamakwe, Tsomo and parts of Idutywa; the Bhacas in Mount Frere and Umzimkulu; and the Xesibes (also cousins of the Mpondos) in Mount Ayliff. Smaller clans - Hlubi, Qwati, Ntlangwini and Sotho-speaking clans (a

TABLE 1.3 POPULATION BY DISTRICT, RURAL AND URBAN AND BY SEX (DEFACIO POPULATION), 1985

DISTRICT	RURAL			URBAN			TOTAL
	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL	POPULATION FOR RURAL & URBAN
BIZAMA	59268	80751	140019	232	389	621	140640
BUTTERWORTH	20973	29461	49434	11503	14491	25994	75428
CALA	19193	25291	43484	1222	1937	2959	46443
CENTANE	32281	48725	81007	117	129	246	81253
COFINVABA	35123	56084	91207	358	568	926	92133
ELLIOTDALE	23925	33129	57054	154	281	435	57489
ENGCOBO	58271	85814	144085	451	595	1046	145131
EZIBELENI	-	-	-	8809	11795	20604	20604
FLAGSTAFF	32916	44908	77824	360	498	858	78682
HERSCHEL	47431	65177	112608	327	420	747	113355
IDUTYWA	31042	44719	75761	651	811	1462	77223
ILINGE	-	-	-	3655	4007	8262	8262
LADY FRERE	65213	88316	153529	699	771	1470	154999
LIBODE	39600	51817	91417	221	283	504	91921
LUSIKISIKI	69557	99136	167693	323	391	714	168407
MALUTI	52999	76271	129270	-	-	-	129270
MQANDULI	47674	63333	111007	241	253	494	111501
MT AYLIFF	24536	35193	59729	455	645	1100	60829
MT FLETCHER	41074	60565	101639	173	242	415	102054
MT FREDE	43625	60245	103870	507	741	1248	105118
MQANAKAE	34503	49252	83755	154	191	345	84100
MGOLENI	46545	64109	110654	279	354	633	111287
QUMBU	37863	55767	93630	335	404	739	94369
TABANKULU	35216	52326	87542	227	344	571	88113
TSOLO	32549	49456	82005	753	1077	1830	83835
TSOMO	29585	40372	69957	209	203	412	70369
UMTATA	58711	95424	155135	22475	27406	50081	205216
UMZINKULU	49609	73014	122623	390	507	897	123520
UMZINYUBU	13462	26096	40558	567	697	1264	41822
WILLOWDALE	38767	53013	91780	150	204	354	92134
TOTAL	1135711	1612030	2747741	58142	71039	127181	2876122

Source: Transkei 1985 Population Sample Census (September 1987).

spill-over from Lesotho) - settled among the other tribes in the districts of Mount Fletcher, Engcobo, Matatiele and along the Drakensberg (Dischl, 1982, pp.5-10).

The process of annexation and final settlement of Transkei territories followed a series of treaties and the territorial annexations by the Cape government through proclamations between 1877 and 1894 (Dischl, 1982). The first region to be annexed to the Cape Colony in 1877 by Act 38 was the area between Great Kei and Bashee rivers, and thereafter Griqualand East between Umtata and Umzimkulu (to the west of the present national road), also known as Nomansland. The respective territories of Fingoland, Gcalekaland and Idutywa; and then Umzimkulu, Kokstad, Matatiele, Mount Frere, Maclear, Qumbu and Tsolo were united into chief magistracies by September 1878. The British Governors of the Cape Colony, eager to obtain the river mouth of the Umzimvubu (in Port St. John's district), used by German boats, negotiated with Chief Ngwiliso in 1878 for the purchase of the strip of land 16kms. inland on the western side of the Umzimvubu river for 1000 pounds. At the same time the British Colony of Natal sent General Thesiger to occupy the eastern bank of Port St. John's. British sovereignty was declared in 1881 and the formal annexation followed in 1884 by Act 35 of 1884. The two regions were later annexed by Act 5 of 1894 into Mpondoland. Act 3 of 1885 annexed Thembuland, Emigrant Thembuland and Bomvanaland, which united Umtata, Engcobo, Mqanduli, Xalanga (Cala), St. Mark's

(Cofimvaba) and Elliotdale into a chief magistracy. The tribal land of Xesibe was made a magistracy in 1878 with Mount Ayliff as residence, after the Rhode Valley had been purchased from the Mpondos for 600 pounds on the 9th. of December, 1886 and annexed by Act 45 of 1886 (Saunders, 1978).

1.4.3. The Road to Self-Government and Independence

The Transkeian territories enjoyed a particular and streamlined development which gave the chiefs and the tribesmen some share of administration and power from the beginning of this century. The Glen Grey Act 25 of 1894, which provided for 8 locations councils and a district council, was applied by Proclamation 293 to the districts of Idutywa, Butterworth, Ngamakwe and Tsomo. These 4 district councils were then amalgamated in the Transkeian General Council (TGC), and Centane was added in 1898. In 1903, the council system was extended to the districts of Umtata, Mqanduli, Engcobo, Elliotdale, Tsolo, Qumbu, Mount Frere, Mount Fletcher and Umzimkulu. In the same year, the three chief magistracies of Transkei proper (Butterworth), Thembuland (Umtata) and East Griqualand with Mpondoland (Kokstad) were united in the United Transkeian Territories, with Sir Henry Elliot as its first Chief Magistrate and Umtata its capital. Transkeian General District Council then replaced TGC with new additions: Willowvale (1903), Mount Ayliff (1908), St. Mark's (Cofimvaba)

(1909), Matatiele, Port St. John's, Ngqeleni and Libode (1911), Xalanga (Cala) (1924), Lusikisiki, Flagstaff, Tabankulu and Bizana (1927). The incorporation of Transkei into the Union of South Africa took place in 1910. The United Transkeian Territorial General Council was formed in 1931 with all the 26 districts of Transkei. It consisted of the Chief Magistrate in the chair, the 27 all-white district magistrates and 3 black members from every district. This council had some powers in local administration but final decisions were made in Cape Town and Pretoria.

When the Nationalist Party took over power in South Africa in 1948, their policy was the creation of ethnic homelands which could become independent states. A series of laws were enacted in this direction. For instance, Act 68 of 1951 provided for the system of Bantu Authorities and was applied in Proclamation 180 of 1956 to the Transkeian Territories, where nine regional authorities and 129 tribal authorities were established besides the 26 district authorities. The promulgation of Transkei Constitution Act of 1963, gave Transkei a self-governing status on 30 May, 1963, with a Legislative Assembly made up of 5 paramount chiefs, 59 chiefs and 45 elected members, and elections took place in 1963, 1968, 1973 and 1976 (Carter, et al., 1967; Hammond-Tooke, 1975; Laurence, 1976). The Glen Grey and Herschel districts (formerly belonging to Ciskei), were added to Transkei during independence on the 26th. of October, 1976 with recognition

from only South Africa and other Bantustans in the whole world.

1.4.4. The Space Economy and Regional Inequalities

Many models of development as propounded by authorities like Myrdal (1957ab), Hirschman (1958), Rostow (1960), Perloff & Wingo (1961) and Friedmann (1966) have been geared to unearthing the developmental processes that generate specific spatial patterns, as a result of the relationships existing between certain elements of development.

Transkei's space economy will be reviewed along three-stage periods from what Rostow (1960) refers to as "traditional society", characterized by the migration of the Cape Nguni people into the territory before the 19th century. Here attitudes to the physical world were pre-Newtonian. Thus, access was denied to modern science and ceilings were placed on the productivity of economic techniques and on the level of attainable output per head. This period is from the time the Nguni people arrived in the Transkei in the fourteenth century, to the time of contact with the white man, just before 1877. The coming into contact with the white man and the resultant annexation of the territory up to the time just before independence, would be termed as "pre-conditions for

take-off". The country, Transkei, was being prepared for that 'great watershed' in the life of modern societies. During this period, the old blocks and resistance to steady growth were finally overcome and a political power-group emerges that regarded the modernization of the economy as a serious high-order political business. These pre-conditions were externally induced by the more advanced societies to hasten the undoing of traditional society (Rostow, 1960). The post-independence era of Transkei will be equated to Rostow's "take-off stage" where there is rapid economic growth and spread of new techniques in agriculture and industry.

During the 'traditional society stage' of development, the inhabitants lived in dispersed wet-point settlements with their families and dependents, and the basis of their subsistence was agriculture, hunting, livestock farming and occasional exchange of horns, hides and ivory for blankets, hoes and guns with passing ships, white traders and neighbours. Homesteads were isolated and consisted of a cluster of huts settled by a particular clan who depended largely on crop and livestock farming, meant specifically for the consumption of the household. This subsistence level of living actually created little or no spatial inequalities in development. It was a question of regional specialization and differentiation (Dischl, 1982).

The coming into contact with the white man by the indigenous inhabitants and the promulgation of a number of acts and annexations during the second half of the 1800s was the beginning of creation of spatial inequalities in the territory. The magisterial centres became the focal points of administrative, judicial and military functions. The whites were encouraged to settle in Transkei to help spread western culture among the indigenes (Dischl, 1982). Residential units for white occupation, court buildings, police stations and military garrisons for the maintenance of peace and security; as well as educational and ecclesiastical establishments to develop the potential of the residents, contributed tremendously in establishing spatial inequalities in development between the few nerve-centres and the large peripheral areas. Several government proclamations like the Land Act 27 of 1913, Black Amendment Act 25 of 1930 and that of 1945, all helped to institutionalize separate development on the basis of race (Hammond-Tooke, 1975; Laurence, 1976; Saunders, 1978).

Institutions like municipal and local authorities introduced bye-laws which controlled building structures, establishments of recreational facilities, provision of infrastructure and development projects. The urban centres became the "control centres as a result of the concentration of political and economic power, while the more inflexible traditional economy of the hinterland became more backward, more subservient and

poorer" (Coates, et al., 1977, p.127). The centres exhibited symptoms of 'hypercephalism' (as in Latin America), as the economic rewards of 'modernization' were reaped or heaped in a tiny portion of a nation's total space and in the hands of minority of its urban residents (p.128).

From the foregoing analysis, it is evident that Transkei, at independence, inherited a type of development process where centralization and regional underdevelopment combined together in a contradictory fashion, so that what benefited the centre tended to give rise to a detrimental impact on the underdeveloped regions.

The attainment of independence in Transkei in 1976 ostensibly created a euphoria of a structural adjustment to the two-sided unequal economic distribution of wealth which was to bridge the yawning gap between the urban core complexes and the depressed peripheral regions. But unfortunately the different development strategies that had been adopted since independence, have succeeded in maintaining the status quo, thus, increasing the divergent economic development among its regions. Foreign investments, transport innovations, resource availability, proximity to major markets, infrastructure and power sources have been focussed of a few centres (Umtata, Butterworth and Ezibeleni). These have helped to reinforce industrial and other commercial activities in the centres

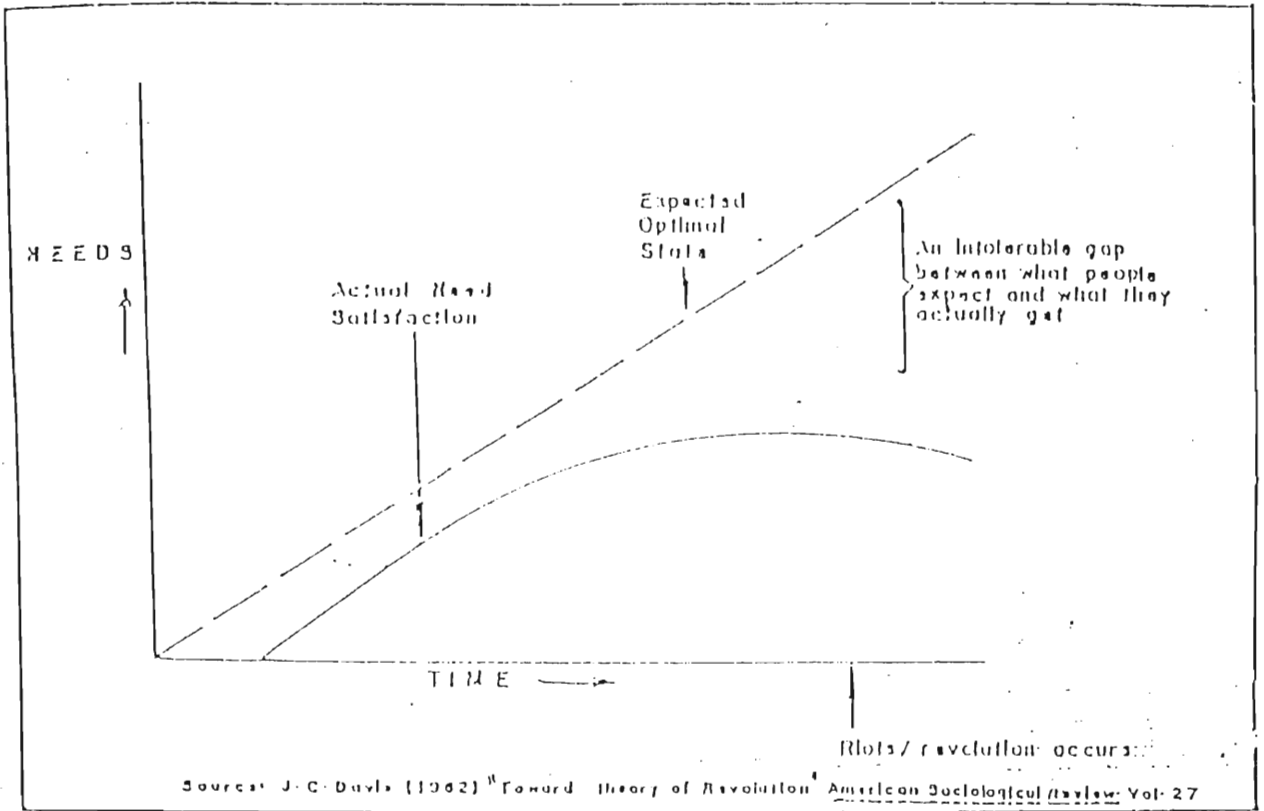
which have initial multiplier effect, resulting from the demands of the employers and employees. Consequently, there has been outflow of capital and labour to the regions where the returns are higher. Out-migration of labour from the underdeveloped hinterlands of Transkei has become selective, where the young, the most able and the most ambitious tend to leave. Their departure worsens the age and sex distribution and makes the periphery less attractive to employers. Those who remain tend to be poorly educated and have value systems and social customs which deter would-be employers from coming to the region. The urban population of Transkei increased by 153.4 per cent between 1980 and 1985 as illustrated in table 1.3.

There is, therefore, a general air of pessimism and depression confirming the employers' judgement, as well as low tax revenues, which produce a poor infrastructure and create dependence upon the central government for almost all forms of social investments, which may not be forthcoming. All these factors act against the underdeveloped region and increase the gap between "haves" and "have-nots". Myrdal (1957b, p.12) finds appropriate words for this situation in the gospel that "for unto everyone that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even that which he hath" (St. Matthew, chapter 25, verse 29).

From the foregoing, it is evident that in spite of the diverse approaches towards a balanced development in Transkei, there had been an increasing divergence in the economic development of the spatial units of the country. There is, therefore, the need for structural adjustment, if the lot of the masses is to be uplifted. This is because the initial spatial inequalities in development and its subsequent amplification, with time, create an intolerable gap between what the people of the depressed areas expect and what they get (Davis, 1962; Seers, 1969; Myrdal, 1970; Meier, 1976). Davis (1962) illustrates this in his model "Towards theory of Revolution" in figure 1.4.

1.5. ORGANIZATION OF STUDY

In line with the objectives of this study, this work will make up of three parts, namely: background, results and conclusion, which will be organized in five chapters. Chapter one will generally be an introduction to look into the general problems of regional inequalities in development; the causes and effects of this problem. The objectives of this study will be laid out in this chapter, as well as the justification of the study and the space economy of the study region - Transkei. The spotlight will be on the inequalities consequent to Transkei's development effort. The second chapter sets out to review the theories and the concepts relevant to



Source: J. C. Davis (1962) "Toward Theory of Revolution" *American Sociological Review*, Vol. 27

Fig 1.4: Davis Model indicating the implications of widening the gap between social expectations and what is actually given to society.

regionalization. Such a review will offer a tremendous understanding to the techniques of analysis. This chapter will also look at the research methodologies, which will examine the various techniques for data collection and analysis. The third chapter will identify the factors underlying the relationships between the variables. Chapter four will look at the levels of development and regional inequalities in Transkei, and will group the observation taxonomic units (in this case, the 28 magisterial districts) in an ordination plane maps. The survey results and analysis will be included. The final chapter, five, is the conclusion and recommendations. Here, the problems, roles and potentials of the districts will be looked into, and then an appropriate regional development strategy will be recommended.

CHAPTER TWO

THEORETICAL AND CONCEPTUAL FRAMEWORK AND RESEARCH METHODOLOGY

2.1. INTRODUCTION

The status geography has assumed of late, is the result of numerous theoretical and conceptual constructs it employs to analyze geographical problems. During the past decades, geographers have expounded conceptual frameworks for the analysis of regional inequality that recognize socio-economic well-being as both multi-dimensional and culturally relative (Hall, 1984). Such theories and concepts make the understanding of spatial inequalities simpler and serve as basis for predictions. These theoretical and conceptual constructs would form the framework within which the underlying factors of regional inequalities in Transkei will be examined, with strategies that could be adopted to rectify this intolerable situation.

2.2. DEVELOPMENT AS A MULTIVARIATE PHENOMENON

'Development' is conceived as a multivariate phenomenon

(Berry, 1973; Myrdal, 1975; Chapman, 1979; Mabogunje, 1980), because it employs several components as a measure in a social and political milieu in which people enjoy equality, and from which differentiation according to class, wealth, sex, colour and religion is absent or at least not degrading (De Souza & Porter, 1974). Development reviews the problem of inequality, that is the unequal access of individuals and groups to the material and non-material resources of a society (Henderink & Sterkenburg, 1978), whether that society is a national society or world society. It looks at the question of the just distribution of wealth, goods and services. Seers (1971) defines development as the reduction of poverty, unemployment and inequality. Past authorities defined it in terms of a few indicators, an approach considered to be unbalanced, because it isolates and concentrates on a few elements, without considering the insatiable wide range of human needs. But since development is more involving and attempts to bring about equity in a wider perspective, the multivariate approach becomes more suitable. The analysis of development should involve employing several indices simultaneously, so that a comprehensive picture of the living conditions of the people could be obtained. This makes this approach more balanced.

The concept of development describes the quantity and quality of goods and services produced and consumed in a community with the ultimate goal of raising the living standards of the living population. According to Dudley Seers (1973),

development is an integrated process of change towards the enhancement of the socio-economic welfare of a given population and the average individual's scope for self-fulfilment. It is the outcome of a series of quantitative and qualitative changes occurring among a given population, the converging effects of which, in the long run, produce positive changes in the ways of life of the people and an accompanying increase in their standards of living. The balanced or integrated approach to development has the advantage of presenting a balanced and unified picture of the various needs of man, which when satisfied could spur him to higher productivity and therefore, higher contributions to national development. There is, therefore, a feedback relationship between the living conditions of the people and the overall development process. That is why it is suggested that in any development plan, the living conditions of the people must be the ultimate reference point to which all plans must be focussed. The multivariate approach in Transkei will help the government develop a strategy that will improve the standard of living and the quality of life of the people, to increase agricultural output, create employment and develop the backward regions.

2.3. RELATIONSHIPS BETWEEN ELEMENTS OF DEVELOPMENT

No matter how many elements one uses to analyze development,

there is no doubt that elements are interdependent. The elements of development tend to be interdependent so that it is possible to group them on the basis of their relationships. By grouping them some basic patterns associated with the development process begin to manifest themselves, and the analysis becomes simple, because the amount of data being handled is reduced. Berry (1960), in his study of variations in the level of development among 95 countries in the world, used 43 variables, which were grouped into 5 on the basis of their similarities. Each of the groups had a distinctive characteristics, and he used the term 'dimensions' or 'factors' of development for the 5 groups. David Smith (1973) measured the variations in level of living in the U.S.A. with 47 variables, and on the basis of the relationships between these variables, he obtained 'factors' or 'components' which he employed to perform his analysis. Classification of variables reduces the body of information available and exposes certain characteristics among these variables which may not have been evident initially.

The relationships between the elements of development can be causal, in that they work to increase development in some regions and produce underdevelopment in others, while others are consequential (Sundrum, 1983). Several relationships at various levels of resolution are, therefore, possible. It is these relationships that work to produce spatial variations in the level of development, with vicious cycle of poverty as one of its products. For instance, measuring variations in the

level of living within a city, variables reflecting the conditions of living of the population must be employed, and we end up picking cluster of variables on the basis of their relationships as shown in figure 2.1 below. This simple illustration indicates the causal links between the 6 variables which are intimately related. Thus, the inter-relationships can be expressed as a reflection of a social class within the city. From this illustration, it is clear that by grouping the variables, we are able to make meaningful generalizations and analyses which can help us to understand our geographical problems better. The only shortcoming of classification method are loss of detailed information and individual characteristics of the variables, in so much that one begins to talk in broad terms of group variables. But in spite of all these, one has to classify before developing theories and achieving meaningful analysis of the geographical problems being considered. The causes of the relationships between variables are that certain factors tend to go together and operate in dependency relationships, and as such cannot exist without the other. This pattern of interdependence brings about grouping of the variables. For example, variables associated with high income population in functional terms, may be illustrated in figure 2.2. The above illustration is typical of causal modelling and indicates the cause-effect relationships associated with some particular variables. None of them stands in isolation that is why variables should not be considered individually whenever there is an analysis in levels of development.

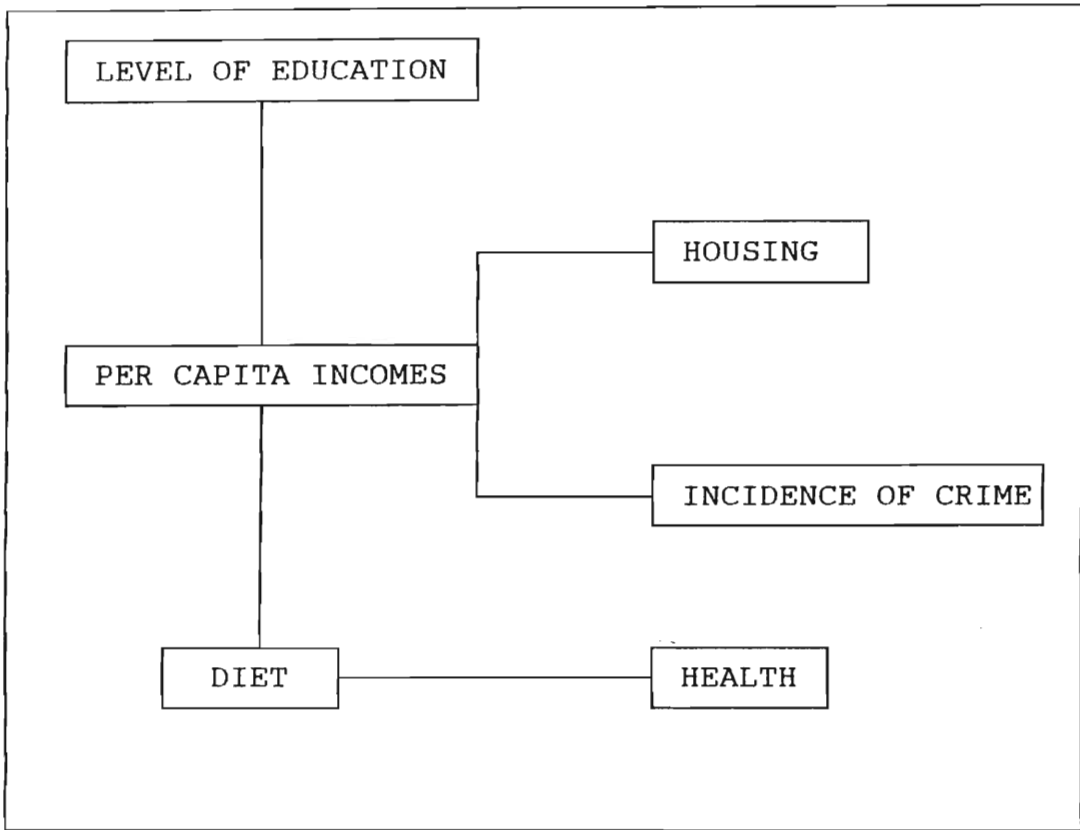


FIGURE 2.1. CLUSTER OF VARIABLES SHOWING CONDITIONS OF LIVING OF THE POPULATION

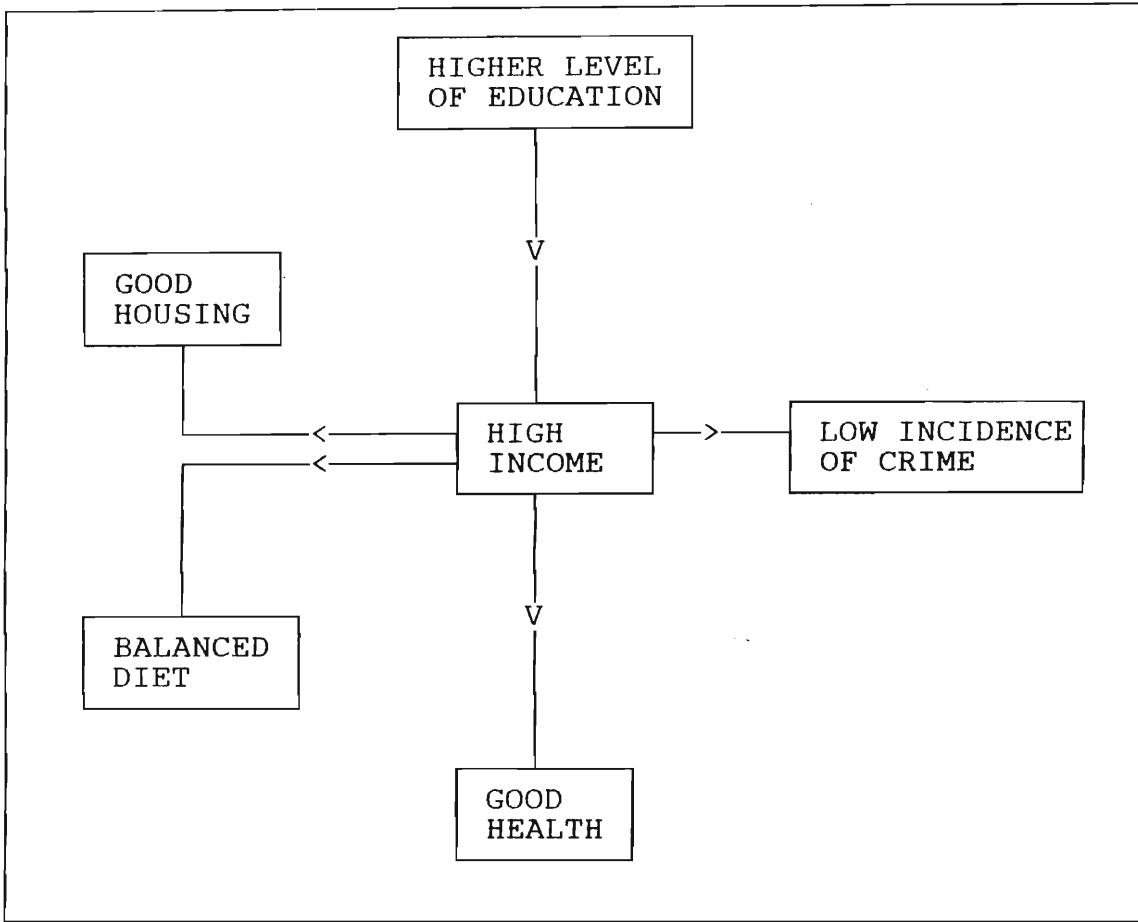


FIGURE 2.2. RELATIONSHIP BETWEEN VARIABLES OF HIGH INCOME POPULATION

2.4. VARIABLES RELATED TO THE BASIC NEEDS APPROACH

Of late, the term 'basic needs' has aroused considerable discussion and debate to such an extent that the term and issues associated with it are subjects of controversy. But this has not been surprising if one considers that the main concern in this work is related to basic needs. It has been argued that inequality and the incidence of absolute poverty have increased, not only in countries with poor growth performance but also in several fast-growing ones (ILO, 1977; Adelman and Morris, 1973). Empirical evidence points to the growing numbers of people in developing countries who suffer from malnutrition and debilitating disease; who live in grossly inadequate housing; and who lack access to essential services such as clean water, sanitation, health care and education. The absolute numbers suffering from deprivation of their basic needs are growing (McNamara, 1976). Such a picture of destitution obviously offends humanitarian instincts and arouses an indignant desire that something ought to be done to eliminate this embarrassing adjunct to economic development. Hence, the advocacy of a basic-needs strategy of development which stresses satisfaction of basic of all, as a primary objective of development strategy. Any disagreement over the desirability of such a strategy will mean denial of the humanitarian sentiments upon which it is based (Lee, 1977).

The ILO World Employment Conference Report's description of basic needs approach, suggests a priority of development objectives that should satisfy the basic needs of the poorest people by the year 2000. This implies that a basic needs approach seeks to define development objectives in terms of people and what they need as expressed by the people themselves (ILO, 1976).

There has been a major problem in the definition of basic needs, with many people looking differently at needs (Booth, 1900; Rowntree, 1908; Maslow, 1968; Alderfer, 1972), and the components constituting quality of life (OECD, 1973; Carr-Hill, 1978). Standing (1977) argues that basic needs cannot be defined in a class-based society, since those that emerge will reflect the needs of a divisive system of production and exchange. Specific groups will determine their needs according to their interests and not their objective human essence. But Ghai (1977) thinks that the unequivocal answer is that the people themselves should decide on the scope, content and priority of their own basic needs. A basic-needs strategy must include mass participation of the people both in defining basic needs and in the decision taken to meet basic needs (Hopkins, 1977; ILO, 1977), through a mechanism in the planning process where representatives of organized groups choose basic needs (ILO, 1977).

There is a need to concentrate development efforts on meeting the core basic needs of the poorest, namely: food and nutrition, drinking water, basic health, shelter, basic education (Maslow, 1968; World Bank, 1976; Khan in Ghai, et al., 1977), and non-material needs as freedom, equality, security and participation (Stewart & Streeten, 1976). Adam Smith on 'necessities' of life considered not only the commodities which are indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without (quoted from Hopkins et al., 1983). Amartya Sen (1978) in a similar view suggests "nutritional poverty line"- below which people suffer from malnutrition; and 'cultural poverty line"- which identifies the level of income adequate for meeting necessities defined in broader cultural terms.

Technically, three factors must be taken into account when defining basic needs, either at the core or higher level definition, namely: components, indicators and targets (Hopkins & van der Hoeven, 1983). The UN has suggested a list of 12 items considered to be an acceptable international catalogue of the components of basic needs. But the precise connotation of each be determined by national attitudes and standards resulting from peculiarities of environmental conditions, cultures, values and economic, political and social organizations (UN, 1954). The list includes the following: health and demographic conditions; food and

nutrition; education, including literacy and skills; conditions of work; employment situation; aggregate consumption and savings; transportation; housing and household facilities; clothing; recreational entertainment; social security; and human freedom. Rao (1975) and Aziz Khan (quoted in Ghai, 1977) include food, clothing, shelter, health, drinking water, education and contraception as components of a core set of basic needs. Considering the above components which allow the level of well-being of an individual, family or society to be measured must be chosen.

Indicators, on the other hand, are measures chosen to gauge the movements towards satisfaction of basic needs (Roberts, 1974). Such indicators measure distributional aspects to show the percentage of the population above a social minimum as basic needs target and then the basic-needs maximum and minimum, in order to point to over-consumption and emphasize the necessity of re-distribution. Input indicators (eg. number of hospitals per 1000 or doctors per 1000) and output indicators (eg. life expectancy), constitute a promising direction to develop indicators for measuring basic needs. Generally, basic-needs indicators are of output or performance indicators, and that a measure of input at one level can be a measure of output at another level. Wherever there is a relationship between a statistical measure and welfare or well-being or basic-needs satisfaction, the statistical measure is an output indicator (Carr-Hill & Magnussen, 1973).

To make a sensible choice of output indicators to measure performance, an explicit discussion of goals or objectives is a pre-condition.

In measuring movements towards basic-needs' satisfaction, there is a need to set targets or levels. This will help to identify nations that have been relatively successful in meeting basic needs over time and some guidance on the kind of appropriate policies. Target-setting is a controversial issue when it comes to selecting the minimum need which must actually be above the survival level, depending on value judgements. The Food & Agricultural Organization (FAO) sets food intakes for minimum energy requirements to a reference man who is between 20 and 39 years of age and weighs 65 kilograms, which agrees to British standards. But the National Research Council (USA) uses optimum requirement: everybody in USA (in good health) requires proper level of nutrition to be able to resist the normal aggressive factors in the environment eg. sickness, etc. (OECD, 1976). Certain targets like clothing needed to prevent the body from becoming too hot or too cold; shelter for protection and for living space; the type of education that allows people to contribute to society and change, for instance, basic literacy skills needed to support life; can be considered in any basic-needs studies.

The importance basic-needs approach to development is assuming

can be reflected in a number of studies conducted around the world to assess its performance and to advise countries on the likely policies to pursue. The first was carried out in Zambia in 1975 and later 1981 to investigate the profile of the core needs of the urban and rural population and the shortfalls in these needs (ILO, 1977; Van der Hoeven, 1982). The Kenyan government requested the ILO to provide some advice on how to incorporate basic needs in their 1979-1983 development plan (Ghai, et al., 1979). The ILO again undertook an analysis of basic needs for an adequate level of health in Nigeria in 1979 (Seers, 1981; Streeten, 1981). This report found out that ill-health persisted despite prosperity created by the oil boom and that basic needs ought to be restricted to real essentials like nutrition, water, shelter, hygiene, education and safety. Similar studies had been conducted in Bangladesh (Khan in Ghai et al., 1977); Thailand (Poot, 1977); India (Rudra, 1978); Philippines and Guyana (Szal in Standing, 1979); Sri Lanka (Richards & Gooneratne, 1980); etc.

The basic needs strategy has become popular, and has emerged, without doubt, as a response to the disillusionment with the poor track record of the more conventional development programmes in South Africa. The reason being that basic needs aim at eliminating poverty and promoting the development of the underprivileged areas. While the more conventional development approaches tend to focus more exclusively on economic growth the basic needs strategy concentrates on

people and their needs. It specifies the minimum bundle of goods and services required for a basic existence (Moller, 1985). A number of studies undertaken in South Africa using basic needs strategy include a qualitative exploratory research undertaken in Black, Indian and White communities in and around Durban and on the Witwatersrand by BBDO Research (Pty) Ltd (1976); Moller et al. (1978; 1983; 1984); Natrass (1979; 1982); Simkins (1980, pp.170-173); the Centre for Applied Social Sciences at the University of Natal in conjunction with the Human Sciences Research Council, (1983); Streeten (1984); Tollman (1984); etc.

All these studies indicate that the basic-needs approach does not offer simple short cut for solving the problem of mass poverty. But with restructuring of political power, changes in planning targets and policies will need to be accompanied by a re-distribution of assets and institutional change. This makes this approach relevant to the Transkei situation in view of a similar situation it finds itself together with other third world countries.

2.5. THE REGIONAL CONCEPT IN THE DEVELOPMENT PROCESS: TYPES OF REGIONS

The region is a tool used by geographers to handle the

complexities of the features of the earth surface in one area. There are single-feature regions like relief regions defined by a certain contour or change of slope; soil regions based on its type, example, podsols, chernozems, laterites, etc.; vegetation regions; climatic regions; etc. Single-featured regions can be combined with some justification to form one region. For instance, soil, vegetation and climatic regions can be combined to form natural regions, because of the causal connections between these features with sufficient differences to distinguish each natural region from the rest.

Geographers are increasingly interested in the aggregation of small areal units into larger composite sets. The fundamental objective of such procedure is to produce aggregate regions with either maximum within-group homogeneity. The type of regions with maximum within-group homogeneity are termed 'uniform' or 'formal' or 'homogeneous' regions, with minimum "dispersion or statistical distance between local characteristics, given two conditions: contiguity and the number of regions" (Boudeville, 1966, p.8). Those regions with maximum interconnections are termed "functional" regions, because they entail analyses of such interaction data as telephone messages (Nystuen & Dacey, 1961; Davies, 1968), inter-regional migration (Brown, et al., 1970), commodity flow (Berry, 1966) and commuting between dyadic nodes in the system (Brown & Holmes, 1971). The regional concept as developed by Perroux, Boudeville, Friedmann and others, denotes a nodal

region, polarized region or interdependency region (Hilhorst, 1971). This concept is based upon the observation that human beings, for the execution of their activities, which are of a public administrative; economic ; political; recreational and social character, require space and, therefore, have a certain location. The relationship resulting from these activities have a spatial dimension and need either transportation and/or communication over the various distances separating their location. There are also planning regions which can be converted from a functional and uniform regions. Planning regions are, therefore, decision-making regions created to satisfy certain functions by planning authorities.

From the foregoing, it is evident that the main types of regions are uniform and functional regions.

2.5.1. Uniform or Homogeneous or Formal Region

This region is delimited on the basis of uniform characteristics. The idea of the formal region as a method of description is that whatever is stated about one part of this region is true of any other part. It is the "largest area over which a generalization remains valid" (Minshull, 1967, p.38). The grouping of small homogeneous regions such as limestone plateau and a clay vale into formal regions such as the scarplands reduces one of the major problems of regional geography, that is where to draw boundaries. But the

homogeneous approach usually used for the delimitation of economic sub-spaces for certain regional planning goals "is unsatisfactory, because of its assumption of a uniform human response surface in each of the sub-units" (Harvey, 1972, p.229). Friedmann (1964), rightly observed that "only a rural economy could, by any stretch of the imagination, be considered sufficiently 'homogeneous' to qualify as a region" (p.505). He, therefore, used centre-periphery model in his work on regional development in Venezuela (1966) because he felt that "the activation of the cores should cause 'growth' impulses and economic advancement to ... 'trickle down' to smaller places and ultimately infuse dynamism into even the most tradition-bound peripheries" (Berry, 1969, p.288).

Uniform region as an approach for regionalism, creates a number of problems. It becomes difficult to identify growth centres when isolating and selecting economically depressed areas. The reason being that the aggregate catchment areas of selected sites may be considerably less, while the inhabitants of peripheral areas may actually belong to the service hinterlands of nodes outside the planning district (Harvey, 1972; Omuta, 1977). Another problem is that the constituents within a subgroup will depend on the variables being used and the interest of the researcher. The inadequacies of this method is also the fact that "without the imposition of a contiguity constraint, any aggregation of subunits will not result in the coalition of contiguous zones to form a region"

(Harvey, 1972, p.229). Geographers have expressed concern about the use of contiguity conditions in regionalization as reflected in the assertion that "regionalization with contiguity constraints oversimplifies and operates against efficient hypothesis testing. There is no basis in geographic theory ... for the adjacent requirement" (Johnston, 1980, p.295).

The shortcomings of formal regions for purposes of planning, make functional regions more suitable, because functional regions are based on economic processes involving functional complementarity and maximum interaction.

2.5.2. Functional Region

Functional region is essentially a place where adjacent contrasting physical environments permit a variety of activities which are complementary in supporting the life of the whole. It is a classic example of unity in diversity, where the complex of areas function together as a whole, and to a degree dependent on each other. It involves a study of how different areas work together to produce such end products as food, clothes, houses, luxuries, etc. Mackenzie defines functional regions as "'an area or unit in which the economic and social activities of the population are integrated round a

focal and administrative centre'. Sauer sees it as 'a cultural area, an assemblage of such forms as have interdependence, and is functionally differentiated from other areas'" (quoted from Minshull, 1967, p.44). Such interdependence of activities will necessarily have a spatial dimension and will require either transportation or/and communication over the various distances separating their location.

As development proceeds, so will functional specialization, and this will result in a more complicated network of relationships, because human activities involve certain locational factors which will give rise to spatial dispersion of these activities. Transportation "allows for accessibility to the centre and for rapid circulation among the various parts of the city region ... It is the nervous system of a regional organism and is absolutely vital to its survival" (Friedmann, 1964, pp.512-513). Echoing this idea, it is noted that "a network serving a certain region not only subdivides this region into feeder areas, but at the same time provides connection between the different parts of the region ... It superimposes a spatial structure on the region it is serving" (Werner, et al., 1968, pp.129-130). Harvey (1972) feels that an analysis of the existing transport network, either in terms of structure or flows, should be a good basis for functional regionalization in the developing world.

Functional regions, therefore, becomes interaction fields, delimited on the basis of flows or interactions, and act as magnetic regions. They can be fragmented to such an extent that there may be parts of the region which may have no connection with the entire region. According to Whyte (1957) invisible social ties stretch from one house to another to form a functional region. Which presupposes that areas in functional region are not necessarily part of it, they are like "interstitial cells in some organisms" (McCarthy, 1940). While formal regions are static, functional regions can grow and shrink in area extent, and changes can occur in character. For example, it is possible to see larger regions near the top of the pyramid re-arranging themselves on a larger scale.

2.6. THE TYPOLOGY OF REGIONS OF DEVELOPMENT

Rural-urban distortions arising from any development process occur at national and international levels. This situation generally depends to a large extent on the different prevailing conditions in each country and on their relationships to the world economic systems. These distortions can be explained in a more 'classical' sense, in terms of regional 'linkage' and 'leakage' (Lo & Salih, 1981). Regional economies are integrated or linked to a world economy on an unequal basis, leading to a polarization ('backwash') of development activities and leakage of vital regional resources

out to the metropolis and abroad (Myrdal, 1957; Hirschman, 1958; Friedmann, 1966).

Many geographers have approached regions from the standpoint of identifying groups of administrative units that appear to have a fairly homogeneous character according to pre-selected list of socio-economic variables (Forde, 1968). This has resulted in the subdivision of a region on the basis of variations in development from the highly-developed through a continuum to regions of poverty. Thus, development process creates different development regions at macro-spatial (world scale), meso-spatial (regional scale) and micro-spatial (residential scale) dimensions. At the macro-spatial level the globe has been divided into either 'north' and 'south'; or 'east' and 'west'; or into 'developed' and 'underdeveloped' worlds. At the meso-scale, there are 'urban-rural' or 'core-peripheral' areas, while at the micro-space we can identify 'high' and 'low' class residential areas. All these terms are used to describe the level of development attained on the surface of the earth.

Friedmann (1966) in his work on Venezuela identified 5 types of regions relevant to national planning policies. At the top of the hierarchy, he identified the 'core' region which is surrounded by the 'upward transitional' areas (both could be seen as the core). Next is 'resources frontier areas' followed

by the 'downward transitional areas', and then finally at the tail is 'special problem regions' (these 3 regions could be described as the 'periphery') (Friedmann, 1966, pp.39-44). The special problem regions have features of vicious cycle of poverty or spirals model typical of the periphery (figure 2.3).

Lo & Salih (1978) in a similar work on Asia, identified 4 regions for the purposes of distinguishing the key dimensions that capture the dynamics of rural-urban relations. They identified the core region comprising the primate city and the immediate surrounding countryside as the 'metropolitan dominance'. Next is the 'urban (metropolitan) shadow', which is the region close to a major growth or dominant centre. The third of the hierarchy is the 'mixed rural-urban' region, which is a symbiosis of a regional urban hierarchy within a relatively prosperous agricultural region. This category may be divided between regions having large urban centres, and are candidates for industrial decentralization, and those with large agriculturally based towns which may act as centres to mobilize development from below. The lowest on the scale is the 'rural dominance' region, a lagging region low in agricultural productivity and lacking in urban facilities and functions. According to them the metropolitan dominant region which is the fastest-growing region of a nation, along with contiguous urban shadow forms the core region of the nation, with superior access to markets, resources and political

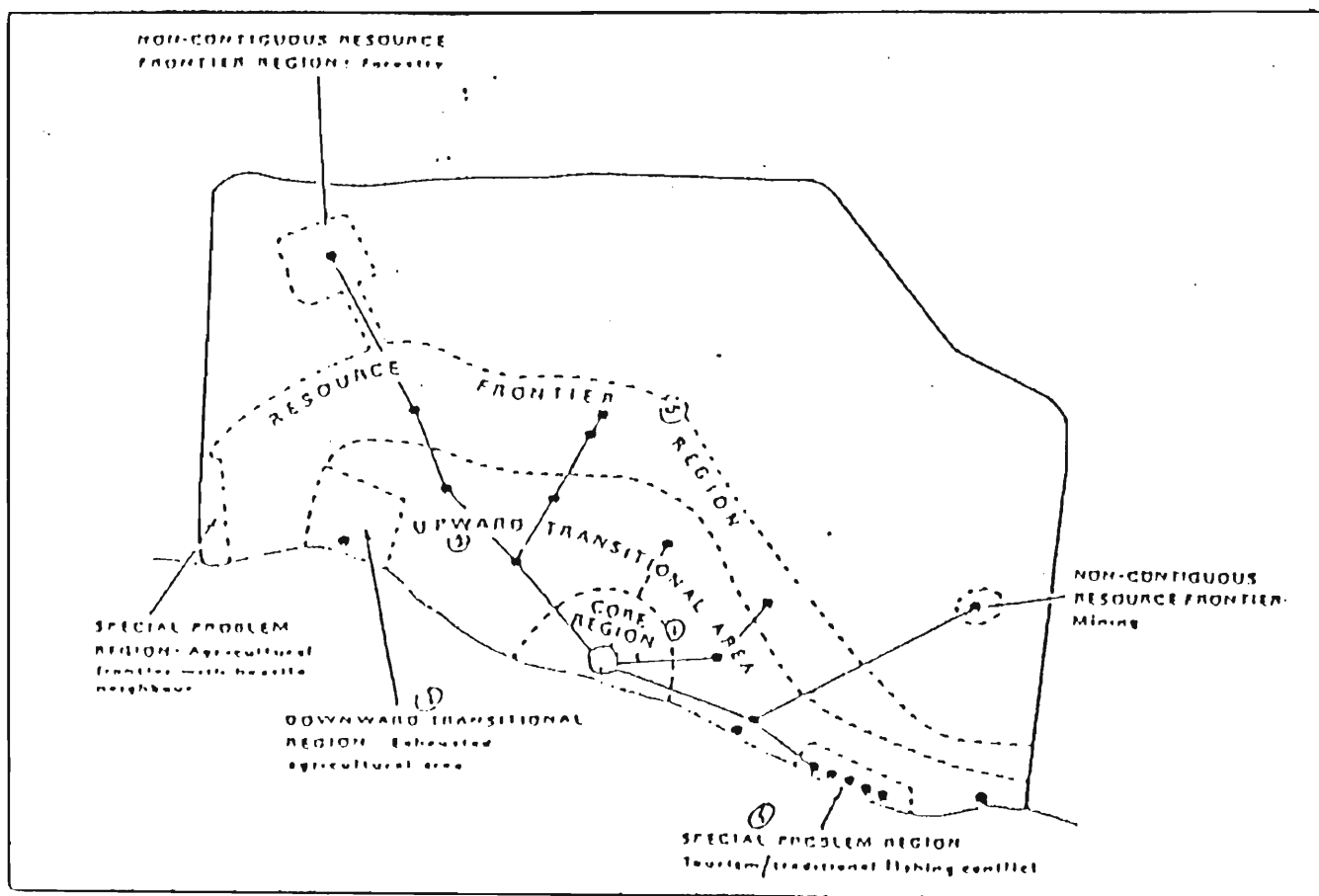


Figure 2.3: Development regions (the Friedmann model).

Source: Friedmann (1966)

power. But the urban shadow can also be the area where industrial-agricultural land-use conflicts are most severe with chronic urban sprawl problems. The poverty of the people and the distance (both social and physical) to sources of minimum support to advance local economies, make the rural dominance regions very problematic. According to Lo & Salih, these 4 regional types form the basic structure of national space-economy in which the urban hierarchy forms a basic skeleton.

Weinand (1973) also identified 4 regions in Nigeria while looking at some spatial aspects of economic development. The 4 basic areal types he identified are the 'growth pole' which contains the majority of entrepreneurial activity and provides high level services. Then he identified the 'hinterland' surrounding the growth pole, provided with a relatively good roads, schools and health facilities, yet looks to the growth centre for its basic economic services. The 'economic frontier' region is one with moderate amounts of economic activity and infrastructure, suggesting that its role in the system is distributive and that it is possibly interstitial, filling the urban complex. In this way, it acts as a complement to the growth centre as well as a possible future competitor. At the tail is the 'undeveloped periphery' with lack of activity and infrastructural variables, indicating that they are excluded from the modern economic sector.

Berry (1960) obtained 5 regions of development on a world scale ranging from the developed to the least developed countries. Enid Forde (1968), in his study of the spatial relationships of Ghana's socio-cultural and economic characteristics identified 4 regions in Ghana. Gideon Omuta (1977), on the hand, identified 5 regions in Nigeria after the work of Weinand. Browett (1976), adopted a stages of growth approach and a regional framework in order to apply Friedmann's stage model of spatial organization to the evolution of the South African space economy. The development regions he arrived at in the South African situation is illustrated in figure 2.4.

From the foregoing, it should, therefore, be possible to identify sub-regions in Transkei, according to their levels of development. Once such regions are identified we should then be in a position to formulate regional development strategies for Transkei.

2.7. REGIONAL INEQUALITIES AS A PROBLEM IN THE DEVELOPMENT PROCESS

Most third world countries, including Transkei, are characterized by marked variations in development. Zones of

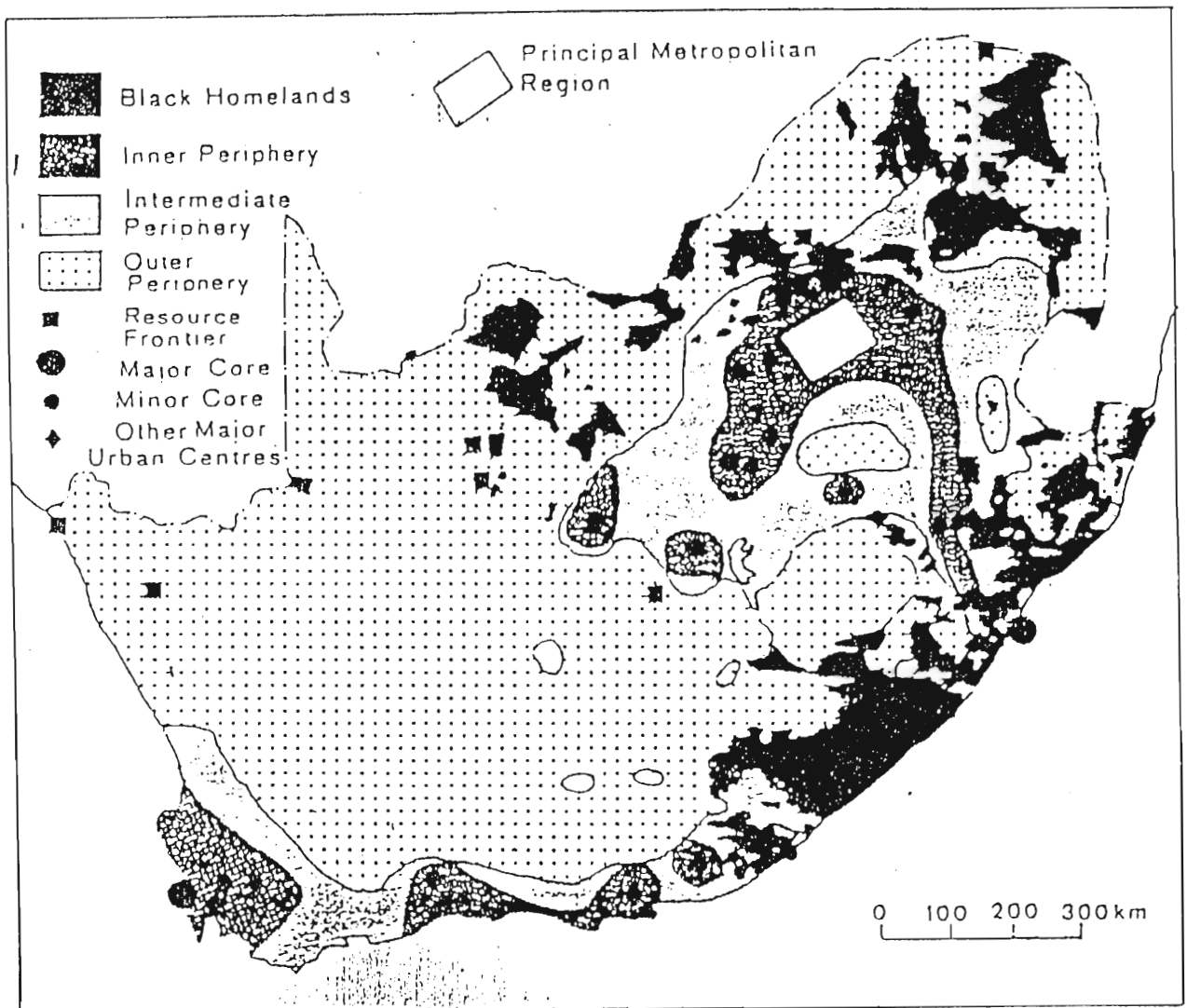


Fig. 2.4: South Africa: Development Regions—The Industrial Period (Source: Browett 1976).

primary production for export contrast with regions of subsistence agriculture, and metropolitan areas with sparsely settled backlands. The differences in the structure of economic production are usually accompanied by pronounced spatial disparities in well-being because of variations in access to basic goods, services and amenities. Regional inequality is probably concomitant with the process of economic development. This is because capital for investment is scarce. Export activities, towns, manufacturing, infrastructure and services tend to be concentrated in one or more core regions, with initial advantages such as favourable natural-resource base, dense population, or nodal position in a transportation network.

Many geographical studies of the problem of regional inequalities assumed explicitly or implicitly that all countries undergo a similar sequence of spatial evolution (Williamson, 1965). However, if underdevelopment is interpreted to be a corollary rather than a predecessor of development, there is no a priori reason to suppose that the regional inequalities in the third world countries are replicas of the ones that characterized the advanced industrial countries during the early stages of their evolution (Hall, 1984). Development processes normally manifest themselves in geographic space. Regional inequalities are one of the several results of development process. Many models of development as propounded by authorities like Myrdal

(1957); Hirschman (1958); Perloff & Wingo (1961) and Friedmann (1966) have been geared to unearthing the developmental processes that generate specific spatial patterns (Blaut, 1961; Chapman, 1979). Such spatial patterns provide us with the means for evaluating the nature and efficacy of the spatial developmental processes and the identification of ways of influencing and directing them in a desired manner.

The concentration of development in a relatively small number of centres of change due to the variations in the resource endowment or their favourable or unfavourable locations, tend to make the magnitude of regional inequalities vary considerably between and within regions. Nowhere was the unevenness of development more sharply revealed than in the backward countries (Trotsky quoted from Wright-Mills, 1963, p.258). According to Wright-Mills (1963), regional differentials are greater in less-developed than in developed countries, because developing countries continue to adopt innovations that originate in the developed countries. This presupposes an existing relationship between the level of development of a country and the level of inequalities in the overall development. Regional inequalities in development is manifested by what exists between the rural and urban areas (Lipton, 1977; Mabogunje, 1980, p.119). Many empirical studies on regional development have come out with evidence pointing to a wide dichotomy in development existing between the rural and the urban areas in the third world.

Usually the most populous urban areas, often the capital or the main port, become the focal point of development, and "the more inflexible traditional economy of the rural areas changes much more slowly, and the hinterland becomes more backward, more subservient and poorer" (Coates, et al., 1977, p.127). Overseas capitalism accentuates this inequality, because foreign investments focus on the capital and the rural hinterland becomes the market to be exploited. Hakam (1966), in a study on Nigeria, noticed that three-fifths of foreign-owned industrial investments in the mid-1960s was sunk in two major coastal areas of heavy urban concentration of population - Lagos-Ibadan and Port Harcourt. This widened the inequality gap between these areas and the rest of the country, thus creating two different worlds in a single geographical entity.

Transport innovations also bring previously unconnected regions together in a national system, and some of the regions possessing greater initial advantages assume a dominant role in the system. Some of the regions will lag behind while others will forge ahead to become metropolitan regions. These metropolitan centres then interact with each other to their own advantage, attracting flows of wealth, employment, decision-makers and political power commensurate with their economic power. These attributes tend to assure the continuing

dominance of the favoured regions, excluding the hinterland from this higher level of interaction, making it dependent upon the urban centres. This 'benefits the region being developed, but greater benefits accrue to the region calling the tune and naming the price' (Coates, et al., 1977, p.130), thus, a local 'colonial' type of relationship exists between the less and more important regions (Kraenzel, 1955; Berry, 1961b; 1972a; Pred, 1974).

Slater (1975, p.137), essentially defines colonialism as a "formal device by which Latin America, Africa and Asia became incorporated into the international capitalist economy", although the degree and the form of the incorporation varied both spatially and historically. This integration created underdevelopment, a development which Kay (1972, p.15), in the Ghanaian case calls, "an acute form of structural dislocation characteristic of an open dependent economy, within which production and consumption were not integrated within the country but through external trade". Thus, the colony exchanged commodities which it produced but did not consume, nor even fully process, for other mainly manufactured goods that it did consume but did not produce itself. This arrangement is best described as Friedmann's core and periphery system.

The subservient position of the peripheral regions is partly

accounted for by the nature of the tasks allotted to them by the metropolitan core complexes. Income flows out of the area and results in adverse multiplier effects which leads in turn to a further fall in regional income and employment. This cumulative process leads to an increase in income in the metropolitan regions and raises demand for manufactured goods. This results in outflow of capital and labour to the regions where returns are higher and, contrary to the postulates of classical economic theory, there is unlikely to be a compensating downward adjustment of wages to attract capital searching for cheap labour (Nourse, 1968; Richardson, 1969). Inequalities, therefore, create a perception of prosperity elsewhere among rural dwellers and a realization of their own depressed state (Todaro, 1989). This normally results in migration from the depressed areas to the urban areas to the detriment of both regions. For instance, "the existence of quite severe poverty in the southern provinces of Ayacucho, Huancavelica, Puno, Apurimac, etc., coupled with the obvious centralization of power and wealth in the capital played a considerable role in the growth of migration to Lima-Callao in the 1920s in Peru" (Romero & Levano, 1969, pp.22-25). In South Africa, the concentration of economic and political power in Pretoria-Witwatersrand-Vereeniging, South Western Cape, Durban-Pinetown and Port Elizabeth-Uitenhage metropolises, has contributed to migration from the economically depressed areas, especially the black reserves, in such of livelihood.

The assumption that the concentration of heavy investments in the few urban sectors of South Africa to attain a rapid overall national development has created a situation where the peripheral regions have been left in their traditional, primary producing state, with minimal linkages between the two. This is a typical dual economy where there is the existence and the persistence of increasing divergences between the rich and the poor nations and peoples on various levels (McCarthy, 1983). As industrialization in the urban centres progressed, the spatial contrasts of the dual economy became more prominent, because the agricultural population received little or no benefits in the form of Hirschman's "trickle down effects" (Browett, 1976; McCarthy, 1983). Instead, contrasts between rural incomes and the level of services and those of the urban centres have been magnified. For instance, the spread of industries and education, drew many young and able-bodied citizens off the land to urban centres "where unemployment, underemployment and urban poverty exploded" (Daly, 1977, p.4). This heartland-hinterland pattern, which has emerged in South Africa, has greatly strengthened to such an extent that the problem of spatial inequalities in development keeps gathering momentum. This is because the concentrated growth does not spread outwards to such an extent that further polarization continues to take place as capital, labour, entrepreneurs and industrial enterprise are increasingly concentrated in the core regions. In anticipation of smoothing away these spatial inequalities of development, a lot of research work needs to be done. As

Fisher (1979), has observed, no meaningful regional plans can be formulated for development unless a thorough understanding of the existing situation is available. It is only upon such a structure that balanced development strategies can be formulated. We shall now turn our attention to the various regional planning strategies that have been evolved to solve regional problems.

2.8. REGIONAL PLANNING STRATEGIES

Inequalities, as noted by Davis (1962), Friedmann (1966), Connell (1971), etc., create serious political, social and economic instability in countries, with disastrous consequences. A few instances can be used to illustrate this tendency. The overconcentration of wealth, political power and population upon Caracas, while the periphery (except the oil regions), deteriorated out of the mind of the central decision-makers, led to a serious social revolution in Venezuela in 1958 (Friedmann, 1966). A fierce antagonism created between the northern provinces of Eritrea and Tigray and the rest of Ethiopia as a result of the unfair distribution of the national cake, contributed largely to Africa's longest civil war since 1961 between the Eritrean People's Liberation Front (EPLF), seeking secession, and Ethiopian People's Revolutionary Democratic Front (EPRDF), a Tigrean coalition movement, on one hand, and the government

forces of President Mengistu Haille Mariam on the other (Daily Dispatch, March 1991). The sweeping political and social violence since late 1950s, which led to South Africa's isolation from the international community, is the result of large spatial inequalities in development between the so-called "white enclaves" and the "black reserves". The differential rates of industrialization between east and west Pakistan accompanied by differential rates of growth of the two regions resulted in the breaking away of the east to form Bangladesh (Griffin & Khan, 1972).

The elimination of these spatial inequalities associated with development, calls for a more equal distribution of the gains from economic growth. This view has emerged recently as an increasingly prominent development objective, especially among third world countries. These countries appreciate the fact that national investment strategies and policies require a sub-aggregation along regional lines (Friedmann, 1969). This is seen as a means of translating regional aspirations into specific action based on local resources and skills. It becomes a valuable defence against overcentralization of economic and industrial development efforts, against the cumbersome and bureaucratic processes in the core regions. It is one of the means for achieving the spatial coordination of sectoral plans and programmes. In order to improve efficiency and economy, and to provide machinery of government better designed to accomplish programmes for rapid social and

economic development, there needs to be radical decentralization. That is why one of the major objectives of the Development Bank of Southern Africa (DBSA) is "to reduce imbalances in the levels of economic development existing in Southern Africa" (DBSA Annual Report 1986-1987, p.1).

There are two major approaches to regional planning and development: concentration of development in a few favoured centres so that developmental impulses from these centres will spread to the other regions (development-from-above model); and then tackling development at the grassroots or the periphery itself (development-from-below model).

2.8.1. Development from Above Model

This model has its roots in neoclassical economic theory and its spatial manifestation is the growth centre concept, and it has of late dominated spatial planning theory and practice. The basic hypothesis is that "development is driven by external demand and innovation impulses, and that from a few dynamic sectoral or geographical clusters development would, either in a spontaneous or induced way, 'trickle down' to the rest of the system (see fig. 2.5). Such strategies, as well as being outward-looking or externally oriented, have tended to be urban and industrial in nature, capital-intensive, and

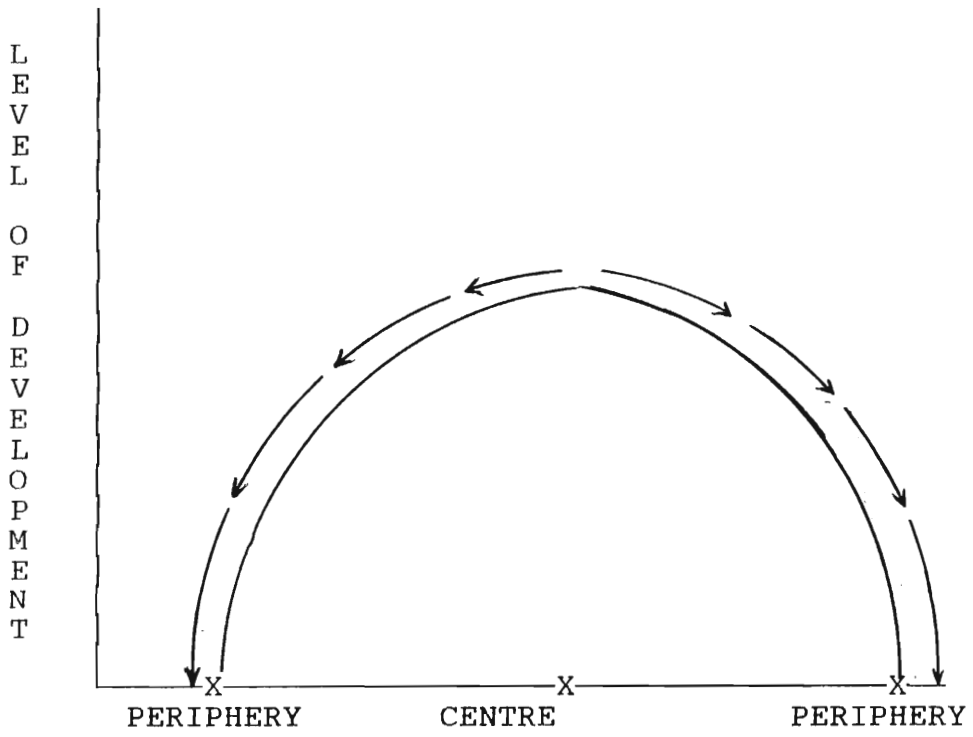
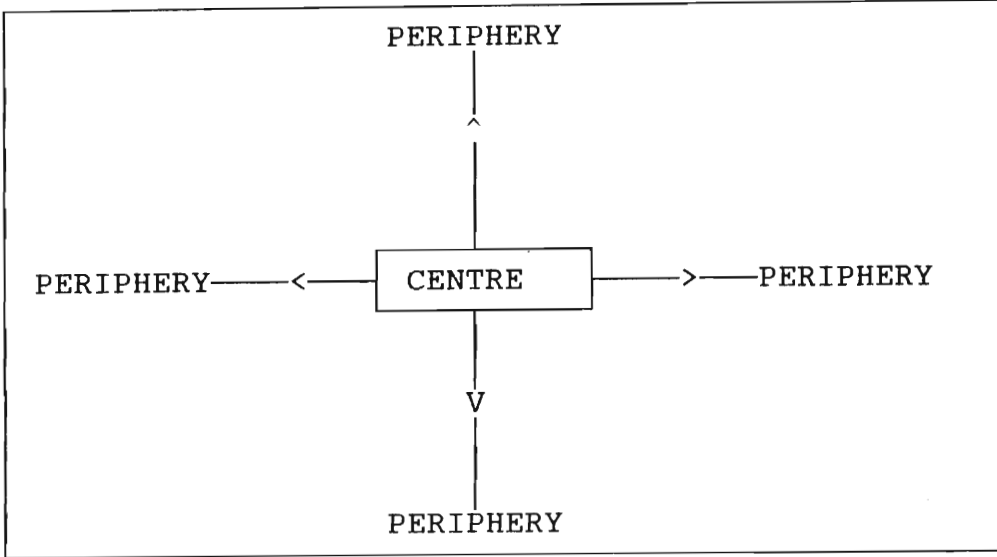


FIGURE 2.5. DEVELOPMENT FROM ABOVE MODEL

dominated by high technology and the 'large project' approach" (Stohr & Taylor, 1981, p.1). This model is based on the unbalanced growth concept where development is further concentrated at the already developed centres or at new centres which are deliberately established with the hope of spreading the benefits of development to the less-developed regions. For instance, industries, jobs, educational facilities, etc., are concentrated in selected growth centres. With time the population of the periphery would benefit from the diffusion of innovations from the centres.

The advocates of this model favour the concentration of resources at the few growth centres, regarded as engines of growth. A cinderella-like transformation of the model was largely the responsibility of Hirschman, who asserted that "development strategies should concentrate on a relatively few sectors rather than on a widely dispersed projects and that growth will be communicated from the leading sectors of the economy to the followers, from one firm to another. This leaves considerable scope to induced investment decisions and, therefore, economizes our principal scarce resource, namely, genuine decision-making" (Hirschman, 1958, pp.62-63). The clustering of investment around the initial growth poles will be beneficial at the beginning of development. However, the actual effects of the growth points on the hinterlands, will depend on the balance between the favourable effects that 'trickle down' to the hinterland, and the unfavourable or

'polarization' effects on the hinterlands consequent to the attractiveness of the growth poles. Competition from the growth points may depress the relatively inefficient manufacturing and export activities and may produce 'brain drain' in the hinterlands. Hirschman argued that in the long run, public investment would cease to be pulled so heavily into the developed areas, largely because of considerations of equity and national unity. Thus, central government funds would be released for use in other regions and this will help regional differences to disappear (Hirschman, 1958). Rodwin (1963) proposed a strategy of "concentrated decentralization" for developing economically lagging peripheral regions, a suggestion consistent with the notion that induced urban growth centres should be the basis for regional development policy.

The 'circular causation' theory of Myrdal (1957), maintained that this simple model with, cumulative effects, is more consistent with actual social and economic processes than the static equilibrium analysis typical of economic theory (fig. 2.6). He found that whatever the reason for the initial expansion of a growth centre, thereafter, cumulatively expanding internal economies would fortify its growth at the expense of other areas. He employed the concepts of 'backwash' and 'spread' effects. The backwash effects involve the workings of selective population migration, capital movements (resulting from increased demand) and flow of savings from the

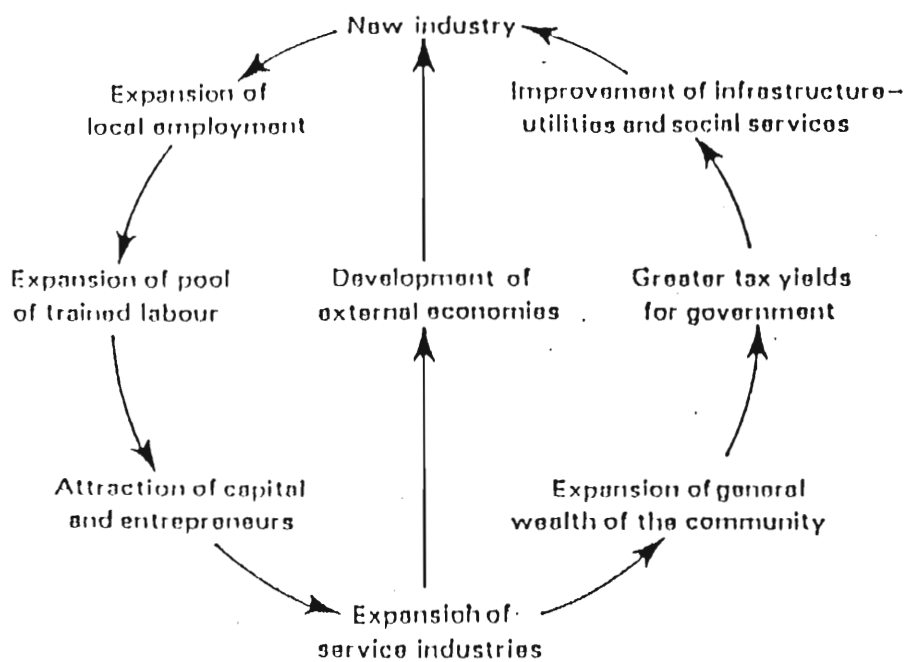


Fig. 2.8: *Myrdal's process of cumulative causation (simplified)*

hinterland. As Morrill (1963) states, the growth of cities based upon the location and the concentration of activities implies migration. This is because the availability of new opportunities is going to draw from peripheral areas the more enterprising and energetic people: skilled labourers, entrepreneurs and the youth seeking a new and better, or more exciting way of life. This cumulative process serves to maintain poverty in the hinterlands; because of their inability to support adequate health and education facilities and their generally conservative outlook.

2.8.2. Development from Below Model

Development 'from below' is a more recent strategy that reflects on changing ideas on the nature and the purpose of development itself, as described by Seers (1977) and Goulet (1978, 1979), in view of inherent distrust of the 'trickle down' or 'spread effect' expectations of past development. This model considers development to be based primarily on maximum mobilization of each area's natural, human and institutional resources with the primary objective being the satisfaction of the basic needs of the inhabitants of that area. In order to serve the bulk of the population broadly categorized as 'poor' or those regions described as disadvantaged, development policies must be motivated and initially controlled from the bottom. This model is

basic-needs oriented, labour-intensive, small-scale regional-resource-based, often rural-centred, and argue for the use of 'appropriate' rather than 'highest' technology. Such strategies have received rhetorical and intellectual support but as yet have not been widely applied (Stohr & Taylor, 1981). Stohr & Taylor (1981) believe that for development 'from below' to be very effective in achieving the desired goals, there is the need to control the backwash effects of development 'from above' by changing the interaction between different regions and countries; and then create a dynamic development impulses within the less-developed areas, through the creation of endogenous factors of change for increased equity and developmental dynamics.

The basic objective of this strategy is the full development of a region's natural resources and human skills initially for the satisfaction in equal measure of the basic needs of all strata of the regional or national population, and subsequently for developmental objectives beyond this. This is what Richardson (1973) calls 'generative' growth. Basic-needs services are territorially organized, and manifest themselves most intensely at the level of small-scale social groups and local or regional communities. Development 'from below', therefore, would require that the greater part of any surplus, created through production specialization within an area, should be invested regionally for the diversification of the

regional economy (Friedmann & Douglass, 1978). Through retention of at least part of the regional surplus, integrated economic circuits within less-developed regions would be promoted (Santos, 1975; Senghaas, 1977) and development impulses would be expected to successively pass 'upward' from the local through regional to national level. Policy emphasis will need to be oriented towards: territorially organized basic-needs services; rural and village development; labour intensive activities; small and medium-sized projects; technology permitting the full employment of regional human, natural and institutional resources on a territorially integrated basis.

Stohr & Todtling (1978) think that development 'from below' may require a certain degree of 'selective spatial closure' to inhibit transfers to and from regions or countries which reduce their potential for self-reliant development. They believe "this could be done by control of raw material or commodity transfers which contribute to negative terms of trade and/or by control of factor transfers (capital and technology), and by the retention of decision making powers on commodity and factor transfers in order to avoid the underemployment or idleness of other regional production factors, or major external transfers" (quoted from Stohr & Taylor, 1981, p.45). The objective here, would be to increase the overall efficiency of all production factors of the economically less-developed region in an integrated fashion,

where available resources and social structures form a basis for more internally initiated development impulses.

Various versions of this model can be envisaged at macro, meso and micro scales. In the macro scale which looks at development efforts at the international level, it is believed that development should be concentrated within the less-developed countries, in a strategy known as the New International Economic Order (N.I.E.O.). The less-developed countries will seek to define a new order which will be conducive to their development and to gain control of their destinies. Development efforts at the meso-scale must be concentrated at the less-developed regions of a country (rural areas), as a way of accelerating their development efforts so as to catch up with the developed regions. At the micro-scale, the concentration of the efforts must be at the zone of decay and low class residential areas. In South Africa, it is maintained that self-reliance together with decentralized planning, did not reduce the development potential of the poorest regions but seems to have narrowed inter-provincial differentials, even before the important state inter-provincial transfer of funds has been taken into account (Paine, 1976). In Transkei, the rural areas should be the focal points of all development efforts so as to achieve balanced development. If development is to benefit the people, then they have to participate in the discussions of development plans. This planning strategy will contribute to

the achievement of a development process, largely based on local resources and self-reliance.

2.9. THE WORKING HYPOTHESES

From the considerations presented above, the following will constitute the working hypotheses for this research.

- a. Relationships tend to develop between the variables used to measure variations in development (Rummel, 1968).
- b. The problem of regional inequalities exists in Transkei.
- c. The 'cumulative causation' mechanism is the underlying force of the inequalities problem that exists in Transkei.
- d. The inequalities phenomenon constitutes a potential problem for Transkei's development.
- e. The problems of regional development in Transkei can be solved through the integrated regional development approach based on grassroots model.

2.10. RESEARCH METHODOLOGY

2.10.1. INTRODUCTION

In keeping with the objectives of this research and on the basis of the concepts and theories reviewed elsewhere in this study, the following methods of data collection and analysis were employed.

2.10.2. DATA COLLECTION

Several indicators can be used to measure the level of development of any country, provided such indicators take into account the basic needs and the accessibility of the population to resource use. Such indicators must probe into the possibility of external assistance which tends to bring innovations without which there can be stagnation in the development process. There must also be a measure of the extent of interaction between the various sectors of the economy and the use of appropriate technology to bring about self-reliance and create more employment to provide incomes to the people, in an attempt to reduce poverty (Berry, 1960; Drewnowski, 1977; Mabogunje, 1980; U.N.O., 1980).

The overall aim of the data collection in this study is to provide a description of the spatial relationships of a number of variables, which will help to measure the magnitude of spatial inequalities in development between the few affluent centres and the large economically depressed areas of

Transkei. Such relationships between the selected variables will help to identify the development regions of Transkei.

The primary data on the selected variables were acquired through questionnaires (see appendix), which concentrated on finding the rural-urban dimension of development, the problems and the planning strategies being used. These questionnaires were sent to the concerned state departments and other parastatal institutions in the capital, Umtata, and the 28 district centres of Transkei.

2.10.3. OPERATIONAL TAXONOMIC UNITS

In the delimitation of economic sub-spaces for certain regional planning goals, the formal regions approach is considered to be very inappropriate because of its assumption of a uniform human response surface in each of the sub-units. Friedmann (1964, p.505) observed in this regard that "only a rural economy could by any stretch of the imagination, be considered sufficiently 'homogeneous' to qualify as a region". Uniform regionalization approach makes identification of growth centres very difficult, if it is used for the isolation and the selection of economically depressed areas. Harvey (1972) believes that the most serious disadvantage of the uniform region approach, is the fact that without the

imposition of a contiguity constraint, any aggregation of sub-units will not result in the coalition of contiguous zones to form a region. Johnston highlights the concern of geographers about the use of contiguity conditions in regionalization that "regionalization with contiguity constraints oversimplifies and operates against efficient hypothesis testing. There is no basis in geographic theory ... for the adjacency requirement" (Johnston, 1980, p.295).

Considering the shortcomings of formal regions as a tool for planning purposes, "functional regions are much more suitable for planning because they are based on economic processes involving functional complementarity and maximum interaction. In effect, planning within the context of nodal regions is based on interdependence rather than spurious homogeneity" (Harvey, 1972, p.230). Since the concentration of resources in a few large centres results in the persistence of a dual economy characterized by polarization rather than articulation there is a need for interaction between these two different worlds within a particular nation state, so that as development gradually spreads, the decrease in spatial inequalities paves way for a balanced regional structure.

The human geographic landscape of any country may be regarded as an interconnected system of central places. Within the urban field of these centres, there is a very intricate

pattern of social-administrative-economic interdependence which is highly influenced by interconnectivity and mobility (Harvey, 1972). The importance of communication on both the effective functioning and the ultimate integration of a region has been stressed by both regional planners and transportation geographers (Friedmann, 1964; Harvey, 1972). Friedmann stresses that transportation "allows for accessibility to the centre and for rapid circulation among the various parts of the city region ... It is the nervous system of a regional organism and is absolutely vital to its survival" (Friedmann, 1964, pp.512-513). Werner adds some substance to these basic ideas that "a network serving a certain region not only subdivides this region into feeder areas, but at the same time provides connection between the different parts of the region. It superimposes a spatial structure on the region it is serving" (Werner, et al., 1968, pp.129-130). Transport network portrays man's attempts to restructure geographic space for optimal utilization of resources, and as such is a good basis for functional regionalization in the developing world (Harvey, 1972).

From the foregoing arguments, it is appropriate that regionalization approach is suitable to focus attention on the prevailing spatial inequalities in Transkei, because spatial inequalities in a region may largely depend on the scale of regional sub-divisions adopted (Keeble, 1967; Stohr, 1974).

The operational taxonomic units to be analyzed in this study were the rural and the urban centres of the 29 magisterial districts of Transkei. This was in conformity with Transkei government's development plans. The districts were: Bizana, Butterworth, Cala, Centane, Cofimvaba, Elliotdale, Engcobo, Ezibeleni, Flagstaff, Herschel, Idutywa, Lady Frere, Libode, Lusikisiki, Maluti, Mt. Ayliff, Mt. Fletcher, Mt. Frere, Mqanduli, Nggeleni, Nqamakwe, Port St. John's, Qumbu, Tabankulu, Tsolo, Tsomo, Umtata, Umzimkulu and Willowvale (see map of Transkei). These magisterial districts serve as the administrative and political centres of Transkei and as such all decision making and government policies are based on these units. Regional planning in Transkei, as presently constituted, is based on these existing administrative structures and are seen as planning districts, because they have been empowered by Transkei government to articulate development plans for each region. This means that they have political power to initiate and formulate plans for the individual district and, therefore, constitute the most important regional planning framework for the development of Transkei.

Compared with all types of regions one can possibly identify for this particular problem under consideration, these magisterial districts combine the features of formal, political and functional regions. These centres are the focal

points of all interconnecting networks and there is a measure of inter-nodal interaction between them. The functional importance of these nodal points used, help to derive both hierarchy of growth-generating nodes and their associated hinterlands.

2.10.4. VARIABLES SELECTED AND THEIR JUSTIFICATION

Past authorities did analyze development in terms of a few indicators, an approach considered to be unbalanced and myopic, because it isolates and concentrates on a few elements, without considering the insatiable wide range of human needs. But the multivariate approach, which employs several indicators simultaneously to measure impacts of development process, obtains a comprehensive picture of the living conditions of the people. Brian Berry (1960), Russett (1961), David Smith (1973), Myrdal (1975), Chapman (1979) and Mabogunje (1980), all employed several indicators to measure the variations in development. "Williamson has established that using several indices and weighted by the relative of the population magnitude, the pattern 'of regional inequality is in the form of an inverted U, reaching a peak in the middle income class'" (quoted from Rogerson, 1980, pp. 103-120), (fig. 2.7.). When using several indicators, Keeble (1967, p.265), maintains that one needs to be cautioned, in that the application of abundant data can be misleading, since what is

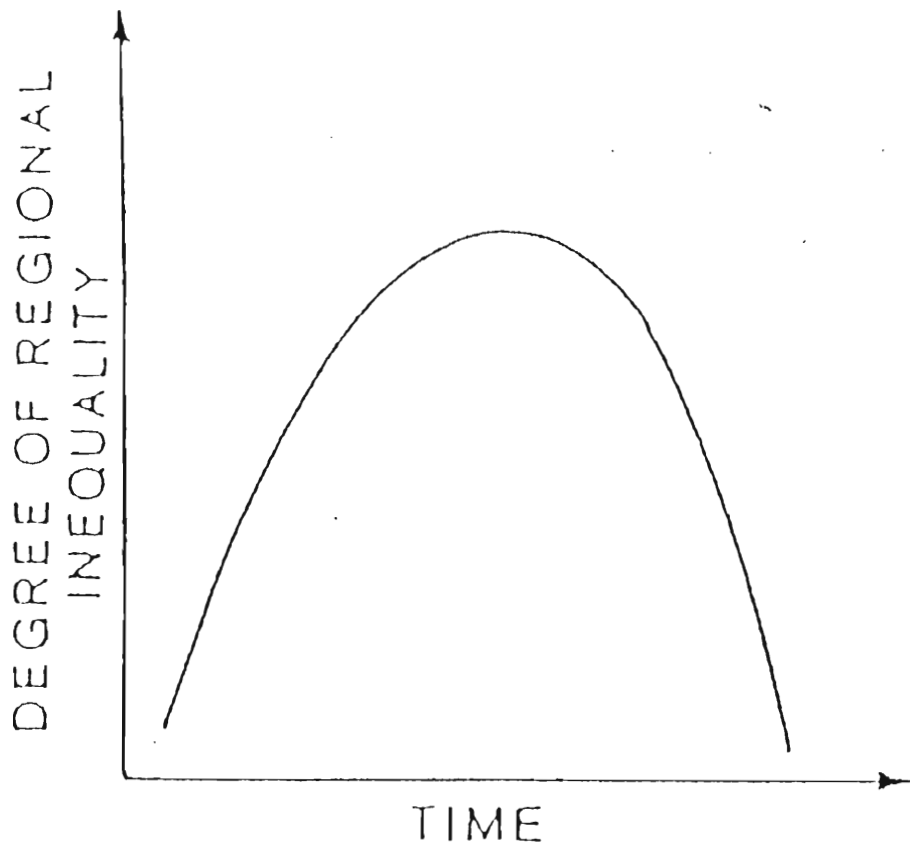


FIGURE 2.7: The Williamson Model
(Source: Rogerson 1980).

available is often not relevant, and what is relevant is often not available. Moreover published data have to be carefully screened to eliminate incomplete, unrepresentative or manifestly inaccurate returns and to ensure as far as possible that the indicators are constructed the same way and mean the same thing for different countries.

For the purpose of this study, my choice of variables was conditioned by the two main considerations: appropriateness of the variables for a developing country like Transkei, and the availability of such data. Each variable should be a meaningful indicator of conditions of regional inequality in Transkei. Also variables reflecting the satisfaction of basic needs like literacy or sanitary water supply are vital measures for the third world (Hall, 1984). Another basis for the choice of variables was that the variables must be comparable both spatially and temporally, and that data should readily be available on such variables, due to lack of vital statistics in Transkei. After independence in 1976, there was lack of trained public servants to handle statistical information when South Africa recalled its statistical personnel, and this brought statistical data to a standstill (Tapscott and Thomas, 1985). In view of the little statistical data base, it is more realistic to select indicators from which one can measure development trends in Transkei.

Based on these considerations the selected variables were as follows: social index - population; health; education; social pathology; entertainment; transport and communication; economic index - modern manufacturing industries; power and water resources; commercial outlets; financial institutions and development projects.

2.10.4.1. Population

Population has been included in the variables because its composition is an aspect of demography that has a profound bearing on the character of human activity and on its ability to change. The correct interpretation of population structure and the study of demographic sub-groups can help understand socio-economic or political change. The economic objective of development is related to production, cost and income, all of which have a geographical expression and directly affect the level of living of the population, the ultimate beneficiary of every development effort (Yirenkyi-Boateng, 1985). Smith (1977) states that if human beings are the object of our curiosity then the improvement of the quality of their lives is of paramount interest. This entails achieving the full potential of human personality (Seers, 1972), or in a broader sense, the movement upward of the entire social system (Myrdal, 1975).

2.10.4.2. Health

This variable is an obvious contributor to the general well-being of the Transkeian people, hence, the tremendous assistance by grants it receives from public funds. The health facilities variable, which includes all levels of health institutions and personnel, provide welfare service and that any deprivations in this regard can seriously jeopardize the economic development of Transkei. But then if available it will enhance the quality of lives of the human resources which constitute the reference point for all aspects of economic development.

2.10.4.3. Education

Education, to all intents and purposes, is the cornerstone of any nation's drive towards technological advancement because it produces the required manpower and the technological know-how for development. If one considers the fact that 75% of Transkei's population is illiterate (Wakelin, 1983a), then there is every justification for the huge funding education receives from the state towards its declared policy of fighting illiteracy in the country. Priority indicators like school enrolment ratio, higher education enrolment ratio, adult literacy rate, pupil-teacher ratio, etc., can be

considered to reflect quality and effectiveness of education and the society's acceptance of modern socio-economic advancement. Therefore, the inclusion of education as a variable will show the relationship between literacy and economic development.

2.10.4.4. Social Pathology (Law and Order)

This variable takes care of maintenance of peace and order, a necessary ingredient for stability and economic development. Security depends upon prevailing political, legal and economic systems, and related to social well-being. There is no security if the public is at a risk from the whole spectrum of violence from war, civil war, regimes of terror, riots, gangsterism and criminality. A society without a lot of crime, vandalism and industrial strife, and one where you are taken care of when in need, is really a stable and secure society. Such a society becomes a receptacle for massive external and internal investments, which can transform the society into a developed society. To ensure that peace and order reigns, there is the need for law enforcement agencies so that a higher level of economic development could be attained.

2.10.4.5. Transport and Communication

The importance of transport and communication as an indicator in any economic development analysis cannot be overemphasized. Even though this network subdivides a region into feeder areas, it does provide connection between the different parts of the region. It is the nervous system of a regional organism and as such it facilitates economic development. Improvements in transport and communication increase migration, help to advance agricultural and industrial output, expand trade relationships and overcome distances and then affect both growth and structure of urban areas. This variable also embraces post and telecommunication which also link up all the corners of the world.

2.10.4.6. Power (Energy) Consumption and Water Resources

Power resources are very vital in the modern times because without them neither commercial agriculture nor industry would be possible on a large scale. They influence the quality of life of the population. Without power life will come to nothing because commercial activities which provide sources of livelihood will come to halt. The greater the availability of electrical power to individuals, the easier it is to perform household tasks and to maintain contact with a wider world

through the electronic media. Water is also of paramount importance because it is utilized for domestic, industrial and agricultural purposes. "The easier the access to water, the better is the quality of life of the people" (IMDS, 1985, p.59). However, while in the urban areas water flows from a tap, for many rural people, who constitute 95% of Transkei's population (IMDS, 1985), access to water is difficult, often requiring women to walk long distances to fetch water from dirty streams and ponds. Without easy access to water, crops fail, most industries cannot operate, bad sanitation sets in, with a resultant increase in unhygienic living conditions. Transkei has "one of the highest infant mortality rates in the world, and this indicates a prima facie case of water shortage even in non-drought periods" (IMDS, 1985, p.60).

2.10.4.7. Manufacturing Industries and Employment Levels

Manufacturing industries offer substantial dynamic benefits that are important for changing the traditional structure of the less developed economies like that of Transkei. The advocacy for industrialization is compelling for countries confronted with the problems of providing employment and training and income for a rapidly increasing labour force. The rewards of labour help the employed above "absolute poverty" - a condition of life so degraded by disease, illiteracy, malnutrition and squalor that it denies its victims the basic

human necessities (World Bank Staff Working Paper No. 401, July 1980). The exploitation and processing of natural resources in an industrial process to serve the domestic market and to facilitate the absorption of redundant or surplus rural labour in the urban economy, it is believed, less developed countries like Transkei, "could proceed most rapidly toward the achievement of considerable economic self-sufficiency" (Todaro, 1989, p.245).

2.10.4.8. Development Projects

This variable will be useful to assess on-going development projects in the various districts of Transkei, and the extent to which local people are mobilizing the existing resources in their localities towards becoming economically self-reliant. It will give an indication of the extent to which the central government and the local people are involved in the fight against the economically depressing state they find themselves.

2.10.4.9. Leisure (Entertainment) Outlets

Once the basic needs of survival and security are fulfilled, the need for love, affection, sense of belonging, self-respect

and self-esteem and of others follow (Maslow, 1954), in the context of social well-being. Hence, leisure, defined as the amount of time free from work, excluding any time spent in travel to and from work, any time spent on domestic chores, and the estimated ten hours a day spent in sleeping, eating and dressing (Drewnowski, 1974), becomes very important. This means, leisure should be seen in terms of accessibility to cultural and recreational facilities including sports and physical exercise, entertainment, the arts, reading, and travel for pleasure (Coates, et al., 1977). The availability of these improves the quality of lives in every economic development.

2.10.4.10. Financial Institutions and Commercial Outlets

"Poverty is relative lack of command over resources and access to opportunity" (Cullingworth, 1973, p.2). As such sound pieces of advice for accumulation of savings towards promoting economic advancement is very important. Such service is provided by financial institutions, which facilitate tremendously the acquisition of funds for development processes. Commercial outlets also provide great service in the effective distribution of processed goods right up to the remotest corner of the country, and also serve as agents of postal services in areas without this facility. In view of the foregoing the inclusion of these variables would not be an

understatement.

By selecting so many variables (integrated approach), a balanced and unified picture will be presented to show the various needs of the people of Transkei, which when satisfied could spur them to higher productivity and, therefore, higher contributions to national development. The data on the selected variables would be collected through questionnaire (see appendix 2) which would concentrate on identifying the development regions of Transkei and the nature and magnitude of the problems of regional inequalities in the country. Such a study could help bring out a new orientation in the country's planning ideology and strategies, in order to ameliorate the present deficiencies, thereby improving the living standards of Transkei's poorest majority.

2.11.1. PRIMARY SOURCES OF DATA: PROCEDURES

The primary sources of data were basically acquired through questionnaire sent to the state and parastatal institutions like the relevant state departments. But where such information were available in published form, they were outdated, or distorted. In certain circumstances the needed data was not available for logistic reasons. To make use of published data for a study of this nature actually stops short

of originality of thoughts. For this reasons, visits were paid to the 28 magisterial districts of Transkei to collect first hand information on the variables being used, through interviews, to ensure that the statistical data obtained in Umtata is corroborated by the existing situations.

During such visits, information was sought on both social and economic indexes. For health, the number of all health institutions existing in each district, their location, the number of beds, available medical personnel like physicians, surgeons, midwives and nurses, the peculiar problems facing the district and the strategies being used to arrest such problems, if any, were inquired. Information on education in each district included the number of educational institutions, gross enrolment, number of teachers, the average percentage pass rates for the primary and secondary levels, problems and strategies being adopted to rectify these problems. Since the maintenance of law and order is conducive for economic progress, the availability of agencies like police, court, prisons, etc., is of vital importance. For this reason, the total number of courts and the grades, crime rate, number of police stations, government expenditure on public order, number of inmates, problems regarding maintenance of law and order and possible solutions were investigated.

The consideration of transport and communication as the

nervous system of a regional organism, makes it appropriate to investigate the extent to which it has been facilitating the economic development of Transkei. How well Transkei has been interconnected, the nature of the surface of the roads and extent of rail track facility, available post offices, postal agencies, availability of automatic telephone exchange, the number of telephone facilities, problems and strategies to improve these network were considered. No meaningful economic development can take place without energy and water resources. Agricultural, domestic and industrial processes hinge effectively on these. For this reason the available sources of energy and water in the rural and urban areas, how the district is trying to alleviate water shortage problems, in case water sources are non-perennial, and measures envisaged to improve water and energy supply systems, were points of reference in this study.

The number of manufacturing industries in each district, where located, its employment strength, problems and strategies being adopted to enhance industrial development, were the most ideal barometer to measure how much investments had been poured into the country in its quest for economic development. Such investments indicated the number of development projects currently going on in each district, the pattern of ownership, community's involvement, the problems and planning strategies under consideration. The financial institutions' involvement in the realization of each district's economic development

objectives were measured by the number of banks, insurance companies, building societies, etc., available and their contributions towards the development of the districts. The nature of commercial activities and leisure in the country were gauged by the number of supermarkets, wholesales, cafes, butcheries, chemists, fuel distribution outlets, clothing shops, in each district; type and the number of entertainment facilities available, how social life could be improved to make the district attractive were looked into.

2.11.2. SECONDARY SOURCES OF DATA

To supplement the data collected through the questionnaires from the field in both Umtata and the district centres, some information, more information were gathered from published research works done by some institutions like the Institute of Management and Development Studies of Transkei, the Development Bank of Southern Africa on development problems and strategies, and other published sources like books, journals, reports on government's policies and plans aimed at enhancing the development objectives of Transkei.

2.12. ANALYSIS OF DATA

To test the hypotheses proposed for this research, several techniques were used to analyze the data gathered in order to rank the units of observation, to reduce the volume of data and to indicate not only the relationships between the variables, but also the underlying factors and their spatial expressions. From the analysis, the variations in levels of development in Transkei will be evident on maps and other diagrams.

2.12.1. FACTOR ANALYSIS AND REGIONALIZATION

Common factor and principal component analyses are two basic factor models used by geographers as statistical techniques for synthesizing a large amount of data. Factor analysis as a scientific method can be "applied in order to explore a content area, structure a domain, map unknown concepts, classify or reduce data, illuminate casual nexuses, screen or transform data, define relationships, test hypotheses, formulate theories, control variables or make inferences" (Rummel, 1968, p.448). The basic assumption here is that if two variables are inter-correlated, they are measuring the same thing to the extent of that inter-correlation.

Factor analysis was developed to condense a number of measures into one or more independent factors and is useful in producing the underlying factors responsible for correlation. It is a "method of determining the underlying order of sources of common variance within a set of variables" (Fruchter, 1954, pp.44-50). Factor analysis provides a "parsimonious description of common variance, beginning with a correlation matrix, which indicates common sources of variance for interrelated variables" (Barnett, 1970, p.22). In this way, the two techniques help to reduce the problem of information overload or multicollinearity. These techniques are used to take care of redundant variables and the need to isolate "basic dimensions" to describe the spatial patterns. They provide information on individual variables as they relate to their means and standard deviations and portray relationships between the variables through their correlations (Stephenson, 1965).

Common factor and principal components analyses differ in terms of their assumptions and their results. The principal component model assumes a closed system where all the statistical variation in the variables is explained by the variables themselves, and it is used in solving the estimates of the communalities, when unity is assumed in the diagonal of correlation matrix. This usually assumes high correlations between all variables, with high common variances and low

unique variances (Shaw & Wheeler, 1985, pp.278-279). This statistical technique is favoured for the easy solution to the communalities problem, and as a result it is preferred to common factor analysis (Blackith & Reyment, 1971; Chatfield & Collins, 1980). This technique has also been termed "the maximum variance technique" (Harman, 1967, p.15).

Common factor analysis, on the other hand, encounters problems relating to the estimation of communalities and for that matter does not assume a closed system. This feature attracts geographers dealing with situations where it would be totally unrealistic to assume a closed model. In most of such studies, it is likely that we have not collected all the variables and that some degree of measurement error exists. Common factor analysis enables such problems to be taken into account, and any variance which is unexplained by the factors can be described by a residual error term (Shaw & Wheeler, 1985, pp.278-279). This means that this technique deals only with the common variance which represents the common elements running through the data and resulting in high correlations between variables. It handles both larger and smaller variable matrix and allows a wider range of analysis other than simple data reduction. Another feature of factor analysis is that by isolating common variances for analysis, "the interpretability of the factors is simplified since each factor or dimension is so rotated as to obtain the minimum number of variable with large loadings on it" (Rummel, 1968, p.475). The advantage of

this "simple structure solution" have been highlighted by Kaiser (1958) and Johnston (1980, pp.160-165). Apart from facilitating the interpretability of factors, factor analysis, by determining invariant factors through rotation can also enable a comparison of factor results of different studies to be made and, therefore, hypotheses tested (Rummel, 1968, p.475). The dimension can, therefore, be used to calibrate scales against which comparisons could be made. For these reasons, factor analysis technique has been employed in this study to extract the factors underlying the variations associated with the 14 variables and the 28 magisterial districts of Transkei.

Factor analysis has been applied as a statistical technique in various analyses of variations in level of development at different regional scales. Considerable amount of research has been organized by using this statistical technique to measure the inequalities in level of development. Renner (1935, pp.137-152), Fruchter (1954), Cattell (1965, pp.190-215), Johnston (1965; 1968; 1978), Spence (1968), Barnett (1970), Clignet & Jordan (1971, pp.261-297), Weinand (1973), Boswell & Jones (1980), Haller (1982), Hall (1984), Obudho (1986) have all applied factor analysis in various studies.

On a macro-spatial scale, factor analysis has been used to measure inequalities in development of different countries. A

classic example of such studies was by Berry who used factor analysis to "try to identify and differentiate the so-called underdeveloped nations, to inquire whether there are any regional types of underdevelopment and to suggest answers to some hypotheses concerning the characteristics of underdeveloped countries" (Berry, 1960, pp.98-107). He analyzed 43 variables on the socio-economic development of 95 countries and he obtained 5 factors which led him to the conclusion that "an underdeveloped country apparently is not a member of some discrete group with very special characteristics. It is simply a nation which tends to be low in various scales relative to other nations" (p.106). Russett (1966) delineated international regions by performing factor analysis on 54 variables selected from 82 different countries, excluding sub-Saharan Africa, and identified 5 factors.

Pal (1963, pp.42-57) obtained 3 factors accounting for most of the variations in the economic development of 57 districts of south India, on a meso-spatial scale. Enid Forde (1968) used 57 variables on Ghana's 69 administrative units to measure the spatial relationships of Ghana's socio-cultural and economic characteristics and he identified 4 regions. Carolyn Hall (1984) evaluated regional inequalities in well-being of Costa Rica using 23 variables in district analysis and produced 4 regions - high affluence medium-high; low affluence medium-high; medium affluence low and low affluence low social well-being. Barnett's (1970, pp.19-20) study of economic

development of Oregon State of USA, analyzed the 36 counties of the state with 12 variables, and obtained 3 components from factor analysis. He then regionalized the state further into sub-areas of different zones of development.

Factor analysis has also been used at the micro-spatial level as a technique for measuring variations between the social areas at the city level. Some of the studies include that of Price (1942), Fuchs (1960), Robson (1969), Rees (1971), Johnston (1978), Afolabi (1981), Yirenkyi-Boateng (1985), etc. These researches were based on Shevky-Bell model (1955) in which factors accounting for variations in the residential patterns in western cities were related to three factors: socio-economic, family and ethnic factors. The initial application of factor analysis to the classification of the social areas of the city was, thus, stimulated by the social area analysis (fig. 2.8) developed by Shevky and Bell in 1955.

From the foregoing, common factor analysis can be regarded as the most realistic for problems where some measurement error may be involved and some underlying structure is assumed about the relationships between the variables. Since it requires a large amount of computation, computer programmes are readily available for computing all correlations among all combinations of variables and presenting them in one correlation matrix. The SPSS (sub-program PA2) is relevant for

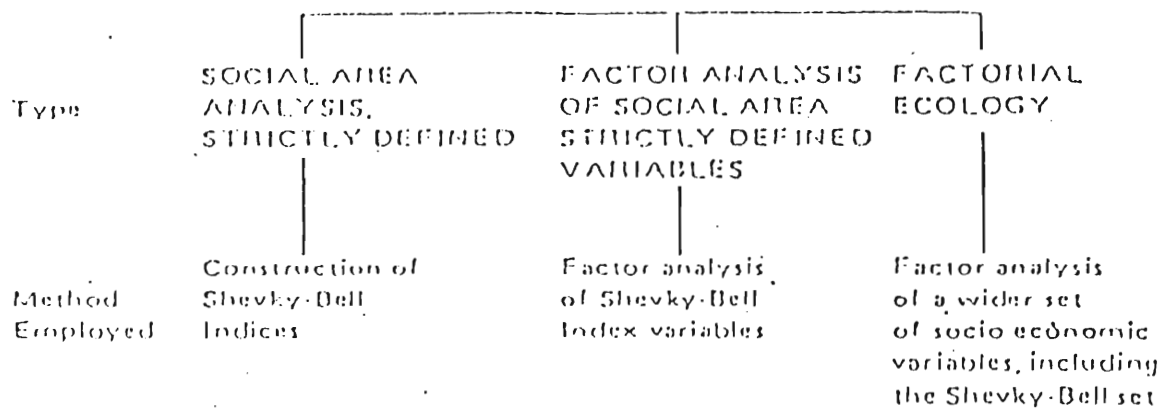


FIGURE 2.8: SOCIAL AREA ANALYSIS, BROADLY DEFINED

Source: Ayer (1979, p.17.)

principal factoring with iteration. Other programmes available are BMDP program P4M and the PFA option.

2.12.2. CLUSTER ANALYSIS

Factor analysis can be supplemented with cluster analysis to provide a more detailed picture of the variations between the taxonomic units. Johnston has observed that "the aim of regionalization is to group observations into categories comprising of similar individuals and thereby to separate dissimilar individuals into different categories" (Johnston, 1980, p.202). Although factor analysis summarizes a multitude of items in terms of fewer factors, the individual factor scores produced, do not provide a general picture of the overall similarity of the zones in terms of all the factors. But then such element is very important in regional analysis (Abler, Adams & Gould, 1977). Cluster analysis can be applied to achieve such regionalization procedure, to arrive at groups which could demonstrate greater internal similarity than those delineated on the basis of individual factor scores (Lance & William, 1968).

The principles associated with classification/regionalization are intended to help the taxonomist to achieve precision,

order and logical basis for regional analysis (Grigg, 1977). When it comes to division or grouping procedure, it should be "exhaustive and classes formed should exclude each other. Thus, each region is supposed to fall in one class and one class alone" (Grigg, 1977, p.488). Regionalization has a time dimension and the classification should be revised occasionally to reflect changes in the processes creating the spatial patterns.

This study will employ the general regional systems or unconstrained grouping, as against specific regional systems or constrained grouping, as the basis for regionalization. This involves grouping in which observations or regions are allowed to cluster whether they lie close together geographically or not. This pattern of grouping means grouping without regard to their geographical location or contiguity (Abler, Adams & Gould, 1977). This system suits the study because inequalities in Transkei are not underlain by any locational considerations of the districts. Cluster analysis in regional analysis has been used as a technique by Berry (1965), Jones & Goldsmith (1965), Hitchin (1969), Johnston (1978), Abumere (1981), etc.

Factor and cluster analyses, therefore, have become an important tool for analyzing variations in geographic space. They have evolved as a technique to keep with the basic

geographical objectives of providing "accurate, orderly and rational description and interpretation of the variable character of the earth's surface" (Hartshone, 1961, p.21). They have helped to derive multivariate regional systems delimited on the basis of several variables reflecting the complex nature of regions. According to Abler, Adams & Gould (1977, p.102), "underlying all measurements, is the ability to assign numbers to things according to a clear and well-defined rule". Quantitative regional analysis makes it possible to apply such measuring scales to the regions for purposes of identifying the variations or inequalities between them.

In the subsequent chapters, the various techniques of data analysis discussed above are employed at various sections together with graphs, maps, tables and figures to carry out the objectives of this research. The first analysis relates to the identification of the relationships between the 19 variables and the basic underlying patterns of the relationships.

CHAPTER THREE

IDENTIFICATION OF THE FACTORS UNDERLYING THE RELATIONSHIPS BETWEEN THE VARIABLES

3.1. INTRODUCTION

This chapter sets to diagnose the relationships between the 19 variables, in anticipation of identifying the major spatial patterns underlying them. It has been established previously that variables associated with multivariate human phenomena, like regional development tend to be characterized by disequilibrium as manifested in the specific groupings of variables (Forrester, 1971). The application of multivariate technique in this study, assumes that by using many indicators, the underlying independent factors of regional development can be extracted and reduced from a number of measures which are inter-correlated (Barnett, 1970). Therefore, any measures reflecting some facet of regional development, will be inter-correlated with other measures of the same facet and will be useful in isolating that facet from the correlation matrix. It is for this reason, that principal component analysis or factor analysis is appropriate in examining the major patterns associated with the relationships between the 19 variables in this chapter. The nature of the

relationships, whether negative or positive, between the variables will be analyzed, and the major dimensions along which the relationships could be analyzed, are discussed. The advantage of this analysis with the varimax rotation is that the "factors constitute a set of variates measured along orthogonal axes r dimension space, and are thus, statistically independent and additive" (Soja, 1968, p.72). The solution is constrained so as to account for most of the variance by only a few significant factors.

3.2. NATURE OF RELATIONSHIPS BETWEEN THE VARIABLES

Factor results are usually displayed in one or more tables, which normally consolidate more information than the length a research report may allow to be highlighted. The most often employed techniques of factor analysis is a matrix of correlation co-efficients among all the variables. The matrix is analogous to a between-city kilometre table, and contains much useful knowledge which can be perused for relationships between pairs of variables. The co-efficients of correlations express "the degree of linear relationship between the row and the column variables of the matrix. The closer to zero the co-efficient, the less the relationship; the closer to one, the greater the relationship" (Rummel, 1968, p.461). The co-efficient ranges from +1.0 indicating positive correlation to -1.0 indicating inverse relationships. In between the

ranges are various co-efficients indicating various degrees of relationships.

To establish the bivariate relationships through correlation analysis, the matrix of correlation co-efficients were derived from a data set of 28 districts of Transkei (cases) and 19 variables, a total composition of 532 cases (i.e. 19 x 28). The raw data from the field (see appendix 3), was used to produce the matrix table, except for three variables, namely: number of educational institutions; number of courts; and number of entertainment outlets, which were weighted. The weighting was as follows:

- i. the number of educational institutions per district
 - Universities.....10 points
 - Police / Military Colleges.....7 points
 - Technikons; Technical/Agricultural/
Post & Telecommunication Colleges;
Colleges of Education.....5 points
 - Special Schools for the handicapped.....3 points
 - Senior Secondary Schools.....2 points
 - Pre-Senior Secondary Schools.....1 point

- ii. the number of courts per district
 - Supreme Court - Appellate Division.....10 points
 - General Division.....5 points
 - Magistrate Courts - Regional Court.....2 points
 - District Court.....1 point

- iii. the number of entertainment outlets (here only hotels were weighted, according to international standards)
- Five Star hotels.....10 points
 - Four Star hotels.....5 points
 - Three Star hotels.....3 points
 - Two star hotels.....2 points
 - One Star hotels.....1 point

These weightings were given according to the importance and what each is capable of offering to the community it serves. The matrix generated from these data, provides the basic material upon which the principal factor analysis operated. Such matrix provides a "quick visual method of detecting the correlations" (Hammond and McCullagh, 1978, p.239). In all there are 171 correlation co-efficients, [i.e. $171 = (361 - 19)$ divided by 2], indicating a full correlation matrix of 342 correlation co-efficients (excluding the diagonals) in a complete matrix table (see table 3.1). It will now be proper for some discussions on the variables with co-efficients greater than or equal to 0.5, at a significance level of 0.01, so as to reveal the nature of their relationships. The variables selected for the present analysis, however, represent the different sectors or dimensions which have been selected for the research. They, therefore, cut across the various aspects of basic needs approach of regional development.

TABLE 3.1: THE CORRELATION MATRIX TABLE

		POPULATION	HOSPITALS	BEDS	DOCTORS	NURSES	SCHOOLS	GRAD. T'CHRS	% TEACH	POLICE	COURTS	INDUSTRY	ENERGY	TARRED	POST OFF	T'PHONES	TDC PROJ.	BANKS	DEALERS	LEISURE
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
POPULATION	3	1.000																		
HOSPITALS	4	0.486	1.000																	
BEDS	5	0.595	0.881	1.000																
DOCTORS	6	0.596	0.561	0.796	1.000															
NURSES	7	0.588	0.880	0.954	0.781	1.000														
SCHOOLS	8	0.857	0.653	0.714	0.690	0.738	1.000													
GRAD. T'CHRS	9	0.613	0.747	0.861	0.922	0.871	0.771	1.000												
% TEACH	10	0.919	0.538	0.603	0.565	0.605	0.877	0.642	1.000											
POLICE	11	0.680	0.781	0.801	0.726	0.911	0.808	0.833	0.671	1.000										
COURTS	12	0.561	0.454	0.645	0.768	0.720	0.606	0.771	0.570	0.755	1.000									
INDUSTRY	13	0.298	0.580	0.586	0.581	0.715	0.612	0.703	0.325	0.777	0.601	1.000								
ENERGY	14	0.594	0.659	0.810	0.933	0.858	0.763	0.947	0.577	0.860	0.802	0.810	1.000							
TARRED	15	0.401	0.798	0.700	0.498	0.723	0.490	0.664	0.424	0.689	0.470	0.537	0.585	1.000						
POST OFF	16	0.413	0.870	0.760	0.593	0.777	0.605	0.744	0.518	0.704	0.432	0.556	0.661	0.848	1.000					
T'PHONES	17	0.584	0.600	0.775	0.944	0.812	0.734	0.939	0.578	0.802	0.779	0.772	0.985	0.543	0.632	1.000				
TDC PROJ.	18	0.493	0.944	0.841	0.609	0.880	0.663	0.801	0.564	0.842	0.587	0.666	0.734	0.831	0.885	0.673	1.000			
BANKS	19	0.620	0.845	0.900	0.850	0.895	0.757	0.932	0.640	0.849	0.733	0.680	0.889	0.825	0.851	0.863	0.889	1.000		
DEALERS	20	0.580	0.907	0.816	0.675	0.870	0.755	0.856	0.668	0.867	0.651	0.683	0.783	0.799	0.885	0.738	0.946	0.898	1.000	
LEISURE	21	0.479	0.647	0.855	0.538	0.654	0.454	0.559	0.378	0.601	0.458	0.277	0.531	0.419	0.506	0.435	0.649	0.580	0.603	1.000

Population, which is the ultimate reference point of every development effort, has a highly positive correlations with the percentage of teachers in relation to total teachers in Transkei (0.919); the number of educational institutions (0.857) and the percentage of graduate teachers in relation to the total graduate teachers in Transkei (0.613). This may be due to the general awareness and the quest for effective formal education on the part of the people, so as to be able to cope with the challenges of the changing world. As population keeps increasing, security becomes a serious problem for people and property as the incidence of crime accentuates. There is no doubt that there is a positive correlation between the population and the police (0.680) and the courts (0.561), in an attempt to bring perpetrators of crime to justice. People, also tend to depend on financial institutions (0.620), for their financial needs to be able to cope with the dynamic economy with its traits of inflation and recession.

Inadequate and proper health care, coupled with high prevalence of diseases have necessitated the dependence of the population on the available health facilities for their medical requirements. This is evident in the positive correlations between population estimates and medical doctors (0.596); the number of hospital beds available (0.595) and the fewer number of nurses and paramedics (0.588). The correlation

between population estimates and hospitals available is not so highly positive (0.486). This may be possibly due to the fact that those who can afford, either do depend on general practitioners and other hospitals in and around Transkei for much better and efficient medical care at extra costs. The population's need for better infrastructure is indicated in the positive correlations between population estimates and energy consumption (0.594) and number of telephone subscribers (0.584). There is also a positive correlation between the population estimates and the general dealers, wholesalers, etc. (0.580)

Considering the provision of better medical care for the people of Transkei, availability of hospitals and medical doctors were selected for discussion. Hospitals correlate positively with Transkei Development Corporation (TDC), Transkei Appropriate Technology Unit (TATU) and Transkei Agricultural Corporation (TRACOR) development projects (0.944). This is because these agencies are the government's arms responsible for the provision of infrastructure and other development projects considered to be essential for the administration of proper health care. The highly positive correlation between hospitals and the number of general dealers, wholesalers, etc. (0.907) and financial institutions (0.895) can be explained that there is high commercial activity in areas with hospitals, in terms of demand for consumable goods and the need for quicker financial

transactions, as many people converge at these centres every now and then. Effective communication systems in these centres most especially in emergency cases, etc., explains the highly positive correlation between number of post offices (0.870); percentage of kilometre of tarred roads in relation to total road network (0.798) and number of telephone subscribers (.600). The availability of hospitals calls for the need of hospital beds (0.881); nurses and paramedics (0.880) and medical doctors (0.561), in order to provide effective medical services to those in need, hence, the highly positive correlation between these variables and hospitals. The need for the police (0.781) to provide the needed security for the sick and the weak underscores the positive correlation between the police and the hospitals. There is a positive correlation between hospitals and schools (0.653), percentage of graduate teachers in relation to total graduate teachers in Transkei (0.747) and also the percentage of teachers in relation to total teachers in Transkei (0.538). This is due to the fact that possibly highly qualified teachers available in the schools is indicative of high quality education and medical care being offered. This is also applicable to industrial employees (0.580) and holiday makers who make use of the entertainment outlets (0.647). The positive correlation of energy consumption (0.659) is likely to be due to the highly technological dimension medical care has assumed currently.

Medical doctors have positive correlations with nurses and

paramedics (0.781) for complementarity; hospital beds (0.796); number of hospitals (0.561); educational institutions (0.690); percentage of graduate teachers (0.922); percentage of total teachers (0.565); police stations (0.726) and courts (0.768) for security purposes; population estimates (0.596); manufacturing industries (0.581); energy (0.933); post offices (0.593) and telephones (0.944) for efficient communication network; TDC, etc. development projects (0.609); financial institutions (0.850); general dealers, etc. (0.675) and leisure outlets (0.538) for services.

The aspect of education as a cornerstone in the economic development of Transkei now comes under spotlight. An analysis of some of the variables associated with the quality of formal education for Transkeians, reveals that generally, good quality education relates positively with variables which give some indication of high level of economic development of a region. For purposes of analysis and quality of formal education offered, the percentage of graduate teachers in relation to total graduate teachers in Transkei has been selected. This variable has a positive correlation with medical doctors (0.922); nurses and paramedics (0.871); hospital beds (0.861); hospitals (0.747); energy consumption (0.947); financial institutions (0.932); telephones (0.939); police stations (0.833); general dealers, etc. (0.856); TDC, etc. development projects (0.801); educational institutions (0.771); courts (0.771); post offices (0.744); manufacturing

industries (0.703); percentage of kilometres of tarred roads (0.664); percentage of total teachers (0.643); population estimates (0.613) and entertainment outlets (0.559).

The importance of security in oiling the wheels of every society's economic transformation, needs to be highlighted. When it comes to maintenance of security and the administration of justice, the onus rests on the police and the courts of the land. The police, however, has been selected for analysis. The police has positive correlation with nurses and paramedics (0.911); hospital beds (0.801); medical doctors (0.726); hospitals (0.781); graduate teachers (0.833); educational institutions (0.808); general dealers, etc. (0.867); energy consumption (0.860); financial institutions (0.847); TDC, etc. development projects (0.842); number of telephone subscribers (0.802); manufacturing industries (0.777); courts (0.755) and post offices (0.704).

Manufacturing industries had positive correlation with energy consumption (0.810); telephone subscribers (0.772); nurses and paramedics (0.715); general dealers, etc. (0.683); financial institutions (0.680); TDC, etc development projects (0.666); medical doctors (0.581); number of hospital beds (0.586); hospitals (0.580); nurses and paramedics (0.715); educational institutions (0.612); percentage of graduate teachers (0.703); police stations (0.777); courts (0.601); percentage of

kilometre of tarred roads (0.537) and number of post offices (0.556).

Energy consumption, kilometre of tarred roads, post offices, telephone subscribers and TDC, etc. development projects will be classified as infrastructure necessary for any economic development, for the purpose of establishing relationships. Here, energy consumption, percentage of kilometre of tarred roads and the number of telephone subscribers will be used for the discussion. Energy consumption also positively correlates with graduate teachers (0.947) in the educational sector; medical doctors (0.933); nurses and paramedics (0.858) in the health sector; police stations (0.860); telephone subscribers (0.985); financial institutions (0.889); general dealers, etc. (0.783) and entertainment outlets (0.531).

The percentage of kilometre of tarred roads in relation to total road network per district correlated positively with hospitals (0.798); nurses and paramedics (0.723); hospital beds (0.700); graduate teachers (0.664); police stations (0.689); post offices (0.848); TDC, etc. development projects (0.831); financial institutions (0.825); general dealers, etc. (0.799) and telephone subscribers (0.543).

There was a high positive correlation between the number of

telephone subscribers and the energy consumption (0.985); the number of medical doctors (0.944); the percentage of graduate teachers over total graduate teachers (0.939); the number of financial institutions (0.863); the number of nurses and paramedics (0.812); the number of police stations (0.802); the number of courts (0.779); the number of hospital beds (0.775); the number of manufacturing industries (0.772); the number of general dealers, wholesalers, cafes, etc. (0.738); the number of TDC, etc. development projects (0.673); etc. However, the correlation between the number of telephone subscribers and the number of entertainment outlets in the country was not so high as the others.

To complete the analysis of the interrelationships between the variables, the number of financial institutions, commercial and entertainment outlets were considered as providing some form of services to the communities they serve. The number of financial institutions and entertainment (leisure) outlets have been selected to further explain the relationships. The number of financial institutions correlates positively with the number of TDC, etc. development projects (0.946); the number of hospitals (0.907); the number of general dealers, wholesalers, etc. (0.898); the number of post offices (0.885); the number of nurses (0.870); the number of police stations (0.867) and so on.

The performance of leisure, however, was not as encouraging as all other variables. But then it had some relatively low positive correlations with some of the variables. It positively correlated with the number of hospital beds (0.655); the number of nurses (0.654); the number of TDC, etc. development projects (0.649); the number of hospitals (0.647); the number of general dealers, wholesalers, etc. (0.603); medical doctors (0.538); graduate teachers (0.559); police stations (0.601); energy consumption (0.531); post offices (0.506) and financial institutions (0.580).

From the various correlation co-efficients considered, it is apparent that all the selected variables have higher positive correlation between them, except a few that have relatively lower degree of positive interrelationships. The high correlation between most of the variables means those variables form a correlation cluster

3.3. COMMUNALITY ESTIMATES OF VARIABLES WITH OTHER VARIABLES

After completing the analysis establishing the interrelationships between the 19 variables, using the correlation co-efficients matrix table, it will also be proper if the communality estimates method could be complemented to produce, predict or explain the percentage variation for one

variable from all others.

Communality estimate measures the variation of a variable in common with all the other variables together. It establishes the proportion of variation of each variable involved in the patterns formed. In the correlation co-efficients matrix table, the principal diagonal usually contains the correlation of variable within itself which is always 1.000. But then using the common factor analysis model, "the correlation matrix can be factored so that the principal diagonal will instead contain communality estimates. The commonly employed estimate for the communality measure is 'squared multiple correlation co-efficient (SMC)' of one variable with all the others. The SMC multiplied by 100 measures the per cent of variation that can be produced or explained for one variable from all the others" (Rummel, 1968, pp.461-2). Communality estimates may also be looked at as a measure of uniqueness of a variable. To determine a variable's uniqueness, the per cent of variation of that variable in common with the patterns is subtracted from 100. This indicates to what degree a variable is unrelated to others, in other words, to what degree the data on a variable cannot be derived from (predicted from) the data on the other variables (Rummel, 1968). For instance, population's uniqueness is 4.6% (100-95.4), i.e. it is unrelated to the other variables by 4.6%.

Table 3.2 contains the communality estimates of the 19 variables used in this study. These estimates are the SMC values in the principal diagonal and for the purposes of prediction or explanation of per cent variation of a variable from all others, these values have to be multiplied by 100. Thus, the values in percentages are as follows: population estimates for 1991 (95.4); number of hospitals (94.9); number of hospital beds (85.2); number of medical doctors (86.8); number of nurses and paramedics (91.4); number of educational institutions [weighted] (87.7); percentage of graduate teachers in relation to all graduate teachers in Transkei (93.4); percentage of all teachers in relation to total teachers in Transkei (92.9); number of police stations (86.7); number of courts [weighted] (75.2); number of manufacturing industries (74.9); energy consumption (98.2); percentage of kilometre of tarred roads in relation to total road network (79.2); number of post offices and agencies (86.7); number of telephone subscribers (96.1); number of TDC, etc. development projects (95.1); number of financial institutions and agencies (94.3); number of general dealers, wholesalers, etc. (92.3) and entertainment outlets (48.1).

These can be interpreted to mean that 95.4% of the population estimates data in table 3.2 can be predicted from or is dependent upon data on the remaining 18 characteristics. In other words, population's uniqueness is 4.6%. This is to say from the data of the 19 variables, the 1991 population

TABLE 3.2: THE COMMUNALITY TABLE OF THE VARIABLES

3	POPULATION	0.9537
4	HOSPITALS	0.9489
5	HOSPITAL BEDS	0.8520
6	MEDICAL DOCTORS	0.8681
7	NURSES & PARAMEDICS	0.9139
8	SCHOOLS	0.8772
9	GRADUATE TEACHERS	0.9341
10	% OF TOTAL TEACHERS	0.9286
11	POLICE	0.8667
12	COURTS	0.7518
13	INDUSTRY	0.7486
14	ELECTRICITY	0.9818
15	% OF TARRER ROAD	0.7922
16	POST OFFICES	0.8672
17	TELEPHONES	0.9611
18	TDC. DEV. PROJECTS	0.9513
19	FINANCIAL INSTITUTIONS	0.9430
20	GENERAL DEALERS	0.9232
21	ENTERTAINMENT OUTLETS	0.4806

SOURCE: BMDP4M FACTOR ANALYSIS PROGRAM, 1990 VERSION.
 DEPARTMENT OF MATHEMATICAL STATISTICS,
 RHODES UNIVERSITY, GRAHAMSTOWN, 1992.

estimates can be determined within 95.4% of the true value on the average. The same deduction detailing the per cent of variation that is predictable for one variable from all the others, is applicable for the remaining variables.

Examining the communality estimates in table 3.2, it is evident that 15 out of the 19 variables have more than 80 per cent of their variance accounted for, of which 10 have more than 90 per cent reproduced. Even the most poorly explained variable, entertainment outlets, has 48.1 per cent of its variance accounted for. Considering a total explanation of over 87.07 per cent (refer table 3.3), as well as a high degree of explanation on each variable, "it seems reasonable to conclude that the principal components model provides a good description of the original data" (Weinand, 1973, p.253).

3.4. IDENTIFICATION OF THE EIGENVALUES AND PERCENTAGE VARIANCE

Although significant relationships had been established through the correlation analysis, it was impossible, however, to consider each of the 171 co-efficient separately. This means that "somewhat redundant information (information overload) was associated with the previous correlation analysis" (Abler, et al., 1977, p.166). There is, therefore, a

TABLE 3.3: TABLE OF EIGENVECTORS / EIGENVALUES

FACTOR	VARIANCE EXPLAINED	CUMULATIVE PROPORTION OF VARIANCE		CARMINES THETA
		IN DATA SPACE	IN FACTOR SPACE	
1	13.7487	0.7236	0.8310	0.9788
2	1.5655	0.8060	0.9257	
3	1.2301	0.8707	1.0000	

SOURCE: BMDP4M FACTOR ANALYSIS PROGRAM, 1990 VERSION,
 BASED ON THE 19 PRIMARY VARIABLES.
 DEPARTMENT OF MATHEMATICAL STATISTICS,
 RHODES UNIVERSITY, GRAHAMSTOWN, 1992.

need for a method or process that will help to obtain sub-systems or groups of variables from the matrix of correlation co-efficients, to facilitate a greater degree of description and explanation and also to expose more information. The effective technique for solving this problem of excessive information or multicollinearity is through Factor Analysis, which is capable of reducing the original 19 variables, grouping them on the strength of their relationships. The technique, therefore, helps to determine from the interrelationships of the variables, the smallest number of groupings, whose association with the original variables, can account for most of the observed interrelationships (Stephenson, 1965).

This was achieved by transforming the correlation co-efficients into eigenvalues and their associated eigenvectors. The 19 variables were, thus, located in hyper space, in relation to axes which helped to identify which variables were highly correlated. By means of the eigenvalues, the different dimensions of the variable structure were then obtained and the percentage variances associated with the different axes were derived. Table 3.3 shows the eigenvalues and the percentage of variance of each primary variable accounted for by all 3 factors. Three factors emerged from the table 3.3, accounting for a total of 87.07% of the total variance (refer cumulative proportion of variance in data space). The few groupings, therefore, suggest a basic

underlying organization or pattern which was inherent in the matrix of correlation co-efficients.

Table 3.3 reveals that Factor One accounts for 72.36% of the total variation. Another 8.24% is accounted for by Factor Two and an additional 6.47% by Factor Three. The cumulative percentage of variance accounted for by the 3 factors is 87.07%. Thus, it can be conclusively said that the variations in the economic development of Transkei could be explained in terms of the 3 factors. The eigenvalues of the 19 primary variables have produced a three-dimensional pattern or solution, on which the 28 magisterial districts of Transkei could be arrayed.

3.5. DERIVING THE FACTORS

Having looked at the eigenvalues, which talk generally on the variations of the 3 factors, it is now imperative for a more detailed picture to reveal the identities of the variables associated with each of the 3 factors. This can only be done through the varimax rotation, which is a popular application in areal classification. The varimax rotation is the process whereby "the axes are rotated about the origin in such a way that each of the original variables, tends to load high on only one factor, creating a relatively simple factor structure

in which giving some empirical identity or name to the dimensions recognized, is made easier usually at the cost of some explanatory power because eigenvalues on loading factors can be reduced" (Smith, 1977, p.320). The number of factors which were derived in this research (3 factors), were, therefore, the independent or orthogonal factors, accounting for the variations between the zones (Kaiser, 1958). They were derived by rotating only the components with eigenvalues (refer variance explained) greater than unity (Rummel, 1968, p.356). Each of these factors introduces information not accounted for by any other factor.

Such a useful information is provided in table 3.4 which illustrates a 'sorted varimax rotated factor loadings [pattern]. The factor loadings are indicated in relation to the 19 variables on the basis of the three dimensions or factors. A matrix of factor loadings (in a sorted form) has, thus, replaced the matrix correlation co-efficients, which was previously examined. The loadings indicate the structure or characteristics of the dimensions which have been extracted.

The full sorted varimax rotated factor loadings table (table 3.4) indicates that instead of 171 correlation co-efficients, 57 factor loadings now have to be contended with. The factor analytic technique has helped to achieve parsimony and economy of description. The multivariate regionalization of economic

TABLE 3.4: SORTED VARIMAX ROTATED FACTOR LOADINGS [PATTERN]

		FACTOR	FACTOR	FACTOR
		1	2	3
HOSPITALS	4	0.902	0.264	0.255
TDC. PROJECTS	18	0.867	0.378	0.000
POST OFFICES	16	0.863	0.301	0.000
% OF TARRED ROADS	15	0.840	0.274	0.000
GENERAL DEALERS	20	0.781	0.441	0.345
NURSES/PARAMEDICS	7	0.684	0.585	0.323
HOSPITAL BEDS	5	0.680	0.512	0.356
BANKS	19	0.679	0.608	0.335
ENTERTAINMENT	21	0.567	0.000	0.347
TELEPHONES	17	0.322	0.875	0.301
ELECTRICITY	14	0.394	0.857	0.303
MEDICAL DOCTORS	6	0.293	0.808	0.360
INDUSTRIES	13	0.405	0.765	0.000
COURTS	12	0.000	0.759	0.361
GRADUATE TEACHERS	9	0.510	0.741	0.354
POLICE STATIONS	11	0.575	0.600	0.419
POPULATION	3	0.000	0.264	0.916
TOTAL TEACHERS	10	0.284	0.000	0.888
SCHOOLS	8	0.364	0.461	0.730

SOURCE: BMDP4M FACTOR ANALYSIS PROGRAM, 1990 VERSION.
 DEPARTMENT OF MATHEMATICAL STATISTICS,
 RHODES UNIVERSITY, GRAHAMSTOWN, 1992.

development in Transkei can now be discussed in terms of 3 factors, each with particular grouping of highly correlated variables as revealed through the factor loadings. To enable the identities of the factors to be exposed, the values of the factor loadings will be examined to enable the factors to be named.

3.6. NAMING THE FACTORS

The naming of the factors is now a vital step in the analysis. The interpretation and the naming of the factors from the loadings "is one of the most difficult aspects of the factor analysis technique, and can involve considerable subjectivity" (Smith, 1977, p.324). To ensure accurate factor interpretation, one must bear in mind the significance of the high and low values and the positive and negative signs of the variables correlating strongly with each dimension.

3.6.1. Factor One

In using factor analysis to construct an index, the first index is the best transformation or reflection of the general pattern existing between the original variables since it contributes a maximum to the total variance. In view of this,

factor one is of key importance in this analysis, since it contributed 72.36% of the total variance. The 9 variables which associated highly with factor one in terms of high loadings above +0.5 are indicated on table 3.5a.

An examination of these variables associated with Factor One indicates to a large extent a measure of agglomeration because they portray, to some extent, the level of agglomeration in Transkei. Considering the unquestioning pursuit of the polarized development strategies of the past decades, with their emphasis on industrialization, technological sophistication and metropolitan growth, substantial geographic imbalance in economic opportunities and development had been created in Transkei, to the extent that variables loading highly on this factor depict the increasing importance of the agglomeration or polarization phenomena. Consequently, it would be proper to identify or name Factor One as "Agglomeration Factor" because the variables here show very high interrelationships as evident in their high loadings. This means that these variables tend to cluster together to portray a particular dimension or characteristics. This high correlation of the indices lends a stronger weight to make 'agglomeration' an appropriate terminology. A schematic outline of variables associated with factor one is displayed in figure 3.1, showing the ecological correlation or correlation bonds associated with factor one.

TABLE 3.5a: TABLE SHOWING LOADINGS OF THE AGGLOMERATION FACTOR

VARIABLES	LOADINGS
NUMBER OF HOSPITALS	0.902
NO. OF TDC. PROJECTS	0.867
NO. OF POST OFFICES	0.863
% OF KM. OF TARRED ROAD	0.840
NO. OF GENERAL DEALERS	0.781
NO. OF NURSES & PARAMEDICS	0.684
NO. OF HOSPITAL BEDS	0.680
NO. OF FINANCIAL INSTITUTIONS	0.679
NO. OF ENTERTAINMENT OUTLETS	0.567

SOURCE: BMDP4M FACTOR ANALYSIS PROGRAM, 1990 VERSION.
 DEPARTMENT OF MATHEMATICAL STATISTICS,
 RHODES UNIVERSITY, GRAHAMSTOWN, 1992.

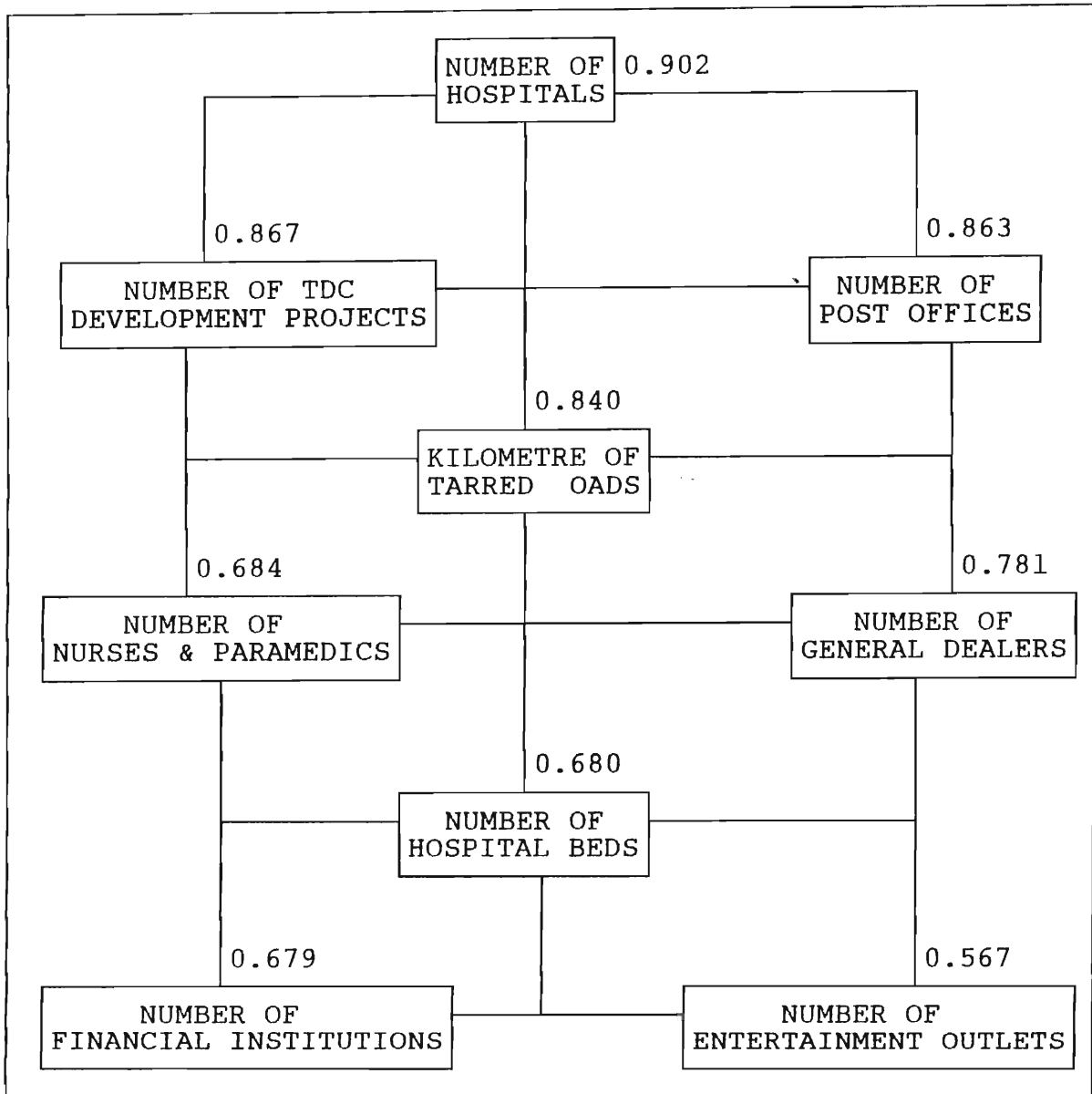


FIGURE 3.1: CORRELATION BONDS ASSOCIATED WITH FACTOR ONE

SOURCE: FIELDWORK, 1992.

3.6.2. Factor Two

This factor accounted for 8.24% of the total variance. Seven variables from the matrix of factor loadings had values equal to or greater than +0.5, as shown in table 3.5b.

A critical assessment of the factor loadings associated with the above dimension, reveals a high loading of energy consumption, which has stronger interrelationship with manufacturing industries. This is due to much concentration on industrialization as a development concept, to absorb redundant or surplus rural labour into the mainstream urban economy in order to achieve considerable economic self-sufficiency. The development of modern industries obviously leads to high energy consumption, and the availability of telephones facilitates communication, as shown in table 3.5b. The development process that is set in motion as a result of industrialization, tends to attract sophisticated expertise in health, education and security to the industrial centres for the benefit of the communities. No doubt medical doctors, graduate teachers, number of police stations and courts correlate in this factor. Factor Two has, therefore, been identified or labelled as "Industrialization Factor". The correlation bond for the 'industrialization factor' is shown in figure 3.2.

TABLE 3.5b: TABLE SHOWING THE LOADINGS OF INDUSTRIALIZATION FACTOR

VARIABLES	LOADINGS
NO. OF TELEPHONE SUBSCRIBERS	0.875
ENERGY CONSUMPTION	0.857
NO. OF MEDICAL DOCTORS	0.808
NO. OF MANUFACTURING INDUSTRIES	0.765
NO. OF COURTS	0.759
% OF GRADUATE TEACHERS	0.741
NO. OF POLICE STATIONS	0.600

SOURCE: BMDP4M FACTOR ANALYSIS PROGRAM, 1990 VERSION.
DEPARTMENT OF MATHEMATICAL STATISTICS,
RHODES UNIVERSITY, GRAHAMSTOWN, 1992.

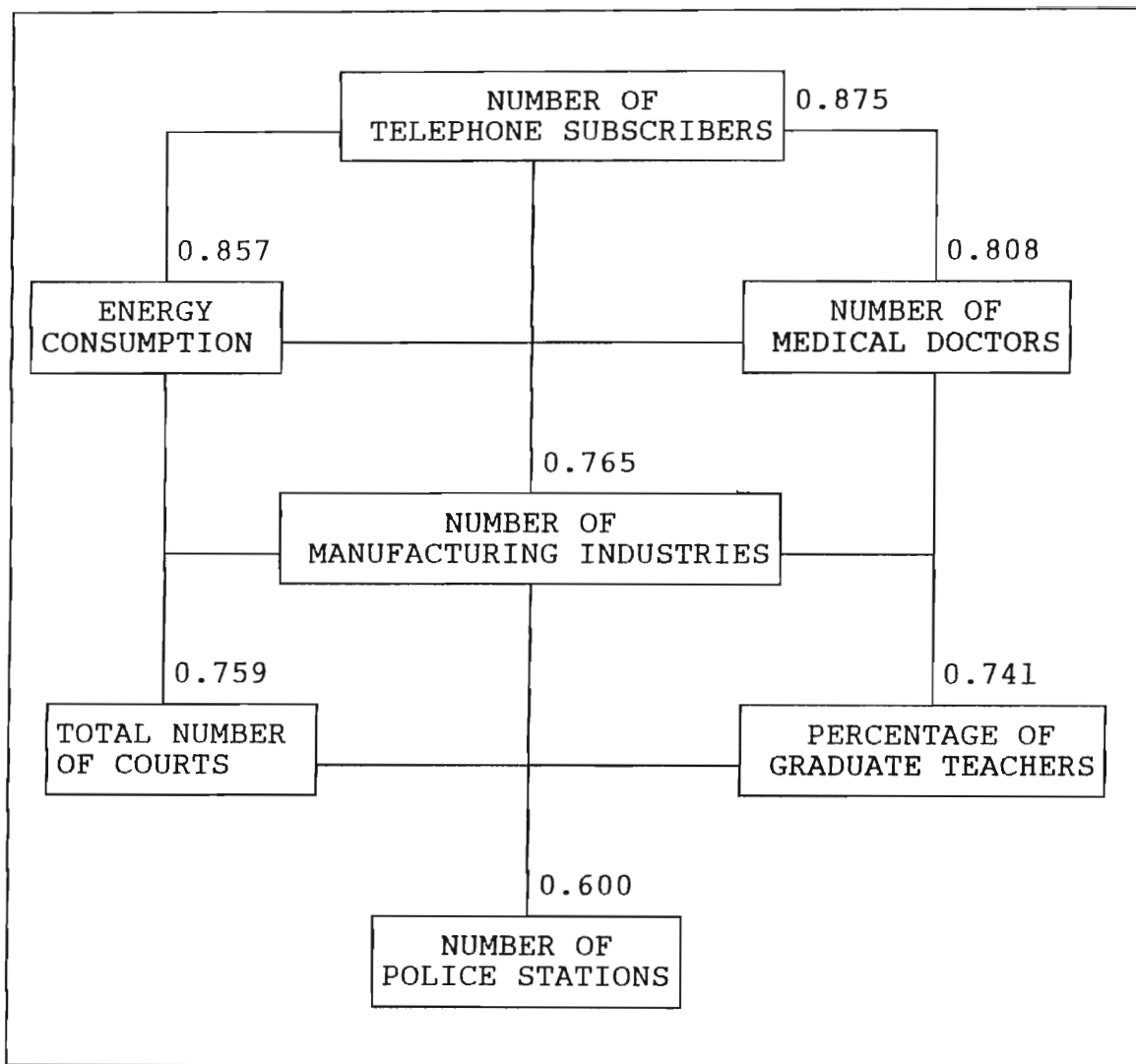


FIGURE 3.2: CORRELATION BONDS ASSOCIATED WITH FACTOR TWO

SOURCE: FIELDWORK, 1992.

3.6.3. Factor Three

Only three variables had loadings equal to or greater than +0.5. These variables are indicated in table 3.5c. From the variable loadings, this factor was interpreted as the "Education Factor". Two of the variables are related to education which has a very high correlation with population. A further review of the full matrix table (table 3.5c), shows that these variables had very low or no correlation (below +0.5) with most of the variables associated with factors one and two. Thus, factor three is indicative of areas caught up in that abyss of Transkei's imbalanced development, but with some efforts from the government to help better the lot of the people by providing education as a start towards development. Thus, the third factor highlights the importance of education in the less-developed regions of Transkei. Its contribution to the total variance was relatively low, 6.47%. Its correlation bond is illustrated in figure 3.3.

From the above findings, it is quite explicit that the 19 primary variables can be grouped into three factors which largely define the levels of inequality in the development of Transkei. These factors together account for about 87.07% of the total variations or differences between the magisterial

TABLE 3.5c: TABLE SHOWING THE LOADINGS OF THE EDUCATION FACTOR

VARIABLES	LOADINGS
POPULATION ESTIMATES, 1992	0.916
% OF TOTAL TEACHERS	0.888
NO. EDUCATIONAL INSTITUTIONS	0.730

SOURCE: BMDP4M FACTOR ANALYSIS PROGRAM, 1990 VERSION.
DEPARTMENT OF MATHEMATICAL STATISTICS,
RHODES UNIVERSITY, GRAHAMSTOWN, 1992.

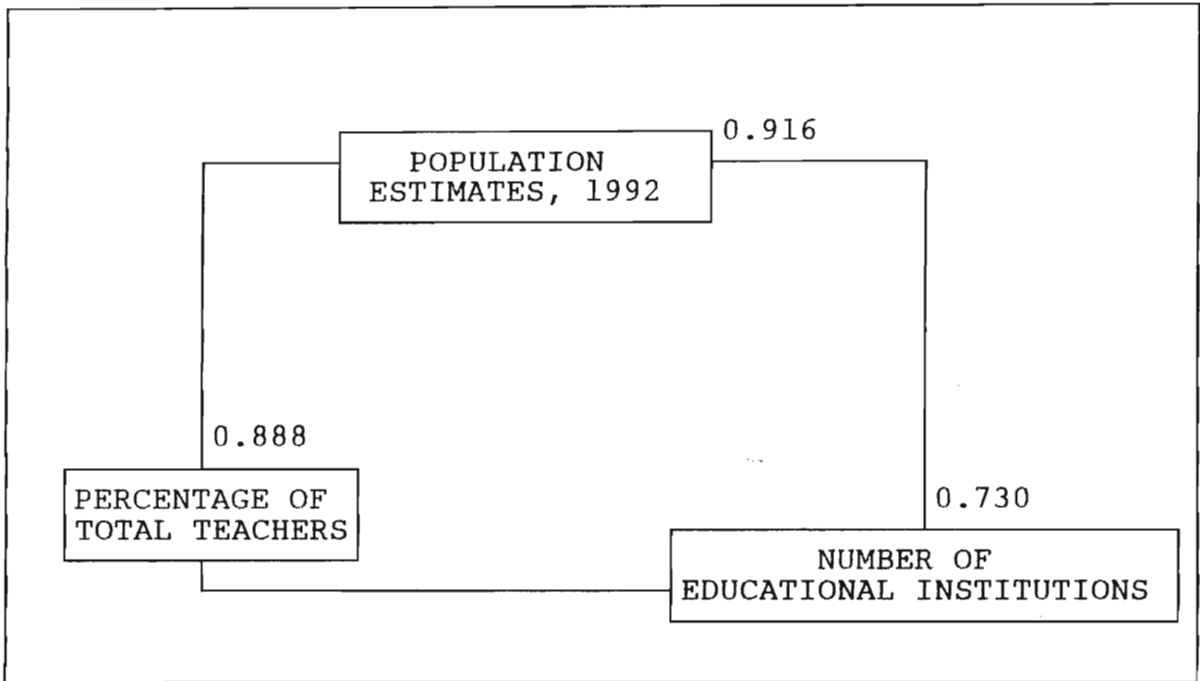


FIGURE 3.3: CORRELATION BONDS ASSOCIATED WITH FACTOR THREE

SOURCE: FIELDWORK, 1992.

districts of Transkei. The factors also indicate a grouping of the variables. The findings in this section of the chapter, therefore, supports the first hypothesis of this study which stipulates that relationships tend to develop between the variables used to measure variations in development as indicated by Rummel (1968).

The processes responsible for the creation of regional inequalities and their associated patterns in Transkei, as well as the other processes underlying their existence, will be explored further in chapter four.

CHAPTER FOUR

SPATIAL MANIFESTATIONS OF VARIATIONS IN DEVELOPMENT OF TRANSKEI

4.1. INTRODUCTION

Some attempts were made in the previous chapter to identify the relationships that tend to develop between the variables used to measure variations in development as indicated by Rummel (1968). The factors or dimensions under which the inequalities in level of development of Transkei could be explained, were identified through the technique of factor analysis. Factors or processes do not, however, operate randomly in a region. "Particular spatial patterns are generated by various processes that operate in a region" (Taylor, 1977, p.134). An important requirement in regional analysis is, therefore, to relate the spatial patterns in a region to particular processes. The spatial patterns associated with the three factors as well as their causal links will be examined by identifying the magisterial districts where the factors are important. This will enable us to group the magisterial districts on the basis of the scores on each of the three factors and to analyze the extent to which development processes are spatially polarized within

Transkei. The districts will initially be grouped with reference to the three factors separately. Subsequently, the districts will be grouped by considering all the three factors simultaneously. One technique that will be used for this type of classification is the ordination analysis (Gittins, 1969). This is a classification technique that would take cognizance of all the three factors simultaneously, as a basis for grouping all the 28 magisterial districts. A comprehensive grouping procedure of this nature is important in regional analysis because it would enable a general picture of similarities and differences within and between the initial classes or groups derived, to be obtained (Johnston, 1980). Such a classification would further help to achieve parsimony, by revealing the classes or groups within which the problem of inequalities of development in Transkei could be broadly analyzed.

Generally, the aim of any classification system is to produce groups, classes or clusters of all individuals, in which the within-group variance is minimized and the between-group variance is maximized (Berry, 1965). The groups or classes are, therefore, properly understood as clusters, so that the important concept in their definition is proximity, in terms of some attributes. The observations to be assigned to a particular group or a class are, therefore, closer to a member of the group than it is to any member of any other group. All the individuals are grouped with their most similar

individuals and are also closer to the reference item for the group than to the reference item of any other group (Johnston, 1980). The reference item in most grouping techniques is usually the similarity index, and the Euclidean Distance Grouping Co-efficient is the most commonly used similarity measure. In Euclidean geometry, the shortest distance between individuals is a straight line and so by locating the objects to be grouped in taxonomic space, such distances could be identified and, therefore, used for the grouping (Watson, 1955). "Distance" as a concept related to taxonomic space, has become an important consideration in measuring variations between geographic units of observation. The technique enables the relative locations of objects in taxonomic space to be used as the basis for classification.

4.2. THE MATRIX OF FACTOR SCORES

The analysis will commence with a look at factor one (agglomeration factor). Here, both positive and negative scores will be considered. Picking the highest positive scores from the table of factor scores (table 4.1), 15 magisterial districts were obtained, with districts like Butterworth (1.570); Port St. John's (1.328); Bizana (1.033); Engcobo (1.072); Lusikisiki (1.106); Umzimkulu (0.993); Glen Grey (0.889) and Umtata (0.693) loading over 0.6. Whereas these

TABLE 4.1: TABLE OF FACTOR SCORES

CASE		FACTOR	FACTOR	FACTOR
LABEL	NUMBER	1	2	3
BIZANA	1	1.033	-0.622	0.856
BUTTERWORTH	2	1.570	2.185	-1.782
CALA	3	-1.163	0.491	-1.359
CENTANE	4	0.582	-0.577	0.055
COFIMVABA	5	0.550	-0.476	-0.247
ELLIOTDALE	6	-0.825	0.265	-1.365
ENGCOBO	7	1.072	-1.144	1.225
FLAGSTAFF	8	0.607	-0.318	-0.808
GLEN GREY	9	0.889	0.267	1.575
HERSCHEL	10	-1.143	0.219	0.439
IDUTYWA	11	0.585	-0.546	-0.696
LIBODE	12	-0.568	-0.289	0.148
LUSIKISIKI	13	1.106	-1.272	1.724
MALUTI	14	-2.217	0.417	1.234
MOUNT AYLIFF	15	0.507	-0.169	-1.205
MOUNT FLETCHER	16	-0.446	-0.359	0.065
MOUNT FRERE	17	0.377	-0.293	0.330
MQANDULI	18	-0.209	-0.395	-0.284
NGQELENI	19	-1.196	-0.077	0.357
NQAMAKWE	20	-0.970	-0.064	-0.142
PORT ST. JOHN'S	21	1.328	-0.072	-1.690
QUMBU	22	-0.789	-0.110	0.183
TABANKULU	23	-0.895	0.002	-0.217
TSOLO	24	0.643	-0.477	-0.401
TSOMO	25	-0.877	0.052	-0.867
UMTATA	26	0.693	4.045	1.804
UMZIMKULU	27	0.993	-0.433	0.637
WILLOWVALE	28	-1.237	-0.249	0.432

SOURCE: BMDP4M FACTOR ANALYSIS PROGRAM, 1990 VERSION.
DEPARTMENT OF MATHEMATICAL STATISTICS,
RHODES UNIVERSITY, GRAHAMSTOWN, 1992.

districts performed very well on the agglomeration factor, 13 districts like Maluti (-2.217); Willowvale (-1.237); Ngqeleni (-1.196); Cala (-1.163); Herschel (-1.143); Nqamakwe (-0.970); Tsomo (-0.877) and Elliotdale (-0.825) performed dismally, scoring in excess of -0.8 on this factor.

From the scores, factor two (industrialization factor) is most dominant in Umtata and Butterworth. These two districts had the highest positive scores of 4.045 and 2.185 respectively. The seven other districts - Cala (0.491); Elliotdale (0.265); Glen Grey (0.267); Herschel (0.219); Maluti (0.417); Tsomo (0.052) and Tabankulu (0.002) - which obtained some positive scores on this factor, had loadings below +0.5. This gives a range of 4.043 for those of positive loadings. The remaining 19 districts all obtained negative scores, with Lusikisiki and Engcobo scoring -1.272 and -1.144 respectively.

The picture in factor three (education factor) is not any different from the other factors. Fifteen districts obtained high positive scores, with some in excess +0.5. Like factor two, Umtata still had the highest positive score of 1.804, with Lusikisiki (1.724); Glen Grey (1.575); Maluti (1.234); Engcobo (1.225); Bizana (0.856) and Umzimkulu (0.637) loading over 0.6. The remaining districts obtained negative scores with Butterworth (-1.782); Port St. John's (-1.690); Elliotdale (-1.365); Cala (-1.359) and Mt. Ayliff (-1.205)

obtaining negative scores in excess of -1.000.

A review of this table of factor scores brings to light a very important picture. Two districts featured prominently in all the 3 factors and nine other districts appeared in 2 factors, while some districts obtained negative scores in either 2 or 3 factors. It will be quite interesting to give a spatial dimension to such a feature. The fact that some districts appeared in more than one factor underscores the importance of such districts in the economic development of Transkei. This strengthens the contention that the positive efforts of development in Transkei are evident in different districts at varying magnitude, creating a polarized development at specific points to the detriment of the greater part of the country.

4.3. SPATIAL PATTERNS ASSOCIATED WITH THE FACTORS

The spatial patterns associated with the three factors will now be considered individually to bring to the light their respective patterns.

4.3.1. Spatial Patterns Associated with Factor One

From table 4.1, it is evident that the districts which had the highest scores on factor one (agglomeration factor), have relatively high level of some development potential. These districts are all situated either in the corridor of the national roads running through Transkei from South Africa or are districts bordering South Africa (refer figure 4.1). For example, the National road 2 from Port Elizabeth through East London to Durban goes through Butterworth, Idutywa, Umtata, Tsolo, Mt. Frere, Mt. Ayliff and Umzimkulu. The R61 road from Queenstown to Port St. John's (a holiday resort) also connects Glen Grey, Cofimvaba, Engcobo and Umtata. The prominent southern districts on this factor also have access to the port facilities available in East London and Port Elizabeth harbours. Some of the districts are situated close to the RSA provinces of Cape and Natal, and their proximity to these provinces further enhances their development prospects. The proposal to make East London an Export Processing Zone will further boost the potentials of these districts. All the factors mentioned above ensure uninterrupted mobility of factors of production to and from these districts.

From the above locational advantages, the spatial arrangement of these districts on this factor is not an unusual feature. Butterworth, Centane, Cofimvaba, Glen Grey and Engcobo are grouped to the southern border with the Cape, with Idutywa, Umtata and Tsolo centrally located along the N2 road, while

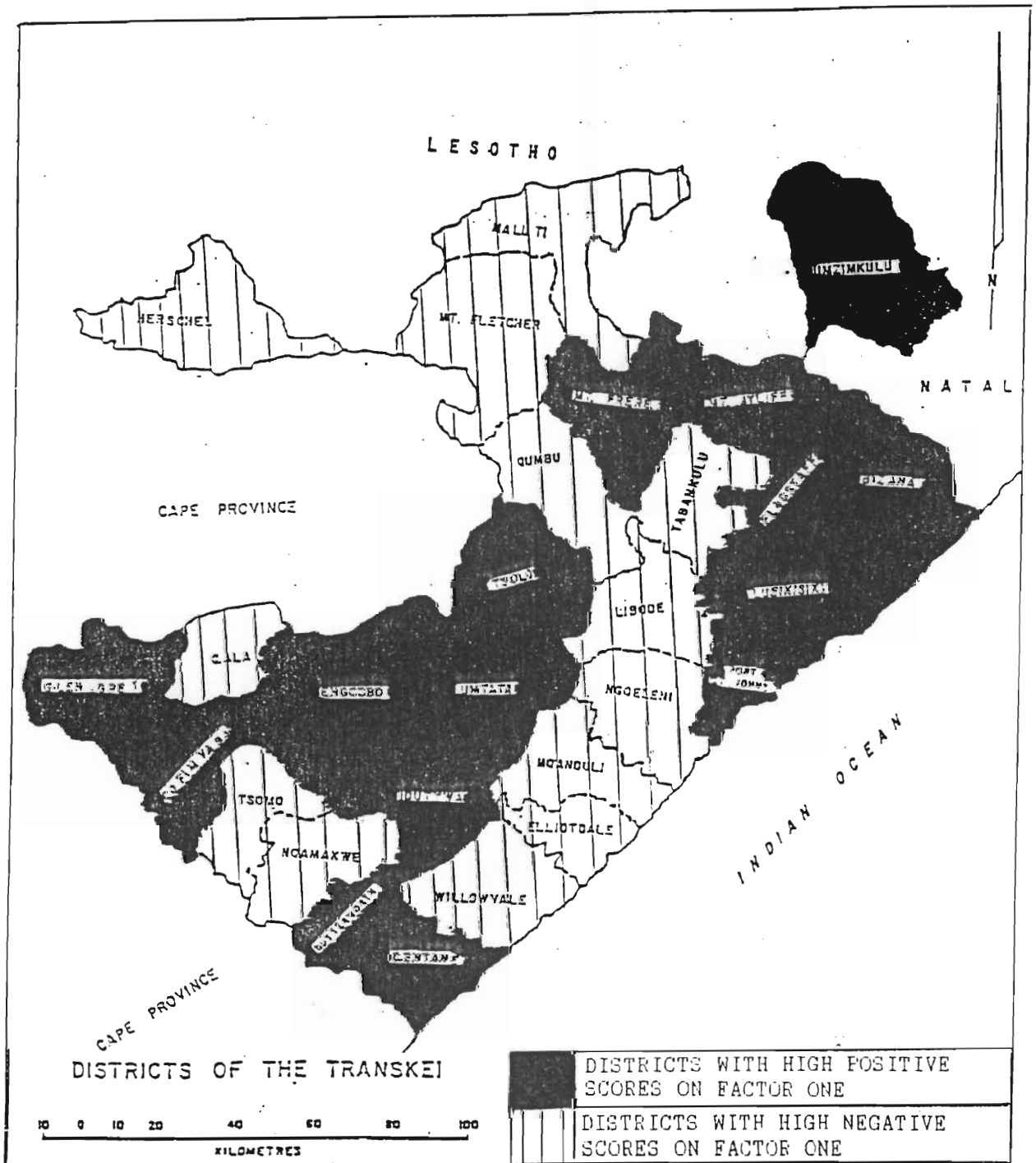


FIGURE 4.1: SPATIAL PATTERN OF THE AGGLOMERATION FACTOR

Mt. Frere, Mt. Ayliff, Umzimkulu, Bizana, Flagstaff, Lusikisiki and Port St. John's share the north-eastern border with Natal in a continuous block. Spatially, the southern districts of Butterworth, Centane, Idutywa, Engcobo, Cofimvaba and Glen Grey form a pattern like the letter Y with Umtata and Tsolo being the spine. The remaining districts with positive scores are crowded at the north-eastern end of the country in a similar pattern of the letter Y (see figure 4.1). The southern districts are more developed than the north-eastern districts in terms of their development potential. This is due to the availability of relatively much better infrastructure, social amenities and proximity to port facilities in East London and Port Elizabeth and markets. The reason for this situation may be due to the fact that the architects of Transkei's independence and most of the past rulers and decision-makers were Tembus from the south and consequently they paid much more attention to the development of the southern part of the country. It is obvious that the north-eastern districts are closer to Durban for port facilities, but then accessibility to Durban is further hampered by the poor infrastructural base in these districts.

The districts with high positive scores on this factor, have the best of health facilities like hospitals, more hospital beds and medical personnel. The medical services provided in these districts are also extended to those districts without any proper health facilities. For example, Butterworth, which

topped this factor, provides medical care to the people of the districts of Tsomo, Idutywa and Willowvale, and critical cases from Thafalofefe Hospital in Centane and the Nqamakwe Health Centre are referred to the Butterworth Hospital. The picture in Umtata General Hospital is even more nerve-breaking. This is due to certain administrative procedures which require all critical cases in the country to be referred to it, before any consideration of possible referral of such cases could be made to RSA for further specialist attention (Department of Health Report, 1989). In addition to this, the districts are also well interconnected with better communication network, thus bringing them closer to the rest of Transkei. Commercial, financial and entertainment facilities are available as additional attractions to these districts.

The districts that scored negatively on the factor (figure 4.1) - Willowvale, Elliotdale, Mqanduli, Ngqeleni, Libode, Qumbu, Mt. Fletcher, Maluti and Herschel - are sandwiched between the districts that scored positively to the north and south of the country forming a continuous line from the south, along the coast through the centre of the country to Transkei's northern borders with the Cape Province and Lesotho. Three other districts - Nqamakwe, Tsomo and Cala - with negative scores are also caught in between the southern districts that had positive scores. These are the districts with the lowest development potential due to lack of better infrastructure, social amenities (as a result of many years of

neglect and conservatism on the part of the indigenous Transkeians). There is very little attraction to these districts in so much that any form of potential investments seem very remote (TDC Industrial Survey, 1991).

These districts - Willowvale, Elliotdale, Mqanduli, Ngqeleni, Libode, Qumbu, Mt. Fletcher, Maluti and Herschel - are connected to the rest of the country by roads which are impassable most times of the year. Districts like Willowvale, Elliotdale, Mqanduli and Ngqeleni have a very good potential as holiday resorts because of their beautiful beaches and nature reserve potentials. But because of poor accessibility, there is little motivation to develop the resources optimally. Water for domestic purposes is one of the most serious problems of the people in these districts. This creates problems for potential investors for example. Livestock and other domestic animals compete with human beings for the little water available, with the worst affected areas being Ngqeleni, Elliotdale and Libode. The conservative attitude of the indigenous people makes it difficult for these areas to be opened to innovation. Certain traditional practices in relation to the chieftaincy system and land acquisition as reflected in the land tenure system, make it difficult for even the government to acquire land for any development. Chiefs are considered as the custodians of the land, which belongs to their ancestors, for their subjects. As a result, the rituals one has to go through in order to acquire a piece

of land for any development can break the back of any investor no matter how high the motivation. As a matter of fact, this situation is not restricted to only these areas, except that it is worse in the districts with negative scores. This assertion was established during data collection at the chieftaincy section of the office of the Military Council on the eleventh floor of the Botha Sigcau Government Building.

The two main spatial patterns associated with factor one, thus, largely reflects the roles of economic, institutional and cultural factors.

4.3.2. Spatial Patterns Associated with Factor Two

Factor two (industrialization factor) presents a different spatial pattern as indicated in figure 4.2. From table 4.1 above, a striking feature of the districts that obtained very high positive scores on this factor is that they also featured very well on factor one. Umtata, which scored 4.045, is the administrative capital situated almost in the heart of the country. Butterworth, which scored 2.185, on the other hand, is situated at the southern tip of Transkei and is often referred to as the gateway to Transkei. These districts, by virtue of their positions, make them accessible to the Republic of South Africa (RSA) because they are situated along

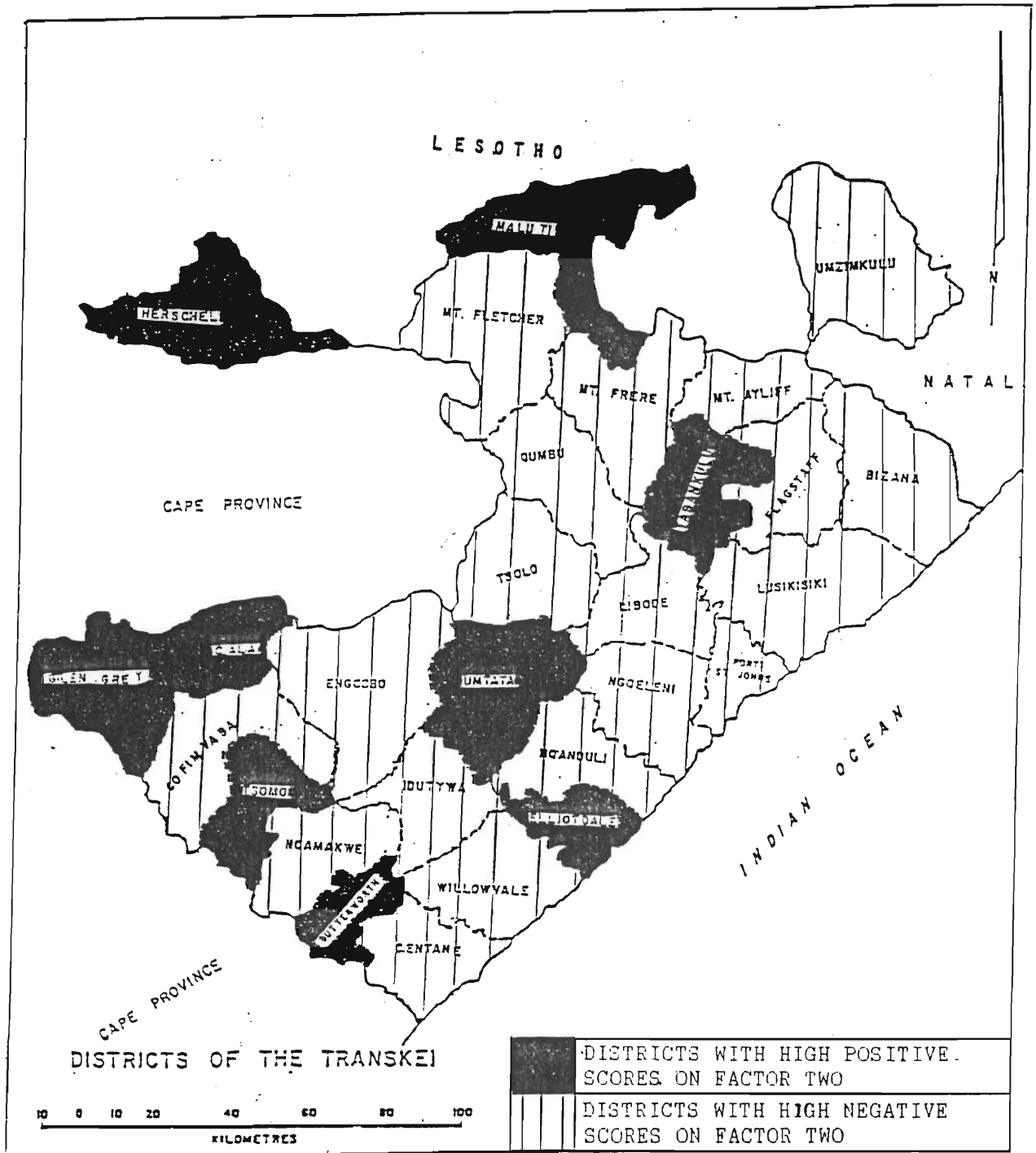


FIGURE 4.2: SPATIAL PATTERN OF THE INDUSTRIALIZATION FACTOR

the main road and rail arteries to and from RSA. They both have the best of infrastructure and social amenities which make them more attractive to investors. Their proximity to the ports in East London and Port Elizabeth is an additional advantage for the mobility of factors of production.

The industrial decentralization policy of the Nationalist Party government of South Africa in 1981, aimed at decongesting the four industrial metropolises so as to achieve a more equal distribution of secondary industry, contributed to the successful industrialization story of Umtata, Butterworth and Ezibeleni in the Glen Grey district. This development strategy adopted, was to utilize the full development potential of each region in agriculture, mining, services, etc., and where possible, alternative agglomeration advantages could be created to counter-balance the existing industrial metropolises. This would help to create employment opportunities in the regions concerned, in order to achieve a better spatial balance in the development of Southern Africa. Umtata, Butterworth, Ezibeleni and Lusikisiki were, therefore, selected as the target points for the realization of these development objectives in the Transkei. Unfortunately, Lusikisiki's dreams of becoming an industrial centre turned into an illusion due to lack of the necessary facilities that were to support the industrial drive. Priority, however, was given to the southern districts of Umtata, Butterworth and Ezibeleni in laying the necessary infrastructural base to make

the establishment of industries possible. There is, therefore, little doubt that these districts have become the live wire of Transkei's industrialization process. Butterworth, for instance, contains almost 50 per cent of the total number of industries currently in production (TDC Industrial Survey, 1991).

The other districts, Cala, Tsomo, Elliotdale, Tabankulu, Maluti and Herschel had insignificant positive scores (refer table 4.1 above) from their contributions towards maintenance of law and order and education. Their situations along the peripheral regions of the country make them high risk districts. For this reason, effective security is of prime importance. During the Matanzima regimes, when the liberation movements were outlawed in South Africa, these districts had a very strong police presence as a measure to counteract any infiltration of the guerrillas to perpetuate political violence in the country.

These districts - Maluti, Herschel, Cala, Glen Grey, Tsomo, Butterworth and Elliotdale - form block-like patterns on the periphery of the country, along the Cape Province and Lesotho borders and the eastern coast, with Umtata and Tabankulu being the only districts in the interior. An interesting feature worth noticing is that out of the 9 districts with positive scores, 6 of them are located in the southern part of the

country. This situation further supports the dominant position of southern Transkei, in the development process of Transkei.

From the analysis of the processes of factor two, it is evident that institutional factors, like governmental policies, must again be mentioned as contributing to the spatial patterns that have emerged on factor two.

4.3.3. Spatial Patterns Associated with Factor Three

Figure 4.3 depicts the districts which scored positively on factor three (education factor). These districts have large population and enormous size of land and more than two-thirds of the total number of the districts are situated in the northern part of the country. They are the districts with little development potential as a result of decades of total neglect in the distribution of the national cake. The communication network in these districts is so poor that there is little motivation to get to these districts with any development project. In view of the poor levels of development in these districts, the Transkei government has been increasing the number of schools and broadening the education and training facilities as a means of developing the infrastructural base. This is to help fight illiteracy and to equip the people with the skills relevant to Transkei's future

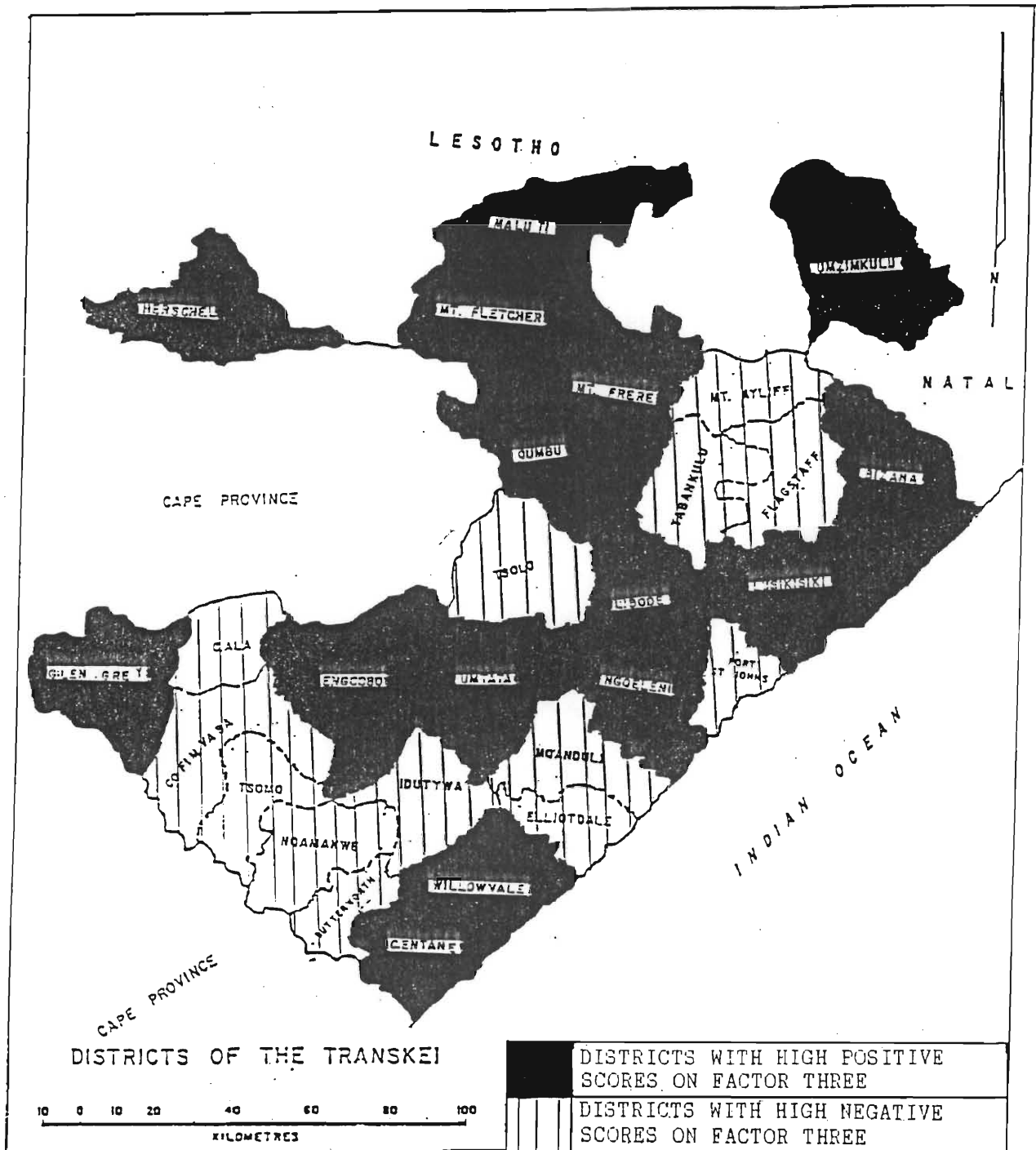


FIGURE 4.3: SPATIAL PATTERN OF THE EDUCATION FACTOR

economic development programmes.

From the above analysis, it can be conclusively said that institutional factors (like government policies) and traditional factors (like the land tenure system and the conservative nature of the indigenous people) have all contributed largely to the spatial patterns associated with the three factors enumerated.

Attention will now be focussed on the approaches that can be employed to group the districts on the basis of their scores on all the three factors considered simultaneously.

4.4. APPROACHES TO GROUPING

There are two approaches to grouping. The first involves the identification of groups on the basis of individual attributes they already possess. This is also known as "inductive classification". Such classification is accomplished logically by agglomerating individuals according to their characteristics. Since each of the 28 districts possesses some particular attributes in relation to their factor scores, this procedure of inductive grouping is adopted.

The second method of grouping involves the assignment of individuals to classes that have been established a priori. This technique may, therefore, be termed "discrimination" or "deductive classification", which is concerned with the assignment of previously unallocated individuals to their most likely class, given an already existing classification system.

Whatever the technique of grouping used, however, they all aim at grouping "observations into categories comprising similar individuals and thereby to separate dissimilar individuals into different categories" (Johnston, 1980, p.202).

In its application as a classification technique, two variants of factor analysis could also be identified. The R-mode factor analysis groups regions with similar variable attributes. The Ordination Technique used in this research is, thus, based on the R-mode factor analytic model. The Q-mode is the other variant that requires transposition of the data matrix in its application, making columns to represent the areal units and the rows representing the variables. Correlations between the columns produce a k.k matrix of correlations between the regional units from which factors may be extracted. The Q-mode, therefore, produces dimensions or clusters from the pattern of object vectors in variable space. Russett (1966), Lance & Williams (1968), Spence (1968), etc., have used Q-mode

to supplement the R-mode for grouping their observations, as can be observed from figure 4.4 below.

4.5. EUCLIDEAN DISTANCES BETWEEN THE MAGISTERIAL DISTRICTS

One of the techniques that can be used to measure the differences in level of inequalities between districts relates to the determination of the socio-economic distances between them by preparing a matrix table. The distances between any point lying in taxonomic space can be computed by using the Pythagorean theorem from plane geometry which states that "in a right-angled triangle, the square of the hypotenuse is equal to the sum of squares of the other two sides" (Abler, et al., 1977, p.163). The advent of computers has actually made the computation of such matrix table easy. In this particular research, a BMDP4M Factor Analysis Computer Program, 1990 Version, was used at the Department of Mathematical Statistics of Rhodes University, Grahamstown, to generate a matrix of socio-economic distances (table 4.2), with reference to all the three orthogonal factors. A detailed information on inequalities in development between the districts is apparent from the matrix of socio-economic distances in table 4.2. Generally, the magnitudes of socio-economic distances indicate the similarities and differences, in terms of development, between the districts. The smaller values on the table signify similarities between the districts while the larger values

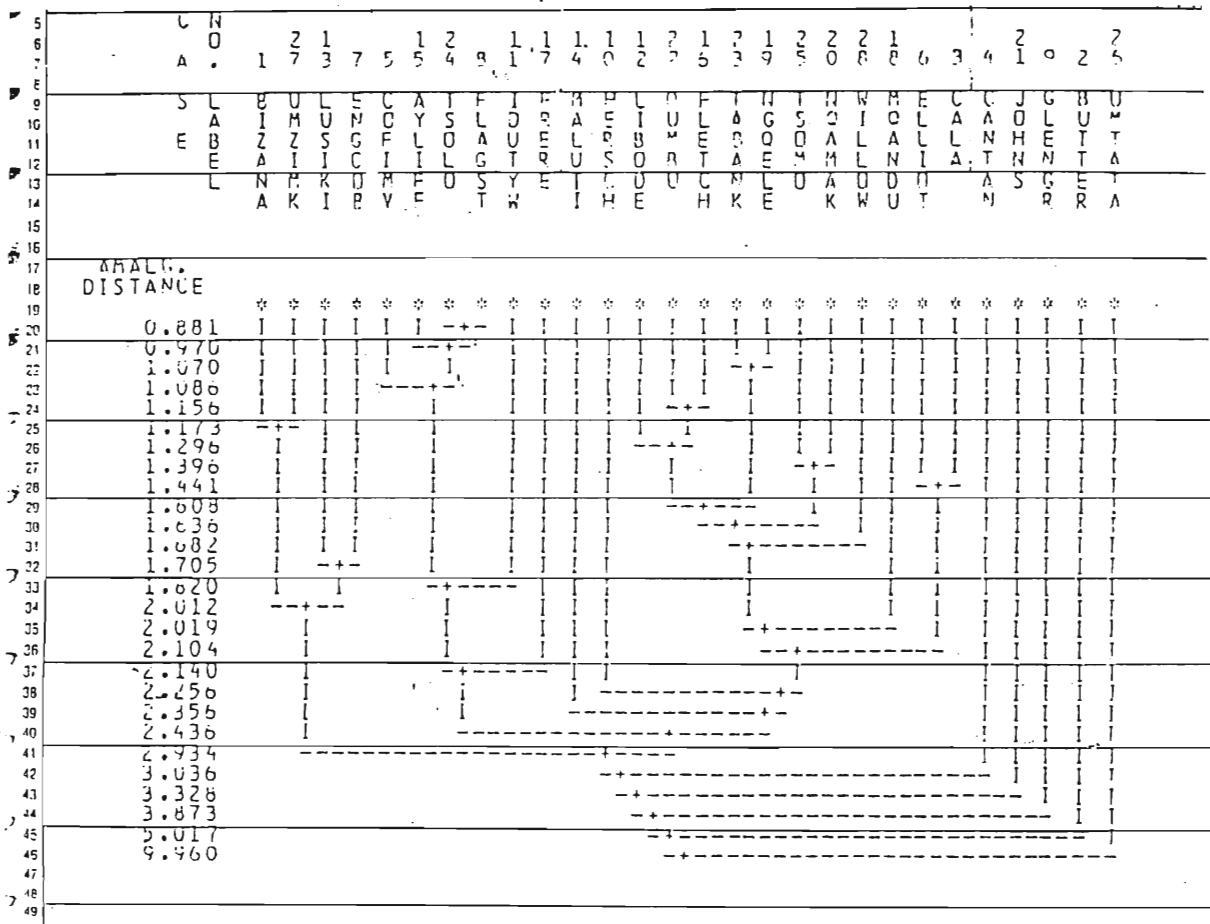


FIGURE 4.4 STEPS IN THE GROUPING OF DISTRICTS ON THE BASIS OF SCORES ON TWO LEADING COMPONENTS OF INEQUALITIES IN DEVELOPMENT (LINKAGE TREE).

TABLE 4.2: SOCIO-ECONOMIC DISTANCES BETWEEN THE 28 DISTRICTS OF TRANSKEI

CASE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	0.00	6.42	7.26	3.69	3.42	6.82	2.14	4.19	4.37	5.06	4.87	5.20	2.01	6.43	4.72	5.00	3.17	4.75	5.79	5.99	3.92	5.22	5.80	3.92	6.59	12.46	1.17	6.03
2	6.42	0.00	10.89	7.88	7.59	10.45	7.18	7.75	5.02	9.17	8.24	9.17	6.97	10.48	8.08	6.95	7.26	9.19	8.88	9.83	7.40	9.11	9.58	7.61	10.22	10.07	6.10	10.21
3	7.26	10.89	0.00	5.29	4.61	1.44	7.03	4.38	9.94	3.87	4.72	3.44	7.79	4.22	3.63	3.58	5.78	3.41	2.80	3.00	5.53	3.25	2.36	4.75	2.22	17.99	7.05	3.07
4	3.69	7.88	5.29	0.00	3.04	5.00	3.36	3.47	6.59	4.53	4.01	3.97	4.12	5.82	3.75	4.01	3.77	3.83	4.35	4.87	3.73	3.77	4.07	3.50	4.99	14.55	3.53	4.30
5	3.42	7.59	4.61	3.04	0.00	4.23	3.12	1.28	6.08	3.41	2.11	2.45	3.70	5.00	1.84	2.44	2.23	2.80	3.53	3.30	3.33	2.85	3.19	1.09	2.10	17.75	6.68	3.11
6	6.82	10.45	1.44	5.00	4.23	0.00	6.81	4.07	9.75	3.66	4.50	3.27	7.42	4.54	3.51	3.31	5.50	2.80	2.93	2.89	5.10	3.12	2.34	4.58	2.10	13.06	2.19	5.72
7	2.14	7.18	7.03	3.36	3.12	6.81	0.00	3.83	4.60	5.14	4.57	4.58	1.71	6.52	4.44	4.70	3.18	4.72	5.30	5.71	4.68	4.78	3.20	0.88	3.48	15.12	3.90	4.13
8	4.19	7.75	4.36	3.47	1.28	4.07	3.83	0.00	6.80	3.55	1.82	2.48	4.55	5.28	0.97	2.50	2.53	2.81	3.59	3.28	3.34	2.80	3.20	0.88	3.48	15.12	3.90	4.13
9	4.37	5.02	9.94	6.59	6.06	9.75	4.60	6.80	0.00	7.44	7.02	7.45	3.87	6.55	7.21	7.38	5.29	7.69	8.24	8.44	7.27	7.49	8.33	6.10	9.18	15.82	4.10	6.87
10	5.06	9.17	3.87	4.53	3.41	3.68	5.14	3.55	7.44	0.00	3.98	2.42	5.54	2.38	3.57	2.35	3.47	2.88	2.48	2.71	4.98	2.28	2.49	3.62	2.03	3.28	15.63	4.58
11	4.87	8.24	4.72	4.01	2.11	4.50	4.57	1.82	7.02	3.98	0.00	2.95	4.87	5.21	2.16	2.85	2.98	2.95	3.89	3.08	4.98	1.30	1.98	3.62	2.03	3.28	15.63	4.58
12	5.20	9.17	3.44	3.97	2.45	3.27	4.58	2.48	7.45	2.42	2.95	0.00	5.24	3.84	2.44	1.57	3.35	2.40	1.94	1.87	4.98	1.30	1.98	3.62	2.03	3.28	15.63	4.58
13	2.01	6.97	7.79	4.12	3.70	7.42	1.71	4.55	3.87	5.54	4.87	5.24	0.00	6.71	5.19	5.09	3.84	5.21	5.95	6.17	5.24	5.32	5.95	4.07	6.92	3.77	18.70	8.35
14	6.43	10.46	4.22	5.82	5.00	4.54	6.52	5.28	6.55	2.38	5.21	3.84	6.71	0.00	5.28	3.54	5.05	4.08	2.79	3.18	6.71	3.14	2.97	1.51	3.15	15.82	4.43	4.08
15	4.72	8.08	3.83	3.75	1.64	3.51	4.44	0.97	7.21	3.57	2.18	2.44	5.19	5.28	0.00	2.48	3.10	2.89	3.50	3.09	3.38	3.14	2.97	1.51	3.15	15.82	4.43	
16	5.00	8.95	3.58	4.01	2.44	3.31	4.70	2.50	7.38	2.35	2.85	1.57	5.09	3.54	2.48	0.00	3.47	2.14	2.17	1.78	4.84	1.18	1.93	2.70	4.81	13.85	2.93	4.74
17	3.17	7.28	5.78	3.77	2.23	5.50	3.18	2.53	5.29	3.47	2.98	3.35	3.84	5.05	3.10	3.47	0.00	3.97	4.37	4.23	3.96	3.64	4.33	2.14	2.17	18.21	4.83	
18	4.75	9.19	3.41	3.83	2.80	2.80	4.72	2.81	7.89	2.68	2.95	2.40	5.21	4.08	2.89	2.14	3.97	0.00	2.61	2.32	3.93	2.45	2.02	3.19	2.47	18.88	5.89	
19	5.79	9.86	2.80	4.35	3.53	2.93	5.30	3.59	6.24	2.48	3.89	1.94	5.95	2.79	3.50	2.17	4.37	2.61	0.00	1.92	5.80	1.70	1.07	3.71	2.50	18.90	5.91	
20	5.99	9.83	3.00	4.87	3.30	2.89	5.71	3.28	6.44	2.71	3.08	1.87	6.17	3.18	3.09	1.76	4.23	2.32	1.92	0.00	5.36	1.84	1.71	3.50	1.40	18.90	5.91	
21	3.92	7.40	5.53	3.75	3.33	5.10	4.88	3.34	7.27	4.98	3.87	4.96	5.24	6.71	3.38	4.84	3.96	3.93	5.80	5.36	0.00	5.11	0.00	1.61	2.93	2.31	16.12	4.96
22	5.22	9.11	3.25	3.77	2.85	3.12	4.79	2.80	7.49	2.28	3.15	1.30	5.32	3.14	2.73	1.18	3.84	2.45	1.70	1.84	1.71	4.82	1.61	0.00	3.48	2.01	16.68	5.48
23	5.80	9.58	2.36	4.07	3.19	2.34	5.31	3.20	6.33	2.49	3.45	1.98	5.95	3.18	2.97	1.93	4.33	2.02	1.07	5.71	3.50	3.84	2.93	3.48	0.00	17.55	6.48	
24	3.92	7.81	4.75	3.50	1.09	4.58	3.40	0.88	6.10	3.62	2.03	2.52	4.07	5.28	1.51	2.70	2.14	3.19	5.71	3.50	5.29	2.31	2.01	3.93	0.00	12.42	17.09	
25	6.59	10.22	2.28	4.99	3.78	2.10	6.38	1.48	9.18	3.18	3.28	2.45	6.93	3.77	3.15	2.30	4.81	2.47	2.50	1.40	3.84	2.93	2.01	14.81	17.55	0.00	12.42	
26	12.46	10.07	17.99	14.58	14.70	17.75	13.06	15.12	9.96	15.82	15.63	18.08	12.85	16.70	15.82	16.17	13.85	16.21	16.88	16.90	14.82	16.12	16.88	14.81	17.55	0.00	12.42	
27	1.17	6.10	7.05	3.53	3.19	6.68	2.19	3.90	4.10	4.80	4.53	4.98	2.16	6.35	4.43	4.79	2.93	4.83	5.69	5.91	3.84	4.96	5.48	3.60	6.48	12.42	0.00	
28	6.03	10.21	3.07	4.30	3.94	3.11	5.72	4.13	6.87	2.92	3.98	2.51	6.19	2.88	4.08	2.42	4.74	2.89	1.68	1.81	5.75	2.10	1.78	4.28	2.29	17.09	6.05	0.00

show greater differences.

The socio-economic distances on table 4.2 are from a minimum of 0.88 to 17.99, a range of 17.11. The cut-off point to differentiate between small and large values in this study, will be as follows: any distances over 5.00 (in approximation) will be classified as large values, and under 5.00 will be small values.

The analysis will commence with a look at the row or column 26 (Umtata). The Euclidean distances obtained here for all the districts were over 5.00 with about 96 per cent being over 10.00. This is a proof of an intolerable gap between Umtata and the rest of the country, in terms of development. There is even a remarkable gap between Umtata and Butterworth, the second major urban centre in the Transkei. The situation of column or row 2 (Butterworth) and the rest of the country, other than Umtata, is not anything better. Two more districts, Cala (3) and Engcobo (7) have been selected for purposes of comparison. There is a vast difference in development between Cala, on one hand, and Bizana, Engcobo, Glen Grey, Lusikisiki, Mt. Frere, Port St. John's, Centane and Umzimkulu. The remaining districts have similarities in terms of their levels of development with Cala. Engcobo ranks on the same pedestal of development with Bizana, Cofimvaba, Glen Grey, Idutywa, Lusikisiki, Tsolo, Umzimkulu, etc. There is a vast difference

between Engcobo and Elliotdale, Herschel, Maluti, etc. The average socio-economic distances between Cala, Elliotdale, Herschel, Libode, Maluti, Mqanduli, Nggeleni, Ngamakwe, Qumbu, Tsomo, Tabankulu and Willowvale is 2.97, which emphasizes their similarities in the level of development.

This distance magnitude is a useful index of the similarities and differences between the districts. The information derived from this analysis, therefore, supports the second hypothesis that the problem of regional inequalities exists in Transkei. On the basis of these similarities and differences, an attempt will be made to group the districts using the ordination technique.

4.6. GROUPING THE MAGISTERIAL DISTRICTS USING THE ORDINATION TECHNIQUE

In the previous discussion, the spatial articulation of the factors was examined separately. Another important picture which has to be printed is that of the positions of the 28 districts on all the three factors simultaneously. This will help to obtain clusters, which will serve as the framework for analyzing the broad inequalities in the level of development in Transkei. Such a composite map will achieve more parsimony and economy of description.

To begin this part of the analysis, the concept of the "linkage tree" will be examined. Figure 4.4 illustrates a "linkage tree" of the kind often used to demonstrate the formation of the groups (Abler, et al., 1977). Smith (1977) also used it in his analysis of inequalities of social well-being in USA. The "linkage tree is a step by step procedure for grouping the observation units. From the linkage tree (figure 4.4), the first two closest (i.e. the most similar) districts of Bizana and Umzimkulu are grouped, then Lusikisiki and Engcobo also group at another level, until all these districts form one group at a higher level. Next follows Cofimvaba, Mt. Ayliff, Tsolo, Flagstaff, Idutywa and Mt. Frere also grouping together. This procedure is terminated with the formation of five groups shown in figure 4.5, each of which occupies its own place in the three-dimensional regional development "space" represented by the graph, with relatively different levels of inequality in development. The attention is then turned to the concept of ordination plane (figure 4.5), where the members of each group are determined. It, however, becomes difficult when some points lie in positions adjacent to another group (Cline, 1949). To determine which group such a point falls, reference is made to the scores of the factors considered most important. The score of that point will indicate with which group it has a similarity. The step by step procedure can be followed by comparing these figures.

Plot of First Two Factor Scores

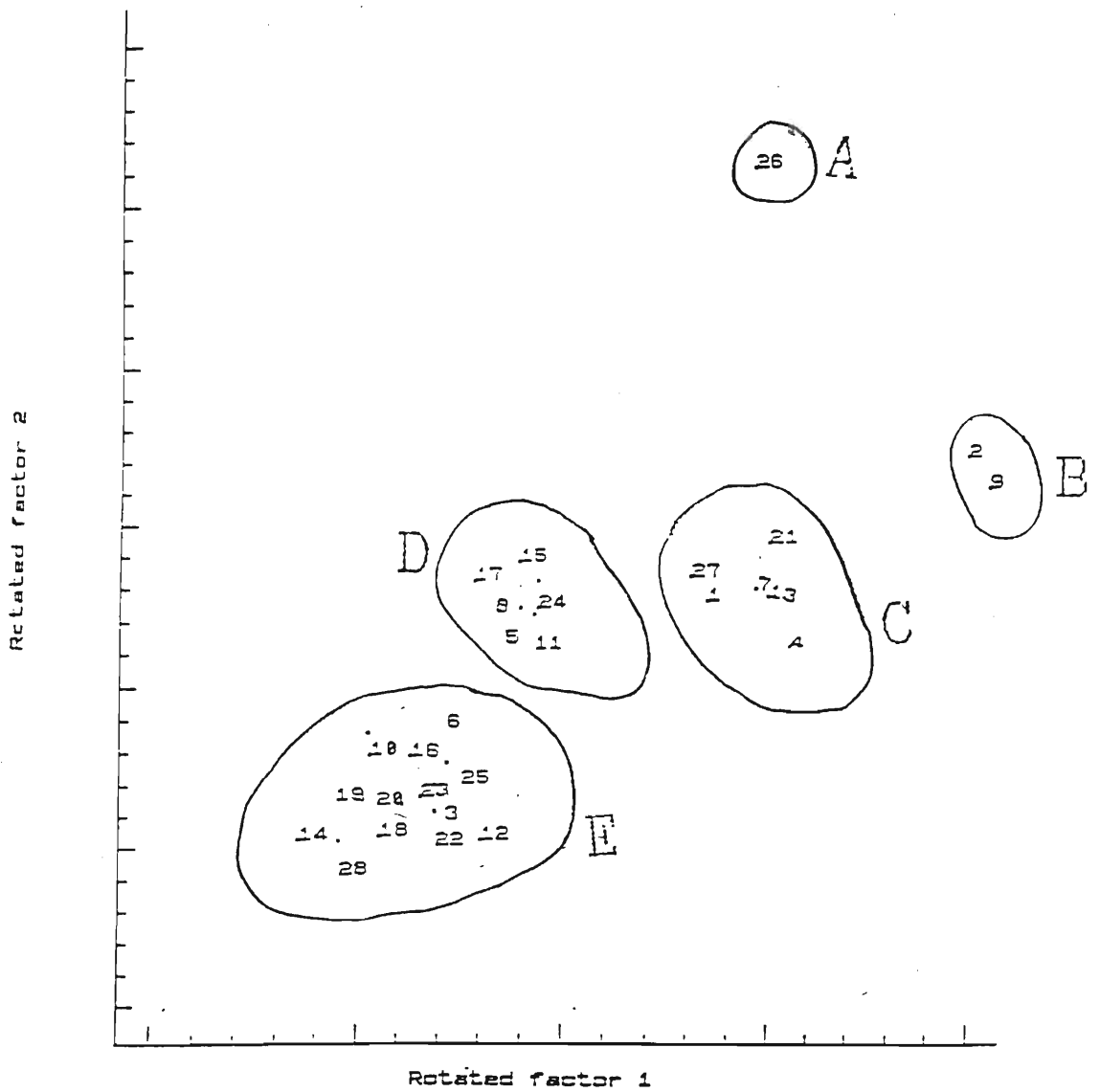


FIGURE 4.5: GROUPING OF DISTRICTS BASED ON SCORES ON THE TWO LEADING COMPONENTS OF INEQUALITIES IN DEVELOPMENT

Table 4.3 indicates the grouping of the districts. It is evident that there were a few districts with relatively very high levels of development. Group A consists of Umtata with an estimated total population (1991) of 248 725. Butterworth and Glen Grey form group B with an estimated total population (1991) of 299 653. The districts in the middle of the development continuum are found in groups C and D with 6 districts each and population estimates of 814 506 and 574 313 for C and D respectively. Group E, with 13 districts occupy the bottom of the development ladder, with an estimated total population of 1 379 537. This implies that in terms of percentages, Transkei is largely composed of approximately 42% of the total population in the least developed districts in group E, 41.5% for those in the middle and 16.5% for the highly developed districts. This is a further proof that majority of Transkeians live in the least developed districts, with little development potential for self-advancement. This further strengthens the potential dangers associated with the unequal accessibility of the population to the basic needs of the modern society.

4.7. EXPLANATIONS OF THE OBSERVED VARIATIONS IN DEVELOPMENT

A general review of the spatial patterns described above reveals that some districts featured prominently on all the

**TABLE 4.3: MEMBERSHIP OF DISTRICT GROUPS ARRIVED AT BY
MULTI-FACTOR CLASSIFICATION**

GROUPS	DISTRICTS	DEVELOPMENT CHARACTERISTICS
A	Umtata (26) (Population 1991) 248 725 (7.5%)	The administrative capital and seat of the government with relatively the highest level of development potential. It has the best of infrastructure, educational institutions and other social amenities. It is also linked to RSA by the N2 and R61, and the only "international" airport in Transkei is situated here.
B	Butterworth (2) Glen Grey (9) (Population 1991) 299 653 (9%)	These districts constitute the industrial hub of the country, sharing about 65 per cent of the country's industries between them. Infrastructure, educational institutions and social amenities are comparable to Umtata. They are both linked to RSA the N2 and R61 respectively, where port facilities and markets are located for the industrial products.
C	Bizana (1) Centane (4) Engcobo (7) Lusikisiki (13) Port St. John's (21) Umzimkulu (27) (Population 1991) 814 506 (24.5%)	These districts are holiday resorts basically, with the entertainment facilities like hotels, beaches and nature reserves, comparable to international standards in some cases. They have good infrastructure and some of the road network here are paved, enhancing accessibility to these resorts. Commercial activity is also prominent.
D	Cofimvaba (5) Flagstaff (8) Idutywa 11 Mt. Ayliff (15) Mt. Frere (17) Tsolo (24) (Population 1991) (P574 313 (17%))	Basically, these districts are commercial centres with not so good infrastructure and social amenities. Paved roads in most cases are limited to either the N2 or the R61

TABLE 4.3. CONT'D

GROUPS	DISTRICTS	DEVELOPMENT CHARACTERISTICS
E	Cala (3) Elliotdale (6) Herschel (10) Libode (12) Maluti (14) Mqanduli (18) Mt. Fletcher (16) Ngqeleni (19) Nqamakwe (20) Qumbu (22) Tabankulu (23) Tsomo (25) Willowvale (28) (Population 1991) 1 379 537 (42%)	<p>The least developed districts of Transkei are in this group. The infrastructure and the social amenities are very poor in some districts. Some districts rely on private individuals' generating plants for electricity. The main roads leading to some of the districts are gravelled and impassable certain times of the year. Most of them are high security risk areas, with high incidence of stock thefts and burglary. Inadequate educational facilities has contributed to overcrowding in schools and poor results.</p>

factors, others on two, some on one and the remaining ones not on any of them. Umtata and Glen Grey featured on all the factors, while Butterworth appeared on the agglomeration and industrialization factors. Engcobo, Centane, Lusikisiki, Bizana, Umzimkulu and Mt. Frere had positive scores on agglomeration and education factors, while Maluti and Herschel came strongly on education but feebly on industrialization factor. Cofimvaba, Cala, Tsomo, Idutywa, Elliotdale, Tsolo, Willowvale, Ngqeleni, Libode, Qumbu, Mt. Fletcher, Port St. John's Tabankulu, Mt. Ayliff and Flagstaff associated with only one factor. Mqanduli and Ngamakwe did not show at all on any of the three factors.

The dominance of group A and B on more than one factor underscores the extent to which development efforts in Transkei has been polarized. Group A's Umtata district is the administrative capital and the seat of the Transkei government. All decisions affecting the whole country emanate from Umtata. It is situated on the intersection of the N2 and R61 national roads from RSA. Umtata strongly dominated the agglomeration, industrialization and education factors because it has the best of infrastructure, health and other social amenities. The group B's districts of Butterworth and Glen Grey also featured on more than one factor and have the best of infrastructure, health and other social amenities. Consequently, a sizable number of major manufacturing industries are situated in the districts of these groups. This

trend of development has been due to institutional factors like the racial segregation and separate development policies of the Nationalist Party Government of 1948. This culminated in the homeland system where certain portions of South Africa were created as black reserves to serve the labour needs of the rest of the country. Blacks in these areas were then charged to administer their own affairs, without any expertise whatsoever. All development processes, therefore, were concentrated in the few metropolises of Transvaal, South Western Cape, Eastern Cape, Natal, etc., considered as white areas.

The concentration of economic development in Umtata, Butterworth and Glen Grey districts and the resultant socio-economic and political problems, called for the rationalization of the development process, by way of close cooperation between all the states concerned. This involved, inter alia, the elimination of duplicate structures, the harmonization of development policies and the mutual development and utilization of basic infrastructures. This in turn, require the formulation of development strategies for the different regions. Hence, the industrial decentralization policy of 1981 which fragmented South Africa and the homelands into nine development regions.

Transkei was broken into two industrial development regions, namely: Region D, incorporating the south of Transkei from

just beyond Umtata, Border, Ciskei and Eastern Cape; and Region E, incorporating north of Transkei into Natal. These were supposed to be points where alternative agglomeration advantages could be created to counterbalance the existing metropolises, to create employment opportunities in the regions concerned and, in the process, to achieve a better spatial balance in the development of South Africa. Umtata (group A), Butterworth and Ezibeleni (in the Glen Grey district) (group A) were, therefore, identified as the industrial development points in the Transkei, with the hope of transmitting some of their developmental impulses to the stagnating peripheral districts. Umtata, Butterworth and Ezibeleni were relatively more successful because of government support. Deliberate attention was made to support these areas, and the cumulative effect of this pattern of development, is the continuous mobility of labour and other resources to these few urban centres. This has accentuated disparities in the development between these urban and the rural centres of Transkei.

The advantages of these districts is further enhanced by the fact that they are all linked to some of the major communication arteries to South Africa. These important networks facilitate mobility of factors of production from the major industrial metropolises of the Republic of South Africa, to enhance Transkei's industrial development drive. Their proximity to East London and Port Elizabeth offers them the port facilities to handle industrial imports and exports and

overseas markets for the industrial products.

Furthermore, Transkei under the Matanzima regime, as noted earlier, exhibited some traces of discrimination in the overall development of the country. The groups A and B in the south, dominated by the Tembus, had priority in the distribution of development projects. Social amenities like urban electricity and water supplies, communication networks, health facilities, etc., were provided mainly in the south. The reason was that they were the home districts of important politicians and architects of independence, or that they were of strategic political importance to the local areas. For instance, of the four industrial points, the three located in the south were able to take off, with attractive incentive packages propping them, to encourage prospective entrepreneurs to these areas.

Some critics of the Matanzima regime question the wisdom behind Ezibeleni as an industrial growth point, when Queenstown is its "surrogate mother". The contention is that Lusikisiki should have been given the opportunity so as to stem the tide of outflow of labour from the Pondoland. This contention has been justified by the poor performance of Ezibeleni as an industrial centre. Industries located at Ezibeleni are being strangled by keen competition from industries located there and the Transkei Development

Corporation (TDC) has been suffering considerable financial and capital losses. Industries at Ezibeleni have been folding up at an alarming rate as a result of low turnovers and industrial agitations from industrial unions. TDC has had to secure good accommodation units for industrial personnel in Queenstown at exorbitant rates, because of inadequate security at Ezibeleni, and this has been an additional drain on its little revenue.

Group C, made up of Bizana, Centane, Engcobo, Lusikisiki, Port St. John's and Umzimkulu, are basically holiday resorts with beautiful entertainment facilities like hotels, beaches and nature reserves of appreciable standards. In this particular group, Lusikisiki-Mtonjeni was the fourth point that was selected for industrial development. But it failed to take off the ground as an industrial centre, because of poor infrastructure. Accessibility to this area was a very difficult task for factors of production to get to Lusikisiki. This situation was due to mere neglect on the part of previous governments because the Pondos were considered to have initially opposed the idea of independence, and so it was a way of making them 'suffer' for their lack of 'foresight'. Consequently, there was little to boost its industrial development potential because of the unattractiveness of the district to prospective industrialists.

The neglect of road network in Pondoland (where 4 out of the 6 districts in group C are located) since independence has seriously affected the entertainment industry until quite recently. The 'Wild Coast Sun' holiday resort in Bizana, a "gold mine" in Transkei's entertainment sector, has been injecting huge revenue into Transkei's economy. But then this resort is more accessible from the Natal south coast town of Port Edward than through Transkei itself. The same problem applies to Port St. John's, another important holiday resort and only 96 kms. from Umtata and most of the districts in group C. It was not until the coming into power of Miss Stella Sigcau (a Pondo) as head of government in 1987 that the paving of at least the important roads to these resorts was given some thought. Pondoland has recently been linked to the National Road 2 at Brooks Nek near Kokstad in the Natal south in 1989/90. At the time of the research, the road to the 'Wild Coast' through Transkei has been paved up to Bizana, with about 60 kms. to the resort yet to be attended to. Lusikisiki has also been linked to the N2 through Magusheni Junction to Brooks Nek, and construction was still in progress on the Umtata - Port St. John's access route. The road linking Centane from Butterworth is on record to have been tarred since 1986, but it is one of the worst east coast roads.

Engcobo and Umzimkulu are comparatively better in this group because they both situated on the R61 and the N2 respectively. This gives them access to the RSA. Three out of six, namely Engcobo, Port St. John's and Lusikisiki, in this group have recently in May 1992 been connected to automatic telephone

exchange.

The districts constituting group D, Cofimvaba, Flagstaff, Idutywa, Tsolo, Mt. Ayliff and Mt. Frere, are basically commercial centres. Their situation along the main arteries from RSA has been the driving force behind the commercial activities going on in these districts. They offer some economic activities to travellers on these routes. Districts like Cofimvaba, Idutywa and Tsolo, located in the south are better off in terms of provision of infrastructure because of their proximity to the more developed districts of groups A and B. Most workers in Umtata, Butterworth and Ezibeleni prefer to stay in Tsolo, Idutywa and Cofimvaba for economic reasons, and commute everyday. This has led to increase in demand for accommodation units, utilities, etc. to cope with the excess demand in these relatively quiet places. Districts in this group have no automatic telephone exchange until May 1992 that Idutywa was connected. It is the only district right now with this facility in this group.

Group E is made up of districts which had negative scores on factors one and two, and present a different spatial dimension to the analysis. These districts include Maluti, Willowvale, Ngqeleni, Cala, Herschel, Nqamakwe, Tsomo, Elliotdale, Qumbu, Tabankulu, Libode, Mqanduli and Mt. Fletcher. They have very little development potential in relation to the variables

contained in these factors. The available social amenities in these districts, for example, hospitals, infrastructure, etc., are not capable of withstanding the pressure from the teeming population they are made to serve. For instance, most of these areas have either a small or no hospital, with an average bed of about 100, and/or a small number of clinics manned by a few nurses serving an average population of about 100 000. The districts with hospitals, have an average of three medical doctors per hospital, a ratio of one doctor to over 40 000 people. These same medical doctors are sent on rotational basis to visit the clinics of those districts without hospitals. They are made to work under extremely difficult conditions in ill-equipped hospitals typical of third world countries. Most of the time they are compelled by logistical problems to refer simple cases they are capable of handling, to either Umtata or Butterworth, the two major hospitals in the country. The high doctor-patient ratio is also due to the unattractive conditions of service and long working hours, which have actually driven away the Transkei-born medical doctors into the exclusively more lucrative private practice. As a result, Transkei has been forced to depend heavily on expatriate doctors.

Communication links with the other districts that do provide relatively better services are either non-existent or poor. Some districts like Willowvale, Maluti, Cala, Ngqeleni, etc., have no or on the average, two kilometres of tarred road, and

that is restricted only to the main street in the district centres. Over 90 per cent of the road network is gravelled and impassable most times of the year. Potholes are common sights on these roads, thus, discouraging any attempts to reach these areas, no matter the motivation. Tele-communication links with these districts and the rest of Transkei and the outside world are so remote that it is far much easier to connect to New York or Sydney from Umtata than Umtata to Elliotdale, a distance of 61 kms. It is even unthinkable to try districts like Maluti (259 kms.), Herschel (315kms.), etc. because they have no automatic telephone exchange facilities. This poor communication system has seriously jeopardized commercial and industrial activities and other services like banking and entertainment. Willowvale, Elliotdale, Mqanduli and Ngqeleni all have beautiful holiday resorts, but the roads leave much to be desired and the beautiful beaches remain unexplored.

These districts in group E had negative scores on the first two factors but incidentally obtained high positive scores on the third factor (education factor). These districts have large population and enormous size of land, and the only visible sign of development is the educational institutions to prepare the population for the labour market. But here also, the educational facilities like classrooms, books, furniture, equipment, quality of teachers, etc., are below standards. The teacher - student ratio is about 1:59, compared to that of the white schools under the Cape Education Department, which is

1:22 (Daily Dispatch of May 28, 1992, p.4).

From the above discussions, it is clear that there are variations in regional development, from highly developed through a continuum to regions of abject poverty and squalor. These findings add further weight to the second hypothesis that the problem of regional inequalities exists in Transkei. Moreover, the concentration of foreign investments, infrastructure, transport innovations, resource availability, proximity to major markets and power sources have helped to reinforce industrial and other commercial activities in these few centres with initial multiplier effect. As a result, the focal point of Transkei's development has just been in a few centres - Umtata and Butterworth - in anticipation that they will transmit some development impulses to the economically depressed periphery. But the backwash effects from this sort of process have been so strong that the peripheral regions have been left worse off than it had been anticipated. The consequences of these institutional factors have been an increasing divergence in the economic development of the spatial units of Transkei. From the above considerations, the third hypothesis that 'cumulative causation' mechanism is the underlying force of the problem inequalities that exists in Transkei, would, therefore, be observed to be valid.

This chapter has so far reviewed the problem of inequalities

in the development of Transkei, by identifying the spatial patterns associated with the factors generating the differences in the development processes of the districts. The particular spatial patterns each of the three factors generated, have created a situation which can, however, be manipulated to uplift the development levels of the already depressed regions.

4.8. SPATIAL DISTRIBUTION OF THE GROUPS

This chapter will be concluded by looking at the membership of the five groups and their spatial arrangements as mapped in figure 4.6. These groups are as follows:

1. the "Administrative factor" which stood out as a distinct factor, was associated with the Umtata region (26), by virtue of its position as the country's capital, from where all decisions affecting the country emanate (figure 4.6).
2. the "Border Industries factor" reflecting institutional policies as already observed. The districts associated with this dimension are Butterworth (2) and Glen Grey (9) as could be seen on figure 4.6.
3. the "Tourism factor" forms a continuous belt from north eastern border with Natal to the eastern coast, with

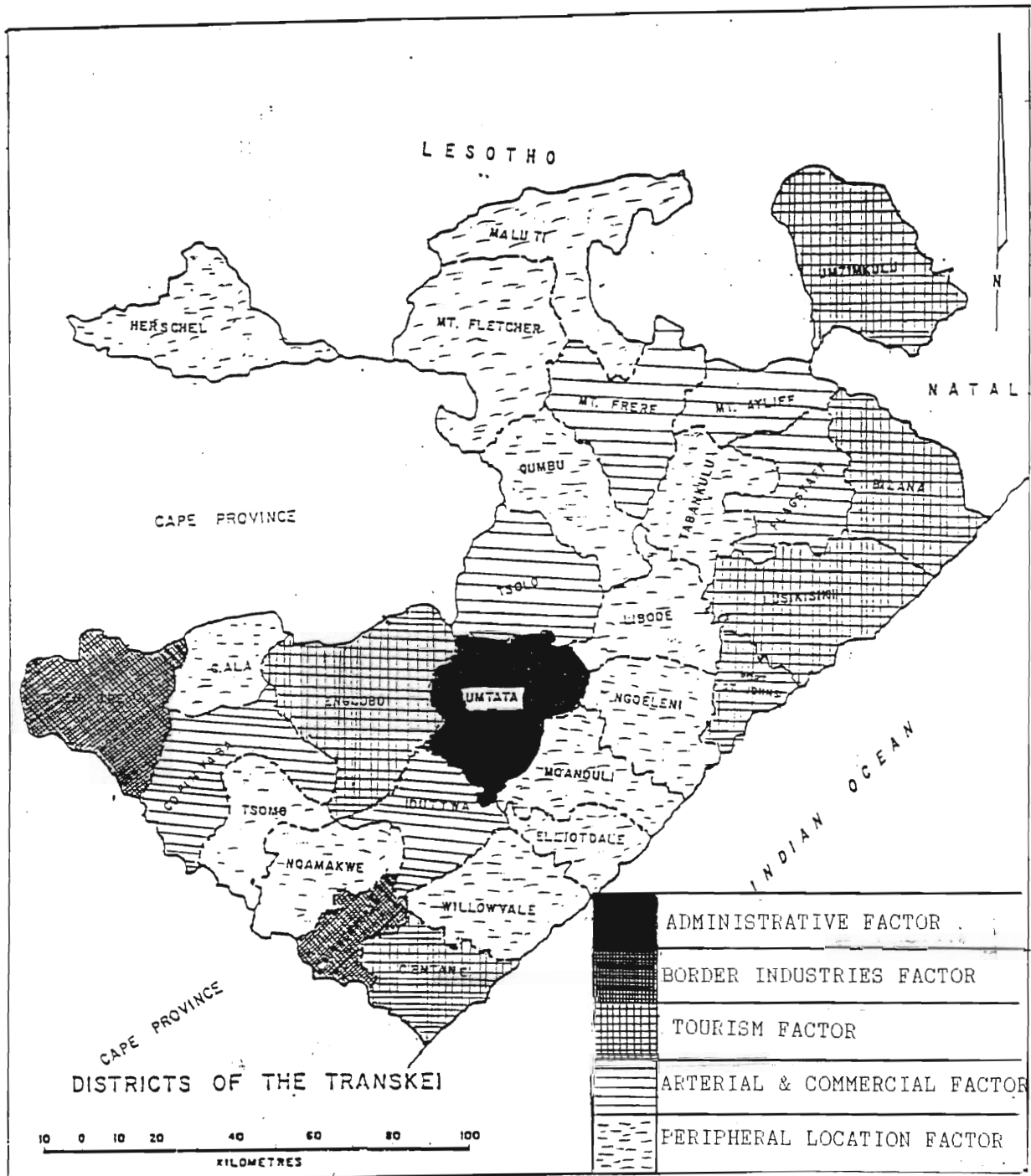


FIGURE 4.6: THE POLITICAL ECONOMY OF PERIPHERAL DEVELOPMENT

outliers of Centane (4) in the southern coast bordering the Cape Province and Engcobo (7) to the western borders. The districts associated with this factor are Umzimkulu (27), Bizana (1), Lusikisiki (13), Port St. John's (21), Centane (4) and Engcobo (7).

4. the "Arterial and Commercial Location factor" comprises 3 contiguous arc-like districts with outlying members of Tsolo (24), Idutywa (11) and Cofimvaba (5) to the south and Mt. Frere (17), Mt. Ayliff (15) and Flagstaff (8). All these districts are situated along the N2 and R61 roads to RSA.
5. the "Peripheral Location factor", the least developed districts, is made up of Cala (3), Tsomo (25), Ngamakwe (20), Willowvale (28), Elliotdale (6), Mqanduli (18), Ngqeleni (19), Libode (12), Tabankulu (23), Qumbu (22), Mt. Fletcher (16), Maluti (14) and Herschel (10), form a continuous belt from the Lesotho border in the north west, through north, central to the eastern coast. The districts of Ngamakwe and Tsomo, form a compact block and are sandwiched in the southern borders of Transkei.

These spatial patterns summarize what had earlier been observed in the previous chapter, when the three factors were analyzed separately. The information presented in figure 4.6, however, summarizes the groupings, with reference to all the

three factors taken together. Figure 4.6, thus indicates the overall levels of inequality in the development of Transkei. By identifying the five groups, each of which presents its particular development characteristics, the development geography of Transkei has, thus, been presented in a simple form to satisfy the basic objective of the regionalization procedure. All the figures and tables used here have, therefore, summarized the levels of variations of development in Transkei, with reference to five major groupings, which can now be taken to represent the contemporary basic framework in the spatial variations in level of development of Transkei. All the information obtained on the variations in the level of development and the various techniques of analyses at different sections of this study, can, therefore, be broadly discussed and analyzed in terms of the five distinct groupings that have emerged.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1. INTRODUCTION

This study has devoted considerable attention to investigate the spatial variations in level of development in Transkei. The spatial analysis was accomplished through a simultaneous consideration of the processes influencing the variations in level of development, the spatial patterns associated with the processes, as well as grouping of the magisterial districts by a consideration of all the three factors that were identified.

This research was based on the consideration that previous researches on the development of Transkei, as a third world country, have not been geared towards a multivariate analysis of the spatial variations as related specifically to levels of development. It was also based on the fact that researchers in Transkei have not adequately identified the particular spatial patterns generated by the particular development processes. This research was thus carried out with the above considerations and the following findings were made.

5.2. SUMMARY OF FINDINGS

5.2.1. Multivariate Analysis of Regional Development

The overall aim of the multivariate approach has been to provide a description of the relationships of a number of representative variables, using the technique of factor analysis. A multivariate analysis of development attributes has facilitated the understanding and identification of patterns of diversity, similarity and regional variations of development processes in Transkei. It has enabled us to obtain a simpler picture of spatial variations of development in Transkei. Some of the most salient underlying dimensions of the interrelationships among a wide range of socio-cultural and demographic data of Transkei have been uncovered through this approach. The technique was able to explore the regional patterns of development in Transkei and to investigate the extent to which the analysis of well-being opened new perspectives on the nature of regional inequalities in developing countries.

5.2.2. Relationships Between the 19 Variables

It was observed that on the basis of the relationships between the variables, they could broadly be grouped into three. In order of importance, the 'agglomeration factor', 'industrialization factor' and the 'educational factor' contributed 72.36%, 8.24% and 6.47% respectively, to the total variance. The identification of the second and the third factors revealed the operation of two distinct processes which were not initially suspected to be operating in Transkei.

5.2.3. Relationships Between the Factors and the Spatial Patterns

The research revealed that the factors owe their existence to various processes that have generated some particular spatial patterns in the space economy of Transkei. Institutional processes have favoured some relatively well-developed southern districts and a few northern districts, while traditional factors revealed a continuous belt of less-developed districts running centrally through the country. This trend emerged during the period of colonial occupation and was reinforced by the Transkei government after

independence. It is very clear that spatial inequalities of development in Transkei is now very evident especially between urban and the peripheral regions. The impact of these inequalities in the level of living on the various surfaces of development identified in Transkei offers an opportunity for future research.

5.2.4. Causal Links Between the Processes and the Spatial Patterns

It was observed that the links between the processes discussed in this study so far and their associated spatial features were causal in nature. There is mutual relationship between spatial patterns that have been created on Transkei's space economy and their underlying causes or processes responsible for these patterns. Where such causal links are allowed to operate, they tend to perpetuate the existing trends. It can, therefore, be deduced from this that the existing processes could not be relied upon to achieve the rapid attainment of equal accessibility of the population to the basic needs of modern life. Only sustained investments in basic services and amenities over several decades and certain structural adjustments can significantly counter the economic trend toward regional inequality. The transfer of resources constitutes an important mechanism to achieve a balanced regional structure.

5.2.5. The Five Broad Groups of Magisterial Districts of Transkei

Through the application of the ordination technique, five groups of the 28 magisterial districts of Transkei emerged, showing different levels of development. Principally, there were two dimensions of inequality, producing wide spatial variations in levels of development. At one extreme, the principal urban centres of the country register high scores of development factors, while at the other end, the most densely populated peripheral districts have a very low level of development. Between the two extremes are regions of intermediate levels of development. This is an indication of the extent to which institutional and cultural factors have polarized development in Transkei to the disadvantage of the majority population in the peripheral regions. Behind the simple core-periphery dichotomy lies an intricate pattern of spatial inequalities in development with important implications for planning.

5.3. PROBLEMS RESULTING FROM EXISTING REGIONAL INEQUALITIES

5.3.1. The Impacts of Apartheid

A review of Transkei's inequality problem cannot be made in isolation without considering the general trend in South Africa. This is because Transkei, which is a creation of apartheid, was part of the greater South Africa until October 26, 1976. The role of apartheid in institutionalizing and mismanaging resources, by forcing people to live on land which could not sustain them cannot be overlooked. Ramphele (1992) blames the Nationalist Party government for creating apartheid - a system which has been influencing development in various ways. She cited the overcrowded homelands where 80 per cent of the people were forced to live on less than 13 per cent of the land. As a result people have been forced to go on using the environment in an unsustainable way, while white farmers are heavily subsidized to keep non-arable land alive, because it was "politically convenient". Apart from the destruction of the environment, infrastructure in black areas including the homelands are neglected, with problems like lack of rubbish tips, sewerage overflows, traffic jams, etc.

This has been the case of Transkei, an independent country not recognized by any country in the world except its creator

South Africa. Because of this Transkei has had to rely on South Africa for her budget which, in some instances, is insufficient for the proposed expenditure. As result, the Transkei government is unable to provide projects for the benefit of the whole country.

5.3.2. The Role of Social and Local Factors in the Development Process of Transkei

The regional inequalities of development and the associated spatial patterns of Transkei have also been the creation of the Transkei government. The various Transkei governments have followed certain policies that have favoured the few core districts to the detriment of the periphery, thus, polarizing the development process. Instead of formulating policies and programmes that will help to promote the general well-being of all the people, such programmes and policies have rather benefited the few urban population. The urban centres have been the focal points for the concentration of development and economic activities, with limited linkages with the space economy. Industrial development has taken precedence over agricultural development. Agriculture in Transkei is largely a peripheral activity operating at subsistence level and constrained by basically physical, economic and social factors. Because of the little development potential in the peripheral districts, the income of the rural population is so

low. Thus, there is shortage of capital, agricultural implement, trained or skilled labour and training facilities, causing agricultural production to be below expectation. Unless incomes can be raised, expansion to agricultural production will be difficult (Nkuhlu, 1987). For these reasons, industries are forced to look elsewhere for some of their inputs.

The non-availability of land for both agriculture and industrial pursuits, due to some cultural values, make it impossible for traditional authorities to provide land for people other than those from their area. This social factor has been militating against Transkei's development. Land tenure in Transkei is in the form of traditional quit-rent, freehold, government land, municipal land and other institutional land. Almost all land in Transkei is in the hands of traditional authorities. Land tenure system and its administration, where there is no formal right of land occupation, is critical to development. Many traditional authorities believe that there is no substitute for land and, therefore, cannot be offered for sale. Hagerstrand (1967) believes that this problem has been a major factor in the underdevelopment of several regions.

5.3.3. Physical Factors Hindering Economic Activities

Certain physical factors like climate and relief have been very critical in economic development of Transkei. Fluctuations of rainfall and persistent drought in some western parts of the country have been seriously affecting agricultural production. Also about 75 per cent of the country is mountainous and heavily incised and cannot be developed for purposes of crop farming. Only 11 per cent of the country is either flat or gently undulating. In addition to this, is the danger soil erosion poses to these hilly regions. Injudicious cultivation, especially in those areas that are steep and receive high rainfall, has resulted in serious soil erosion. Another problem is the low phosphate and calcium content of the soil and some soils even contain poisonous aluminium (Swanevelder, et al., 1989), in districts like Qumbu, Libode, Ngqeleni, Tabankulu, Mt. Fletcher, etc.

5.3.4. Lack of Statistical Base

Another area of concern in Transkei's development process is the weak statistical base on several socio-economic variables. The lack of comprehensive data on all aspects of the socio-economic conditions of the population is a major handicap in the drawing up of appropriate plans (Abumere,

1970). This handicap seriously inhibits the co-ordination of programmes that development planners and researchers in the country can come out with. It is also a serious setback in a free market system like that of Transkei, because market forces operate within a sphere of ignorance consequent to incomplete or lack of information.

5.3.5. Corruption

Corruption is another social cancer slowly but seriously destroying Transkei and it is rife in high government circles. It came to light during data collection for this research that certain roads, like the one linking Butterworth to the coastal resort of Centane, is officially known to have been tarred as far back as 1986. But as a matter of fact that road is one of the worst roads linking Transkei's beautiful east coast. It is also on records that the Department of Agriculture in the country ordered and paid for a number of tractors in excess of R 11 million from Austria, to boost agricultural production. But these tractors were either never delivered or got 'lost' in transit. No one could account for where both the money and the tractors went. The tourist sector has also not been left off corruption. High government officials, including a former prime minister and some ministers have been convicted for swindling the country of millions of rands in granting gambling rights to some entertainment magnates. This case

brought tension in the relationship between Transkei and South African governments because the latter refused to repatriate the culprit to answer charges. All these factors ultimately affect the spatial development of Transkei.

5.3.6. The Political Economy of Spatial Development

A spatial system is created where the core dominates almost all the vital decisions of the population in other areas. The peripheral regions have become dependent on the core by virtue of politics and economic principles on supply and market relations. As a result, all the potential resources available in the periphery that could be used for its transformation, are gradually being siphoned to the core regions. All able-bodied people who could remain and undertake development projects that could help their rural home districts, are drifting to the core for jobs and self-advancement, leaving the old and young, who can offer a little towards development.

From the above problems discussed, it is evident that the politics of development of the Nationalist Party and the Transkei governments are now having spatial impacts. This is seen in the light of the numerous political agitations and the

related violence sweeping through RSA in general and the Transkei in particular. There have been agitations from the various districts, especially in those districts with very little development potential, calling on the Transkei government to come out with structural adjustment programmes that could redress the inequality problem, to enable them also enjoy part of the national cake. Some districts like Herschel, Cala, Ngqeleni, Libode, Qumbu, Maluti, etc., have been calling strongly for Transkei to be re-incorporated into greater South Africa. This is the only hope which they feel is left for them if they were to get out of their present predicament of poverty, degradation, squalor and disease. Numerous community organizations, farmers' unions, etc., have been sending numerous petitions to the government. Occasionally they occupy municipality and government premises to highlight their problems and threats and civil disobedience.

These volatile situations validate the fourth hypothesis of this research that the inequalities phenomenon constitutes a potential problem for Transkei's development. The earlier the Transkei government got back to the drawing table to produce meaningful plans that could redress the regional inequalities, the better. This will defuse any potential political upheavals, whose explosion could be suicidal to South Africa in general and Transkei in particular.

5.4. RECOMMENDATION

5.4.1. INTRODUCTION

Institutional factor has been identified as being of key importance in influencing the existing spatial pattern of development. The institutions are largely involved in devising various planning and other policies which have, however, tended to favour the few core regions of Transkei. There has been an over-emphasis on industrial development without equal emphasis on other components associated with industrial development. The ideal function of any institution involved in influencing the living conditions of a given population, however, is to formulate planning programmes which will promote the overall welfare of all sections of the population; reduce existing imbalances in the social and spatial structures; mobilize all sections of the population for voluntary and other meaningful development projects and resolve all possible social conflicts in the communities (Hardiman and Midgley, 1981). Planning programmes should, therefore, "be better conceived and implemented as a process of human thought and action which should be designed to improve the living conditions of a given population" (Ayeni, 1979, p.357). A situation where the "planning mechanism increases and maintains existing inequalities in level of living cannot, therefore, be satisfactory" (Mehmet, 1978,

pp.29-30).

From the analysis of the processes of influencing variations in level of development in Transkei, and in particular the roles of the institutions concerned with addressing the imbalances in development, the following factors would have to be taken into consideration and the necessary changes made, if a considerable improvement in the living conditions of the population is to be attained.

5.4.2. REGIONAL DEVELOPMENT STRATEGIES APPROPRIATE FOR TRANSKEI

From the considerations above, there is the need to develop an appropriate development strategies that will be capable of reversing the developmental processes that have created the existing regional disparities. Such strategies should aim at reducing these disparities so that positive impacts of public expenditure programmes accrue to all groups in the territorially defined target population, for the benefit of all groups within the country. This then calls for a review of the existing development from above to one of development from below (grassroots level) planning strategies.

5.4.2.1. "Development from Above" Strategy

The development from above model has been adopted in Transkei since independence. Development in this country has been seen to originate in a relatively small number of 'centres of change' located at points of highest potential interaction within the communication field. With the clustering of investments around these initial centres, it is believed that favourable effects from the progress of the growth points, will trickle down to the peripheral regions. But contrary to this belief, the backwash effects, in terms of the workings of selective population migration (where the young are the most prone to move), trade and capital investments, have been weakening the periphery, leading to polarized development. The cumulative expansion of internal and external economies have fortified the growth of the few core centres in Transkei at the expense of the larger periphery. The peripheral districts have thus been raped of their potential resources that could be utilized to transform their economies for the benefit of their population, the ultimate reference points. This is the main reason for the instability, militant agitations and other immoral practices in the country.

From the foregoing, it can be confidently said that 'development from above' is not the appropriate strategy for the economic development of Transkei, because it tends to

aggravate the existing conditions.

5.4.2.2. "Development from Below" Strategy

This strategy calls for the creation of dynamic development impulses within the less-developed areas, to reduce the backwash effects of development from the urban centres of Transkei. The 'development from below' model is a self-reliance development policy where the local communities get involved in the development process of their own area, using local resources. Experience shows that the communities' involvement in such projects brings a sense of pride, ownership and responsibility to development projects. This strategy ensures that the local centres generate activities for their immediate periphery rather than for an external and foreign system. In this way, "the hierarchical urban-industrial system, would essentially be sustained from 'below', by the relatively stable human, social, political and environmental needs, rather than by the fortuitous and uncontrollable trickling down of impulses from above" (Stohr, 1981, p.45). Under a development from below model, the local centres would develop primarily as a supportive component of their respective hinterlands, rather than the hinterland developing as a function of the selective requirements of the urban system.

In view of the magnitude of inequalities in Transkei's development which has been consequent on the concentration of development efforts in a few urban centres, 'development from the grassroots level' seems to be the only way out of a potential revolution from the people. This contention, therefore, validates the final hypothesis that the problems of regional development in Transkei region can be solved through integrated regional development approach based on the grassroots model.

This strategy could further be implemented by establishing welfare extension units in each district to interact with the population. These institutions should be charged with the responsibility of encouraging the people through periodic extension education, such as exposure to experiences elsewhere and other educational techniques, to contribute positively to the attainment of higher level of living. Such educational programmes could include lectures on waste disposal, environmental health, methods of increasing labour productivity and moral education which Transkei needs seriously. The institutions could ensure that the local population becomes more responsive to local needs. The institutions proposed could influence the population in each district to "operate, manage and maintain facilities like public toilets, waste disposal units and public standpipes for their mutual benefit" (Roberts, 1974, p.27). These elements

are important aspects of the grassroots approach to development (Esman, 1978; Filani, 1980; Gana, 1982).

The population of each district could also be, as a matter of necessity, mobilized for purposes of undertaking voluntary self-help projects and helping to implement various local programmes that would raise their level of living. This would involve regular meetings of local communities to monitor and evaluate projects and plans. The existing districts of Transkei could also be used as planning units for the proposed grassroots approach to development. Since a region is a unit in which internal bonds are at maximum, the 28 magisterial districts of Transkei could constitute ideal homogeneous region, where information could be collected and kept on such regional units for planning. This then calls for immediate upgrading and strengthening of the statistical base in the various departments of Transkei to provide a meaningful data base within which development plans can be formulated and executed. Periodic surveys on all aspects of the socio-economic structure of the economy should be conducted. This will ensure that information on past and present trends will always be available to the regional economic planners. Research and proper analysis will provide better information on relevant matters for the authorities, so that action could be taken to make market forces more efficient and its propulsive power better utilized.

5.5. FUTURE RESEARCH AREAS

Development, as was noted in chapter two, is a multivariate concept. Some indicators of development were examined in this study and the inequalities of development in Transkei were measured by considering 19 variables related largely to the basic needs of the population. But there are other indicators which could not be examined due to time, financial and other logistical constraints. For future research prospects, spatial variations in Transkei can be examined in terms of the following specific areas.

It was proved that the inequalities of development in Transkei has led to the workings of selective population migration involving the young. This situation is weakening the peripheral home districts in any development processes. To correct this anomaly, some modalities which could help to stem this outflow of potential labour from the periphery need be considered seriously. A detailed migration studies of each of the 28 districts need to be conducted.

About 75 per cent of the land in Transkei is mountainous and heavily incised. Only 11 per cent of the land is flat or gently undulating and can be economically viable for any

meaningful production by the population. This has been having serious impacts on the environment, creating ecological problems like soil erosion, environmental despoliation, pollution and over-utilization of the limited resources. In view of the ecological disaster staring the face of humanity, a thorough investigations into ecological problems need to be undertaken at district levels for a possible line of action to arrest the situation.

To embark on a major economic growth on the sectors of Transkei's economy, researches need to be conducted on the growth rates in the number of schools and pass rates per district. This will help to establish if the Transkei government is making a headway in the drive to broaden the education and training facilities. It is a way of developing the infrastructural base and to help fight illiteracy and equip the people with skills for future economic development. The growth and success rates of industries in Transkei can help in also assessing the industrial promotion policy of the government. Such a study will help to make Transkei more attractive to investors and can promote economic growth, employment and better standards of living for the people.

The population dynamics of Transkei, (the characteristics - sex, age structure, fertility, ethnic composition, etc), is also another area that will be worth investigating. This study

will provide future projections for regional planners to provide workable plans that will help the government to cater for the needed development objectives for the benefit of the people. The question of quality of life and the socio-economic factors responsible for the emergence of slums in most of the urban centres can also be considered. Solutions could then be offered to contain the potential socio-economic problems these slums present to the entire society.

In this study, it was established that there is a high incidence of crime in Transkei, especially along the border districts, with regular cross-border incursions by criminals, stock thieves and anti-government operatives. A detailed study of the geography of crime in Transkei can present some recommendations that will help the law enforcement agencies in combating crime in Transkei.

The moral decadence that has permeated all spheres of life in Transkei is another area of concern because of its debilitating effects on the economic development of the Transkei. There needs to be moral education for Transkeians, because no matter how effective development efforts are, if the morals of the people leave much to be desired, there will be no progress. The role of the churches as vanguards of morality, can be a future study area.

The other area associated with the inequalities of development in Transkei that also needs to be studied in future is the impacts of these regional inequalities in the level of living in the various surfaces of economic activity identified in Transkei. All these studies will provide the Transkei government with the necessary recommendations that will help to achieve higher economic growth and better standards of living for Transkeians.

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APPENDIX 1

SOURCES OF DATA FOR THE SELECTED VARIABLES

Sources of data and information used in this research were obtained from the questionnaire (see Appendix 2), publications from relevant Government Departments and institutions like DBSA and IMDS. In most cases the author had access to official records both published and unpublished records. Personal observations on the part of the author were also useful.

1. Population Estimates for 1991 were obtained from the Statistics Section of the Department of Commerce, Industry and Tourism. The Estimates were based on 1985 Population figures, as a prelude to the 1991 Population Census. This Department also provided statistical data on commercial outlets, financial institutions and entertainment outlets. However, information on entertainment outlets like nature and reserves, camping sites, hiking trails, etc., were obtained from the Conservation Section of the Department of Agriculture and Forestry.
2. The Head Office of the Department of Health provided all the information related to Health, which was used in this study, on district basis. For reliability purposes, the author sampled three districts, that is 10 per cent of the 28 districts, to ascertain if the data obtained from there agreed with the data obtained from the Head Office.
3. Information on education was obtained from the Department of Education Head Office in Umtata, and was related to the same information from three Circuit Offices in three districts. The University of Transkei's Public Relations Office and the Department of Collegiate Education of the Faculty of Education also provided information on tertiary education in the Transkei.
4. The Departments of Justice and Prisons, Police, the Supreme Court and the Office of the Military Council provided statistical data on social pathology. However, some information was considered to be too sensitive.
5. Information on Transport was obtained from the Transport Section of the Department of Works and Energy and publications from DBSA and IMDS. The Office of the Postmaster General also provided information on post and telecommunication.
6. The Transkei Electricity Supply Corporation provided all relevant information on power source, districts with and without power, and the consumption pattern of electricity in Transkei.

7. The number of manufacturing industries, where they are located were obtained from Transkei Development Corporation. The information on the number of development projects and where located, was obtained from Transkei Development Corporation, Transkei Appropriate Technology Unit and Transkei Agricultural Corporation, the three main institutions responsible for development projects in the country.

APPENDIX 2

QUESTIONNAIRE USED TO COLLECT DATA ON VARIABLES FROM THE GOVERNMENT DEPARTMENTS IN BOTH THE HEAD QUARTERS AND DISTRICT OFFICES.

A. HEALTH

1. The number of health institutions, their location and number of beds in this district.

Health Institutions	No. in the District	Location Urban / Rural	No. of Beds
---------------------	---------------------	------------------------	-------------

i. Hospitals

ii. Health Centres (Clinics)

iii. Nurses' College

iv. Others (specify)
-Gen. Pract.

-Dentists

-Opticians

2. Statistical data for Medical personnel and where stationed.

Medical Personnel	No. in the District	Station Urban / Rural
-------------------	---------------------	-----------------------

i. Physicians

ii. Surgeons

iii. Dentists

iv. Opticians

v. Pharmacists

vi. Radiographers

vii. Physiotherapists

v. Nurses

vi. Student Nurses

3a. Are there any major problems facing Health in this District?

Yes [] No []

3b. If Yes, briefly state what these problems are.

.....

4. How are these problems being solved, if yes?

.....

B. EDUCATION

1. List the number of educational institutions in the district

-----	-----	-----	-----
Educational Institutions	No. in Urban	No. in Rural	Total
-----	-----	-----	-----

i. Primary

ii. Secondary

iii. Technical/
Vocational

iv. Agric. Coll.

v. Training/
Coll. of Educ.

vi. Technikon

vii. University

viii. Others eg.
Specialised
Inst. for
Blind, Deaf
Cripple

2.	Educational Institutions	Enrolment		No. Teachers	
		Urban	Rural	Urban	Rural
i.	Primary				
ii.	Secondary				
iii.	Technical/ Vocational				
iv.	Agric. Coll.				
v.	Training/Coll. of Education				
vi.	Technikon				
vii.	University				
viii.	Others eg. Specialised Inst. for Blind, Deaf, Cripple, etc.				

3. The average percentage pass rates for the past five years at the Primary and Secondary levels.

i. Primary Level

Year	Urban pass rate	Rural pass rate	Total
1986			
1987			
1988			
1989			
1990			

ii. Secondary Level

Year	Urban pass	Rural pass	Total
------	------------	------------	-------

	rate	rate
1986		
1987		
1988		
1989		
1990		

4. Do you think there are any problems in education in your district?

Yes [] No []

If yes, what are these problems?

.....
.....

5. What further measures are being adopted to ensure improvement in education in the district?

.....
.....

C. SOCIAL PATHOLOGY (LAW AND ORDER)

1. The total number of courts and the grades in this district and where located.

No. of Courts	Grade	Where located	
		Urban	Rural

2. The total number of Police Stations and where located in the district.

No. in Urban	No. in Rural	Total no. of Police Stations

3. What was the total government expenditure on public order and safety per 1000 of population per annum over the past 5 years (1986-1990)?

Government Expenditure	
1986	
1987	
1988	
1989	
1990	

4. The number of inmates of welfare institutions.

Male- adults	Female- adults	Male- juveniles	Females- juveniles	Total

5. Do you consider crime rate in your district to be too high?

Yes [] No []

If yes, what in your opinion is this mainly due to?

.....

6. What in your opinion are the major problems facing the police in maintaining law and order?

.....

7. How are these problems being solved?

.....

D. TRANSPORT AND COMMUNICATIONS

1. Specify in kilometres the transportation network in this district and the linkages.

Nature of surface	From	To	Total Distance in kilometres
i. Tarred roads			

ii. Gravel roads

iii. Rail tracks

2. What in your opinion are the major problems facing transportation system in the district?
.....
.....

3. How are these problems being solved?
.....
.....

4. The number of post offices and postal agencies and where located.

Institution	No. in Urban	No. in Rural	Total
-------------	--------------	--------------	-------

i. Post Office

ii. Postal Agencies

5. The type of telephone exchange and the total number of telephones available.

Type of telephone Exchange	Publicly-owned	Privately-owned	Total no. of Phones
----------------------------	----------------	-----------------	---------------------

i. Automatic Exchange

ii. Manual Exchange

6. Any communication problems in this district?
Yes [] No []
If yes, briefly describe these problems.
.....
.....

7. Is there anything being done to improve this communication system?
.....
.....

E. POWER (ENERGY) RESOURCES

1. The number of power stations, where located and the power source in the district.

Sources of Power	No. in Urban	No. in Rural	Total no. of Power Stations
------------------	--------------	--------------	-----------------------------

i. Hydro

ii. Coal

iii. Oil

iv. Nuclear

v. Others
(specify)

2. Is the whole district served by electricity?

Yes [] No []

If No, give the reasons.

.....
.....

F. WATER RESOURCES

1. Indicate the main sources of drinking water in the district e.g. pipe-borne water, wells, springs, rivers, etc. and where located.

Sources of Drinking Water	No. of Household Users in Urban	No. of Household Users in Rural
---------------------------	---------------------------------	---------------------------------

i. Pipe-borne Water

ii. Natural Source
(rivers, etc)

2. Do these sources ever dry up within a year?

Yes [] No []

If Yes, for how many months?

.....
.....

3. What is done to alleviate the water shortage problems during the lean period?

4. What efforts are being made to improve upon the water supply system?

G. MANUFACTURING INDUSTRIES AND THEIR EMPLOYMENT LEVELS

1. The number of manufacturing industries, where located and the number of industrial employees in the district.

Type of Industry	No. of Industries	Where located	No. of Employees
------------------	-------------------	---------------	------------------

- i. Extraction
- ii. Processing
- iii. Others
(specify)

2. Are there any problems hindering development in the district?
 Yes [] No []
 If Yes, what are these problems?

3. What strategies are being adopted to enhance industrial development?

H. DEVELOPMENT PROJECTS

1. Please provide a list of on-going development projects in this district and indicate the ownership pattern and where located.

Type of Dev. Project	On-going Dev. Projects	Ownership Pattern	Where located
----------------------	------------------------	-------------------	---------------

2. If the community is not involved in any type of local development projects in the district, give reasons why.

3. Please state what you think are the major problems regarding the development of this district.

4. What planning strategies would you recommend for this district?

I. FINANCIAL INSTITUTIONS

1. Specify the number of banks, agencies and insurance companies and where located in this district.

Financial Institutions	No. in Urban	No. in Rural	Total
i. Banks			
ii. Agencies			
iii. Insurance Companies			

2. What contributions are these banks/insurance companies making towards the development of this district?

J. COMMERCIAL OUTLETS

Specify the number of supermarkets, wholesale, etc and where located in the district.

Commercial Outlet	No. in Urban	No. in Rural	Total
i. Wholesale			
ii. Supermarkets			
iii. Clothing outlets			
iv. Food Outlets (cafes)			

K. LEISURE (ENTERTAINMENT)

1. Specify the number of entertainment facilities available and where located in the district.

Facility	No. in Urban	No. in Rural	Total
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i. Hotels

ii. Motels

iii. Resthouses

iv. Country Clubs

v. Holiday Resorts e.g. game resorts

vi. Others eg. soccer grounds

2. How can social life be improved in this district?

APPENDIX 3

DATA COLLECTED FROM SELECTED VARIABLES FOR 1991 [SOURCE: FIELDWORK, 1992]

VARIABLES DISTRICTS	POPULATION	H E A L T H				E D U C A T I O N A L I N S T I T U T I O N S			S O C I A L P A T H O L O G Y		MANUFACTURING INDUSTRIES	ENERGY	T R A N S P O R T & C O M M U N I C A T I O N			DEVELOPMENT PROJECTS	FINANCIAL INSTITUTIONS	COMMERCIAL OUTLETS	ENTERTAINMENT OUTLETS
	Population Estimates 1991	Number of Hospitals	Number of Hospital Beds	Number of Medical Doctors	Number of Nurses and Paramedics	Educational Institutions (weighted)	% of Graduate Teachers in relation to total in Tkel	% of teachers in relation to total in Tkel	Number of Police Stations	Number of Courts (weighted)	Number of Manufacturing Industries	Electricity Consumption in KWHS 1991	% of Km. of Tarred to total road	Number of Post Offices & Agencies	Number of Telephone Subscribers	Total number of IDC, TATU TRACOR Projs	Number of Banks & Agencies	No. of Cafes, Wholesalers, General Dealers	Number of Leisure Outlets (weighted)
BIZANA	182540	18	410	10	453	158	4.1	4.0	5	7	1	19283843	25.3	20	152	13	5	202	25
BUTTERWORTH	87186	22	509	24	745	177	6.8	3.1	8	9	51	57943439	32.1	28	1981	18	7	272	12
CALA	53823	10	190	4	151	78	1.8	2.1	1	2	0	1814024	2.2	2	138	2	1	89	4
CENTANE	93904	18	358	9	441	135	3.9	3.5	3	2	0	6860485	0.7	21	153	9	2	201	23
COFIMVABA	106482	15	310	8	307	126	3.7	3.5	3	2	0	2573620	20.8	20	158	9	4	152	9
ELLIOTDALE	66451	10	201	4	205	86	0.8	1.7	1	2	0	221021	5.3	9	42	1	2	85	9
ENGCOBO	187727	20	580	11	442	168	3.6	4.5	3	2	0	7107578	20.6	21	169	10	5	195	20
FLAGSTAFF	89728	15	320	7	305	119	3.5	2.9	2	2	0	2117118	21.7	20	151	7	4	187	4
GLEN GREY	212487	10	215	5	683	185	6.1	5.9	7	7	18	38887831	28.0	26	1819	15	6	251	8
HERSCHEL	131001	15	45	1	295	120	1.8	3.8	3	9	0	131875	12.1	7	21	1	2	140	5
IDUTYWA	106233	12	281	5	25	112	3.5	3.3	2	2	0	2700140	22.0	23	194	8	4	198	5
LIBODE	194629	19	380	13	445	133	2.8	3.9	1	2	0	958327	13.8	15	52	1	2	124	3
LOSIKISIKI	150096	8	10	1	139	139	3.9	5.2	5	2	2	8309979	25.0	22	180	12	5	212	21
MALUTI	70419	15	305	7	302	113	3.4	2.5	2	2	0	1364207	0.3	1	55	1	1	122	5
MOUNT AYLIFF	118053	12	89	5	213	137	1.1	3.3	3	2	0	1697280	22.0	19	142	7	3	150	3
MOUNT FLETCHER	122408	16	329	8	315	141	3.8	4.3	2	9	0	114629	14.7	15	72	3	2	143	3
MOUNT FBERE	129636	11	141	4	107	141	2.4	2.8	2	2	0	2378493	20.0	22	205	10	5	188	6
MQANDULI	128815	12	180	3	139	107	2.6	3.2	1	2	0	657211	18.8	14	55	3	2	127	16
NGELENI	93341	8	12	2	78	130	2.7	3.4	1	2	0	239359	4.8	4	34	1	2	119	5
NGENAKWE	52953	17	321	10	438	80	3.9	2.2	3	7	0	899623	11.9	13	43	1	2	121	4
PORT ST. JOHN'S	109056	11	180	3	223	140	2.5	3.5	2	2	1	6994863	26.3	19	158	11	4	197	24
QOMBO	101931	12	143	3	110	128	2.8	2.7	2	2	0	120117	8.9	14	95	2	2	128	3
TABANKULU	96999	16	350	8	312	125	3.9	3.6	2	2	0	377318	7.7	8	49	1	2	123	8
TSOLO	79056	8	24	1	15	99	1.4	2.6	1	2	0	219956	22.6	19	153	9	4	182	3
TSOMO	248725	24	1036	142	1125	238	14.5	8.3	10	19	30	200844	9.1	14	44	1	2	121	3
UNTATA	142753	19	455	15	545	150	4.0	4.2	6	7	3	122551035	35.0	36	5172	20	13	325	30
UNZIMKULU	112545	9	27	1	20	137	1.4	3.6	1	2	1	12077578	22.2	20	188	11	5	208	20
WILLOWVALE												237174	0.7	8	66	3	1	129	11
TOTAL	3318734	401	7863	333	8768	3767	99.4999999999	99.6999999999	86	121	107	298328870	453.4	458	11899	180	99	4889	232
AVERAGE	118454	78571	14.32143	280.82143	11.89286	313.14295714	134.5357142857	3.55357142857	3.5607142857	3.0714288	4.3214235714	3.8214285714	16.19295714	18.357142957	417.82142857	8.7857142857	3.5357142957	168.75	10.42957142