

GENERALITY AND UNIQUENESS OF CITY HINTERLAND RELATIONSHIP
A CASE STUDY OF CALCUTTA METROPOLIS

In partial fulfilment of the requirement for
the degree of Masters of population studies.

A l o k K u m a r D u t t

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I certify that the dissertation entitled "Generality and Uniqueness of City Hinterland Relationship - A Case Study of Calcutta Metropolis" submitted by Mr. Alok Kumar Dutt, in fulfilment of six credits out of the total requirement of thirty credits for the Degree of Master of Population Studies (M.P.S.) of the University is to the best of my knowledge, his original work and may be placed before the examiner for evaluation.

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CONTENTS	Page
PREFACE	xv - vi
Chapters	ix
I. INTRODUCTORY	1 - 5
II. GENERAL AND GEOGRAPHICAL FEATURES OF THE AREA UNDER CONSIDERATION AND METHODOLOGY ADOPTED IN THE STUDY.	6 -24
III. DEVELOPMENT AND GROWTH OF THE CORE REGION AND ITS IMPORTANCE IN THE CONTEXT OF THE HINTERLAND.	25 -36
IV. ANALYSIS ON THE BASIS OF SELECTED DEMOGRAPHIC VARIABLES. CONCENTRIC CIRCLE AND SECTORWISE.	37 -71
V. ANALYSIS OF CORRIDORS ON THE BASIS OF SELECTED DEMOGRAPHIC VARIABLES.	72 -92
VI. COMPARISON WITH RESPECT TO SELECTED DEMOGRAPHIC VARIABLES OF THE URBAN AND RURAL PLACES WITHIN THE CORRIDORS, AND URBAN AND RURAL PLACES OF THE AREA UNDER EXAMINATION.	93 -99
VII. SOCIAL AMENITIES IN THE RURAL AREAS AROUND CALCUTTA CITY AND URBAN POTENTIALITIES OF THOSE PLACES.	100-115
VIII. DISCUSSION ON THE BASIS OF FINDINGS AND CONCLUDING REMARKS.	116-126

CONTENTS OF TABLES

		Page
TABLE 1.	Area (in sq. Km) covered, and percentage of the same to the total area.	6
TABLE 2.	Number of Police Station, Towns and Villages in each district under examination.	7
TABLE 3.	Growth of Natural & Migrant population in Calcutta city(19 -1961)	29
TABLE 4.	Distribution of Migrants in the City by age and sex.	30
TABLE 5.	Distribution of urban centres in different sectors.	33
TABLE 6.	Distribution of Urban centres in concentric zones at varying distance from Calcutta city.	35
TABLE 7.	Density of Population per sq. Km.& percentage of Rural & Urban areas to total area.	38
TABLE 8.	Decadal percentage increases population in Urban & Rural areas in different concentric zones.	39
TABLE 9.	Percentage variation of population (Urban) by sex (1961 - 1971)	43
TABLE 10.	Share of Urban population in different Sectors over the decade (1961-1971).	44
TABLE 11.	DENSITY OF POPULATION PER SQ. KM. IN RURAL AND URBAN CONCENTRIC ZONES.	46
TABLE 12.	Sector wise distribution of population density per sq. Km. (1931).	50
TABLE 13.	Sex ratio of population in Urban & Rural concentric zones.	52
TABLE 14.	Sex ratios among Sch. caste, Sch. Tribe, literate & working among the general population in Rural & Urban by concentric zones.	55
TABLE 15.	Percentage of literates to Total population in Urban & Rural areas by distance zones.	58

CONTENTS OF TABLE

		Page
TABLE 16.	Percentage of Male & Female literates to total population in Rural & Urban concentric zones.	60
TABLE 17.	Distribution of workers in different sectors of Economic activities in Rural and Urban areas.	63
TABLE 18.	Percentage distribution of workers in different sectors of Economic activities by Urban & Rural concentric zones.	64
TABLE 19.	Proportion of workers in Primary sector to Secondary plus Tertiary Sectors of Economic activities in Urban & Rural concentric zones.	68
TABLE 20.	Percentage shares of selected variables in the corridors out of Total urban & Rural areas under examination.	75
TABLE 21.	Density of Population (Km), persue per occupied Households & Sex ratios in different sectors of Population within the corridors.	76
TABLE 22.	Characteristics of Urban & Rural corridors in respect of selected demographic variable.	79
TABLE 23.	Percentage distribution of various size classes of Rural places by distance zones.	101
TABLE 24.	Distribution of cumulative scores of amenities according to size classes of Rural settlements in different distance zones.	103
TABLE 25.	Urban potentialities of the Rural areas around Calcutta as determined by Rank	106

CONTENTS OF TABLE

Page

TABLE 26.	Percentage distribution of urban places by size class in different concentric zones.	108
TABLE 27.	Percentage distribution of Urban Centres according to their functional characteristics by concentric zones of different distance zone.	111

CONTENTS OF MAPS AND CHARTS.

P R E F A C E

The study has been undertaken in fulfillment of six credits out of total requirements of thirty credits for the degree of Masters of Population Studies in Jawaharlal Nehru University, New Delhi. This study is in fact a continuation of the exercise which was initiated in connection with the ' Geographical aspect of Population, one of the several aspects that were taught to the trainees under the programme in this University. The difference is, however, that the present work is detailed study of smaller region, on the basis of village level data and on an elaborate plan. The main idea behind this project is to train the students in the intricacies of research work, and to provide them with adequate experiences in the field of population studies.

The undersigned is greatly indebted to the University which has given him this opportunity by providing all possible guidance and assistance that are necessary.

The undersigned is personally grateful to Pro. Asok Mitra, Dr. M.K. Premi & Dr. S. Nangia for their invaluable support. In fact they are the main prop of this work. In spite of their busy schedule, they have ungrudgingly guided him throughout the project work. Their expertise is always made available to him whenever he is in need of it.

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In spite of all the precautions and care, the errors, if any, that might have crept in the dissertation should be viewed the responsibility of none but the undersigned's alone.

Dated, Calcutta.


(Alok Kumar Dutt)

CHAPTER - I.

GENERALITY AND UNIQUENESS OF CITY HINTERLAND RELATIONSHIP- A STUDY OF CALCUTTA METROPOLIS

INTRODUCTORY

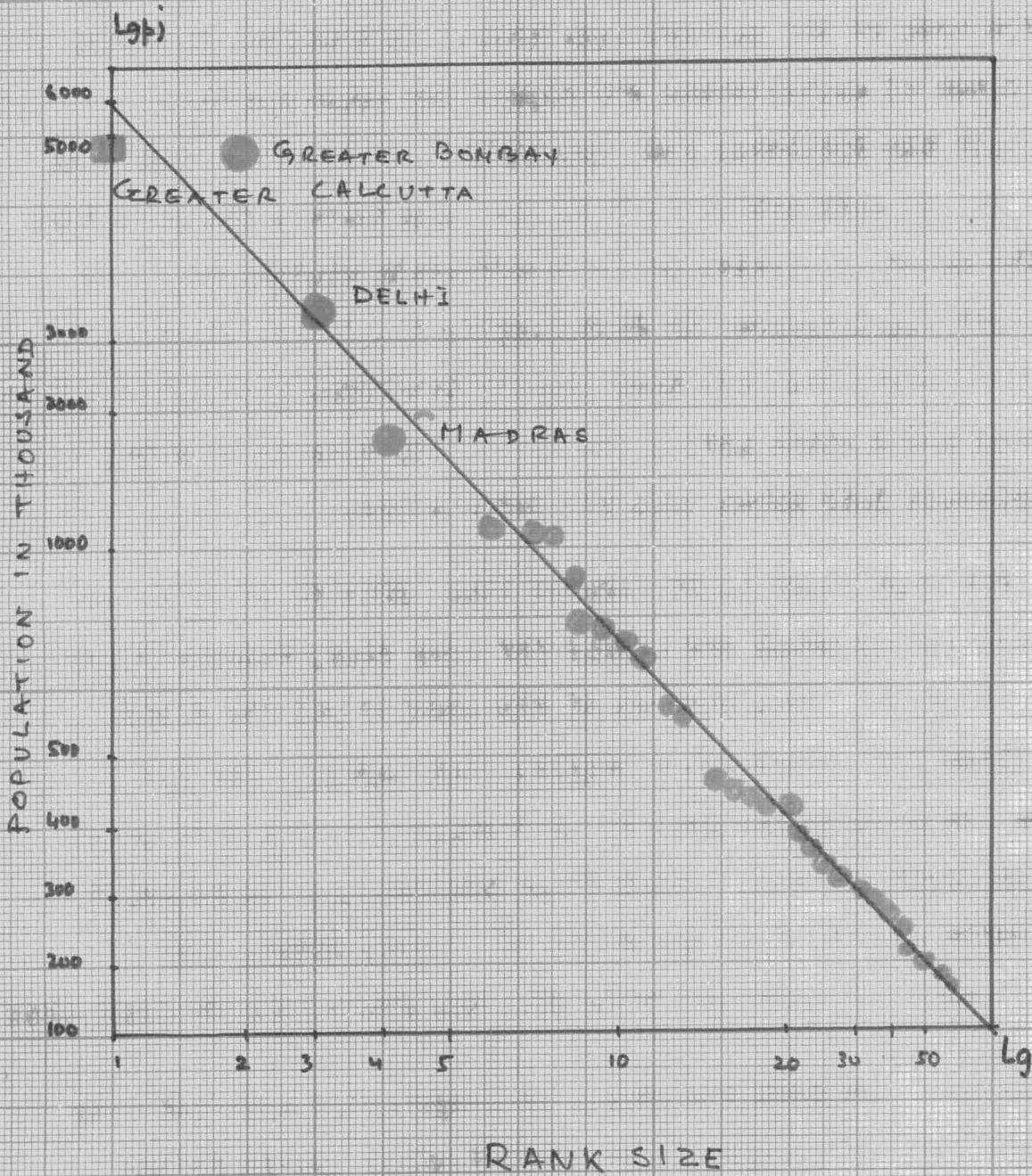
Calcutta City-the gigantic nerve centre of the Eastern India had its humble origin in three villages viz GOVINDAPUR, SOOTANOOTY and KALIKATA in the seventeenth century within a span of roughly three centuries the city has undergone a lot of urban transformation. It has risen from a small trade centre to become the largest metropolis of the country. It has, except on, one or two occasions occupied, number one position among the Indian cities.¹ Development of Rail-way net works, expansion of coalfields, and establishment of iron and steel centres in the vicinity of Calcutta during the second half of the nineteenth and the early part of the twentieth century respectively helped in the rapid development of the Hooghly Valley and strengthened the economic base of the city and its neighbouring regions.

Although the location of Calcutta enjoys neither a nodal or a central position nor the focal point of a traffic network yet as Dr. Kar puts it "the early economic growths acting as a geographic momentum, the strong industrial base and thriving commercial and trading centres have more than compensated for

1. Indian cities except Calcutta are maintaining a steady rate of expansion. The population of most cities of the world rose sharply over a considerable period and then slowed down. Calcutta corresponds to other cities of the world in this respect. Calcutta growth has been rapid like many other cities of the world but since 1941, it is in the throes of decline.

N. Mezunder (1964), "Urban Delhi - Past growth and future trends". SERI, Calcutta 1969, Vol.3. No.3, pp.7.

Fig 1 RANK SIZE DISTRIBUTION OF 50 LARGE CITIES AND TOWNS OF INDIA



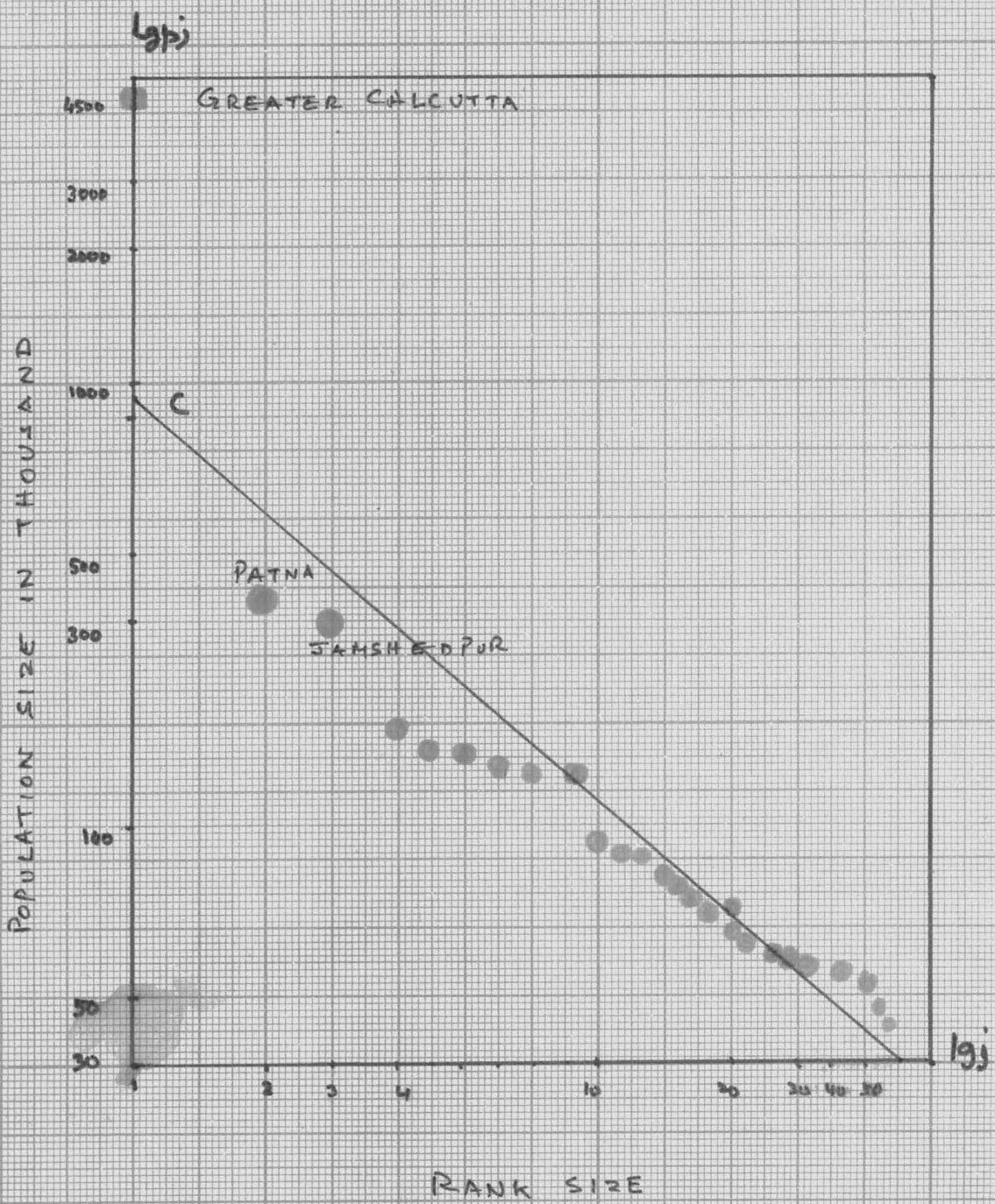
its eccentric location and most unfavourable environment.2

The city and its adjoining region have the longest concentration of industry and contain the major chunk of the urban population of the state of west Bengal. It also enjoys most of the central functions, and a unique position in respect of urbanisation and population concentration.

Although the intensity and complexity of the urban centre is felt in the city proper in the main, nonetheless its influence on the urban population of the surrounding regions has been of great significance. In fact veering round the Calcutta city, a large area has been already developed into urban centres and a still larger area is in the process of being transformed into urban from the rural state.

Although there is no denying that greater Calcutta and greater Bombay which are nearly the same size, represent the primacy of the urban centres of the country yet the sizes of these two cities are "smaller than expected for the urban net work of the country as a whole" (fig 1). However, in the north eastern Indian urban context like (i.e. urban net works comprised by the state of Orissa, Bihar, west Bengal etc), Greater Calcutta with its seven million population is actually more than four times as large as is expected from scale of urban net work of the North Eastern Macro region

Fig 2 CALCUTTA AND OTHER CITIES AND TOWNS OF NORTHERN EASTERN INDIA



= 3 =

(fig. 2)³. This clearly brings out the importance of Calcutta city and its concentration.

It would be most interesting and at the same time rewarding to look into the different facets of transformation of the neighbouring rural areas with reference to the city proper, and examine the generality and uniqueness of the city hinterland relationship with the help of Secondary data (i.e. census data) available to us. Since Calcutta's hinterland is very extensive and took shape as early as nineteenth century, an exercise was first undertaken in the form of a term paper to examine Calcutta's influence in respect of selected demographic variables at the police station level, limited by a radius of hundred miles. The object was to determine the area under the greatest influence of Calcutta city for the purpose of undertaking a detailed investigation of the area of greatest influence with the help of some variables subsequently, but at the village level.

2,3: The size of the country's hypothetical primate city (Point C) is marked by regression line of selected cities (Fig. 1), while (Fig 2) reveals the position of Calcutta city in the contexts of the cities of the north Eastern region. In deriving this, the logarithms of their ranksize ranksize are plotted parallel to the X-axis ($\log j$), the logarithms of the population are plotted on Y-axis ($\log P_j$). In "Urbanization and spatial structure of Indian Economy". In centenary Monograph No.7, Census of India 1971, New Delhi, 1972 pp.306.

The term paper revealed that Calcutta's suburban outlying areas and areas surrounding it upto a distance of thirty two miles radius from the centre of the city, are experiencing the impact of real urban development as well as the cumulative effect of the industrial expansion, growth of industrial centres, inflow of the intercity, inter district commuters as well as inter state and intrastate migrants, and at the top of all, displaced persons from across the International borders of Bangladesh (erstwhile East Pakistan)⁴.

As the next step, it was proposed in this project to take up the area with Calcutta city as its core for detailed investigation regarding city hinterland relationship. As the study of all the relationship is a laborious and time consuming affair, it was decided to confine the study to an examination of only demographic aspects such as growth pattern distribution, concentration, occupation of population etc. etc. and the availability of social amenities in the rural areas around Calcutta city both diachronically as well as synchronically. The object was to build up the demographic

4) Dutt. A.K. Demographic profile of Calcutta city and its surrounding regions within a distance of hundred miles" (unpublished Term paper submitted in connection with M.P.S. programme of I.N.U. , New Delhi, 1977).

profile of the city and its immediate hinterland, and the relationship between the two. It was also intended to find out differences if any, in the emerging pattern of the regions.

The subject has been covered in eight chapters. The first chapter introduces the theme. Section one of the second chapter gives the geographical features of the area under consideration and describes the historical development of the area. In the section two of chapter 2, the methodology and the hypothesis are discussed in detail. In chapter three, Calcutta city (core region) is discussed in several particulars. In Chapter four, the analysis of the city and its hinterland has been made with the help of debated demographic variables for each concentric zones and sectors for rural and urban. Separately. The marking of the concentric zone has been explained. In chapter five, attempts have been made to analyse the characteristic of the corridors emanating from the core region at different directions with the help of the same demographic variables as has been done in case of the concentric zones etc. In the following chapter a comparison is made between the two sets of results obtained from the preceding two chapters as to ascertain the real state of affair in respect of city-Hinterland relationships. In chapter seven, attempts have been made to analyse the city-

Hinterland relationships on the basis of amenities scores i.e. availability of social amenities in the selected villages around the core region at varying distances. In this section, an attempt has also been made to assess the urban potentialities of the rural areas at varying distances from Calcutta city with the help of suitable techniques devised for the purpose.

In the last chapter i.e. eight the appraisal of the whole discussion is made. Conclusions drawn from the findings are highly noted, and necessary suggestions have been made for future consideration.

C H A P T E R II

GENERAL AND GEOGRAPHICAL FEATURES OF THE AREA UNDER CONSIDERATION AND METHODOLOGY ADOPTED IN THE STUDY.

SECTION I: General and Geographical Features Area Under Coverage and number of Units considered.

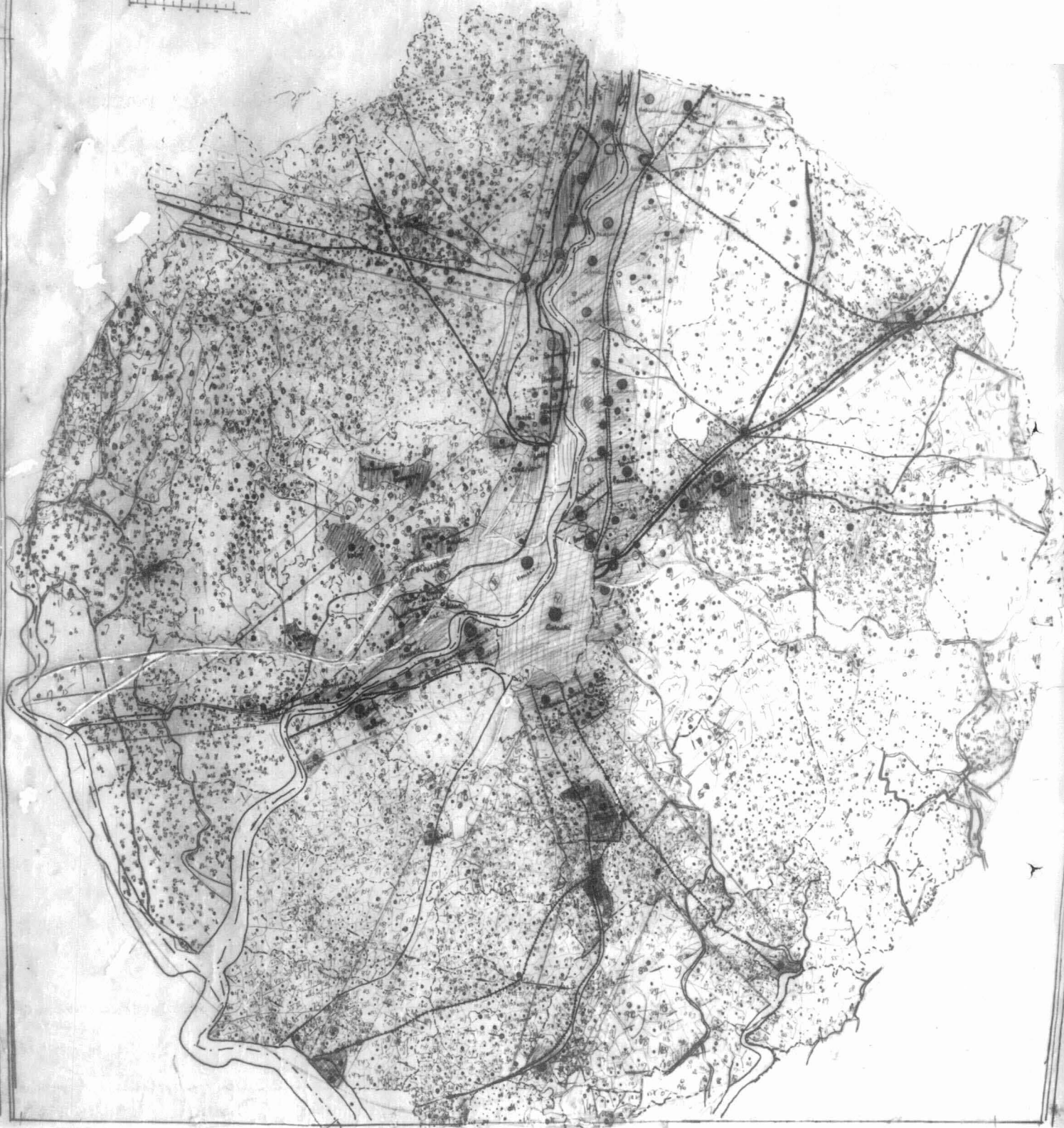
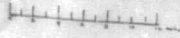
The area under considerations which forms a circle of thirty two miles radius from the city core constitutes apart from Calcutta (the core district) other districts viz. Howrah, Hooghly and Twenty four Parganas. Total area thus covered works out to be 7458.4 sq. km. urban being 736.6 sq. km & Rural 6721.8 sq. Km, in the following breakup.

TABLES : AREA (IN SQ KM) COVERED AND PERCENTAGE
OF THE SAME TO THE TOTAL AREA

Districts	Total area in sq. Km.	Area under cove- rage in Sq.Km.	Percentage of covered area to tal area.
Calcutta	104.0	104.0	100.00
Howrah	1474.0	1460.9	99.11
Hooghly	3145.0	936.3	29.77
24 Parganas	13796.0	4957.2	35.93
Total	18519.0	7458.4	40.27

CALCUTTA'S HINTERLAND

RURAL SETTLEMENTS



MAP No 1

From the Table 1, it is evident that 40.27 percent of the total area of the four districts comes into the picture. This area, apart from 100 words of Calcutta city comprises in all 56 police stations, 105 and 4714 Towns & villages respectively. The distributions of Police stations towns and villages in the districts are as follows:

TABLE 2: Number of Police Stations, Towns & Villages
in each district under investigation.

Districts	Number of P.S.	Percentage of Police Station.	No. of Town	Percentage of Towns	No. of village	Percentage of village.
Calcutta	-	-	1	0.96	-	-
Howrah	11	19.64	27	25.71	1000	21.21
Hooghly	12	21.43	14	13.33	911	17.33
24 Parganas	33	58.93	63	60.00	2803	59.46
Total	56	100.00	105	100.00	4714	100.00

It is evident from the Table 2 that out of 223³.

5. Cesus of India 1971. State Table AI: Area, House & population, series 22, West Bengal: General Tables, Part IIA, New Delhi, 1973 paper 13.

urban units in the State of West Bengal 105 are recorded within the area under examination. In term of percentage, it works out to 47.09, whereas as regards rural units out of 41,392,⁶ Villages, 4714 villages come under scrutiny i.e. only 11.39 percent of the total. It suggests therefore, that the area under investigation has more of urban concentration than rural.

Geographical Location:

The circumference may be divided into four sectors viz. North Eastern North Western. South Eastern and South western. The district Howrah and Hooghly correspond roughly to the South Western and North Western sectors respectively. While North Eastern and South Eastern comprise the major part of twenty four parganna district and whole of Calcutta district. The South western sector lies between Latitude $22^{\circ}12'$ and $22^{\circ}48'$ in the North, and its eastern most and westernmost extremities are $82^{\circ}23'$ and $87^{\circ}50'$ Longitudes respectively. The sector North Western lies roughly between the latitudes $22^{\circ}39'$ & $23^{\circ}01'$ in the North. The eastern most extremity of this portion is marked by $88^{\circ}30'$ east Longitude and westernmost extremity by $78^{\circ}30'$ West longitude. The sectors North Eastern and South Eastern fall between $23^{\circ}01'$ & $23^{\circ}50'$ North Latitudes and $87^{\circ}30'$ and $89^{\circ}50'$ South Longitudes respectively.⁷

6. AS above.

7. "Physical aspects" In district comes Hand book, 1961 census of India Calcutta, pp.7.

Boundaries : Natural and Artificial

The boundaries of the South Western Sector is both natural and artificial. Because the base of the triangle lies in the north bounded by the southern borders of North Western Sector viz. Arambagh and Serampur sub Division of the Hooghly district while south-western and South Eastern arms are bordered by the rivers Hooghly & Rupnarayan respectively. The eastern side of the North Western Sector is bounded by the river Hooghly which separates this region from Ranaghat Sub Division of Nadia district and Barrackpore sub division of Twenty four Parganas. On the south, it is limited by the borders of Howrah district whereas the Northern and Western portions are bordered by the major portions at Polaba and Dodpur Police Station and parts of Tarakeshwar & Khanakul Police station of Hooghly district respectively.

The Sectors North Eastern & South Eastern which are constituted by Calcutta and 24 Parganas districts, of which Twenty four parganas has the major contribution. The Western and to a some extent the South Western borders of these Sectors are bounded by the river Hooghly. In the North, it is limited by the Police Station Bijpur & Habra (major portion of these two police stations) of the district of 24 Parganas while the Eastern border is limited by the portions of Baduria, Hasnabad, Baserhat,

= 10 =

Sandeshkhali Police station, and the South Eastern and south are bounded by the Police Stations of 24 Parganas viz. Basanti, Kultali, & Mathurapur.

General Configuration & River System

The South Western sector which lies between two river system viz. Hooghly and Rupnarayan, and intersected by Damador, is a flat alluvial plain with drainage towards southern and south eastern directions. Because of these configurations the tract is divided into three district region viz. (1) Eastern tracts formed by Hooghly and Saraswati river system (2) Central tract - a product of Damador and its tributaries. & (3) western tract which is formed by the rivers Damador and Rupnarayan.

This part of the region, in addition to above mentioned river system is traversed by numerous branches. Mention be made of Bali, Rajganj, Sankrail, Sijbaria and Champakhals in respect of Hooghly river, a Madaria, Banspati, Galghata, Bakshikhal etc. etc. pertaining the rivers Damador and Rupnarayan.⁸

8. District Census Hand book & Howrah
Census of India 1961. Calcutta, Physical aspects 7.

The North-western sector is characterised by flat alluvial plain intersected by a number of rivers and streams. Howrah, the land of this region may be divided into two divisions viz. (a) Upland (b) Plain. The western corner of this region (Folaba, DADPUR P.S.) forms the upland which is somewhat rocky. The remaining portion is either low lying or disc shaped depression so that they form extensive marshes. The river system in this part of the region includes Hooghly, Damador, Dwarakeshwar, Mundeshwar etc. and a large number of smaller streams. Among the streams, mention be made of Behula the Kana Nadi the Kuntinadi, the Saraswati the Kaushiki, the Kana Damador, the Mandaria, the Beria etc. The river Hooghly is navigable. On both sides of this river Urban centres have developed. Damador on the otherhand is not navigable rather it is famous for its notoriety as causing frequent devastating floods. It also changes its course quite often. Of late, the river has been tamed with the help of Damador Valley Corpration Project.⁹

In the South Eastern & North Eastern sectors, Hooghly river flows along the western boundary. Bidyadhari, which is connected with Hooghly by Tolly's nullah has acircuitous course. It passes through Basirhat in the east and thence turns south east

9. District Census Hand book. Hooghly Census of India 1961
Calcutta. Physical aspects pp. IX, XI.

and joins Matla just above Canning. The Piali is a subsidiary river which connects Bidyadhari with Matla. In the North Eastern direction, the area is traversed by several rivers such as Jamuna, Nawai, South, Padma and Gobindakhali. Of which only Jamuna is navigable. The chief navigable river in the south Eastern portion is Hooghly which is joined by several small tributaries such as (1) the Katakhal, (2) The Balarempur (3) Nilakhal, (4) Khotakhali (5) Haroa (6) Diamond Harbour Creek. Further this part of the region is characterised by several channels e.g. Karpis Khali, Tengra Khali in Kulpi Police Station, Magrahat Khal Kaorapukur, Lakshmikantapur, Sangrampur Satpukur, Banstobla, Ghugudanga, Gundakata, Andarmanik etc. etc. The Magrahat Khal and Kaorapukur Khal are principal trade routes in the South Eastern direction. Infact all the khals in this region have connections with the Hooghly river so that trade with Calcutta is possible through there river routes.

The whole of South Eastern and North Eastern Sectors form an unbroken alluvial plain. The land slopes here and there, and forms low swamps. These parts of the region do not have high elevation. The western part of the Basirhat subdivision which is under consideration in this study is only raised slightly. The southern part of this region consists entirely of a series of low lying basins sloping inwards from the river banks.¹⁰

10. District census Hand book, 24 Parganas.

Census India 1961:Gazetter (Appendix I) pp.1-23.

Climate and Rainfall in the Region

An oppressive summer, plenty of rains and sultry conditions are the salient features of this region. Summer starts from March and continues upto the end of September, Rainy season which has a very long spell commences from June and lingers upto the middle of November in two distinct phases. The first phase begins from June and goes up to September. During this phase, there is a widespread rain caused by the South West Monsoon. The second phase which commences from September end and ends in November is helped by the retreating monsoon. The weather is very humid due to high moisture content in the air. However, the intensity varies with different seasons. It is lowest during summer evening and appreciably high during rainy season. The temperature ranges from 8°C minimum to 42°C maximum during the whole year. The average annual rainfall recorded in this¹¹ region ranges from 1560 mm to 1590 mm.

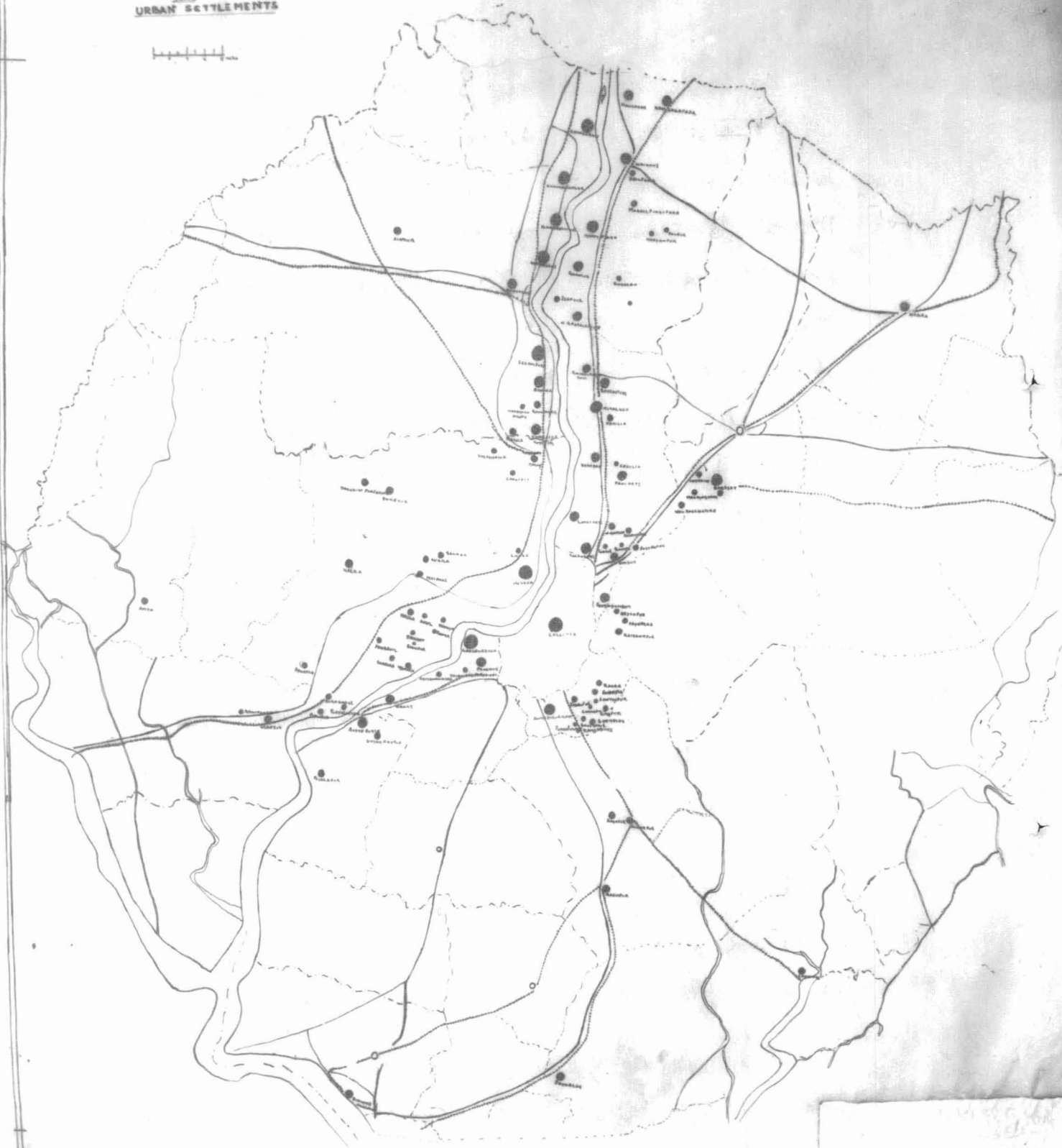
Transport Network in the Region

By the third quarter of the Nineteenth century, a general system of Railway was established in this region. The South Western part is traversed by two broad gauge Railways viz. Eastern Railway

11. Table II. Physical Aspects & location. In census map of India 1971. Part YA&XB. Series 22, Calcutta 1975. pp-2.

CALCUTTA'S HINTERLAND

MAIN TRANSPORT NETWORK
AND
URBAN SETTLEMENTS



MAP NO 2

and South Eastern Railway (formerly called as B.N.R.) .
In addition this part is also provided with suburban
Railway network which has a stretch upto Kharagpur from
Howrah junction . As regards North Eastern and South Eastern
part of the region, it may be stated that those areas have
been traversed by the network of Eastern Railway which has
its terminus at the Sealdah Station of Calcutta. In addition
these parts are provided with Suburban Railway system as well
The North Eastern part is traversed from South West to
Northwise by central section of the Eastern Railway and from
West to the East by Barasat Basirhat line. Calcutta Jessore
Road runs parallel to the central section of Eastern Railway.
South Eastern part has railway connections for places upto
Diamond Harbour, Budge Budge, Canning Lakshi Kantapur in
several directions in the south. For all these places except
Budge Budge which is a terminal point situated about 16 miles
from Calcutta are nonindustrial in nature. Sonarpur &
Baruipur are very important junctions in the South while
important junctions in the North are Dum Dum, Barrackpore,
Naihati, and in the North East direction is Habra.

Like wise, the North Western part is also
provided with Railway lines. The main lines (broad gauge)
of Eastern Railways run through its entire length from
South to North while from the junction of Seoraphuli and single
broadgauge lines runs upto Tarakeswar. Howrah Amta line was
opened initially upto Domjur which was subsequently extended

right upto Amta. Howrah station is the terminal point for all these lines in this section. Several important bridges have since been constructed to provide connections between Howrah and Calcutta so as to bring the hinterland closer to Calcutta.

Originally, the South Western part was provided with only three major roads viz. Old Benaras Road, Grand Trunk Road, and Orissa Trunk Road.¹² At present this section of the region is provided with good network of High ways and Feeder Roads, Similarly, there were eight important roads in the North Eastern and North Western parts of the region in the nineteenth century. The roads were G.T. Road, Jessore Road, Orissa Trunk Road at Budge Budge Road, Diamond Harbour Road, Vishnupur Road, Tatri Road, Cossipore and Dum Dum Road, Barrackpore Trunk Road, Akrar Metia Buruz Road etc. Many more roads have since been added and some National High ways have been constructed to provide better communication facilities in this part of the region. At present the region has a very good network of National and State Highways reinforced by several feeder roads all over this region. The North Western Sector is also provided with good networks. Almost in the middle running along the whole length, the river Hooghly provides an easy means of communication for all the important towns and villages along its banks on both sides from North to South with Calcutta.

12. Major Ralph Srayth: Statistical & Geographical Reports of Twentyfour Perganas. 1857 pp.

Because of these extensive networks (Railways, Roads, Rivers, canals etc. etc) there is a lot of interaction between Calcutta and different urban and rural centres, and this trend is increasing day by day. An idea of interaction (in one direction only) can be formed from the volume of commuters that the city receives daily. It is estimated that roughly half a million commuters come to Sealdah, Howrah and different vantage points of Calcutta by using different modes of conveyance daily.¹³

With the development of extensive Railways and Road net works, and good communication facilities, rural areas adjoining Calcutta came still closer to Calcutta. The entire area was thus brought into contact with Calcutta since the second half of nineteenth century. Such contacts , therefore, resulted considerable interaction between Calcutta and its immediate hinterland. In the process, therefore, certain urban centres such as Bally, Ulberia, Howrah in the South Western part of the region, Serampore in the North western region, and Bhatpara, Baranagar, Barrackpore in the North Eastern region and Budge Budge, Canning Diamond Harbour, Baruipur etc. in the South Eastern region were developed which were mainly dependent on Calcutta mart. Production of these urban centres dependent

13. Green L. & Dutt, A. Special agencies in Metropolitan Calcutta - A comparative study Calcutta 1967. p.

upon the demands of the whole sale traders in Calcutta, and it was not related to the demands of the local population. Consequently therefore, unlike other metropolis, Calcutta as well as these towns developed more into commercial centres rather than industrial town. Nevertheless, it is this area which also witnessed the development of the major share of industries viz. mills and factories of the state and contained the bulk of urban population as well*

SECTION II METHODOLOGY : TECHNIQUES AND HYPOTHESIS

The best technique for describing urban interaction is that which depicts growth. Population and area when taken together represent the good beginning and a handy tool for the purpose. Usually an urbanized aggregation is so characterised that it includes all the contiguous territory but that has been heavily peopled than a certain critical density. This density level is such that it exceeds the maximum limit which can sustain a population at subsistence level by mere tilling the land so that the majority of workers seek employment in occupations which are other than agriculture.

Generally a city grows by several thousands of populations inhabiting each square kilometer of land at its periphery and

if an original urban centres grows beyond several million persons, it necessitates the development of satellite sub centres. Usually, these centres will be developed with all possible urban amenities, and will inhibit people who have urbanways of living. Moreover, if there is no physical constraints, such centres will develop in all directions from the centres. From the centres thus developed, the influence will radiate in their neighbouring areas as well. Usually such influence will be felt much along the railines, main roads, important services etc. The villages located in those net works will have urban potentialities.

Hence to examine the process of urbanization and growth, as well as the urban potential of all the rural areas around Calcutta city, it is essential that we must know.

(a) the demographic and geographical background of the area under study.

(b) the device and methods to assess the urban potential of the rural places.

For the purpose of demographic analysis, it is necessary to obtain information available from sources on the following (1) Population (2) Origin of Population & movement, (3) Occupation and industrial structure, (4) Households etc. etc. As it is envisaged in this project to rely on data available in census and other published secondary sources only, it has been decided in connection with the demographic analysis, only the following variables be considered.

- 1) Density (2) Sex ratio of the Population
- (3) Percentage of literates (4) Percentages of total male workers to total male population (5) Percentage of total male population;
- (5) Percentage of total female workers to male workers, (6) Proportion of total workers in Primary sector of Economic activities to the total workers in Secondary and Tertiary sectors of Economic activities (7) Percentage of total scheduled caste and scheduled Tribes population to total population of the area.

It has been also envisaged to study spatially at one point of time only i.e. 1971. However, for the purpose of delimiting the growth process through different points of time reinforcement of data from other secondary sources will be resorted to as and when necessary.

As the earlier study (Appendix II) revealed clearly that Calcutta city has maximum influence upto 32 miles, the area with Calcutta city as the core is therefore divided into concentric zones of three miles each . The last zone is however of two miles radius the demographic variables as stated earlier have been worked out for each concentric zones for rural and urban separately. Because it is presumed that these variables will have different behaviour as they move away from the city. Or, in other words it has been hypothesised that distance gradient will have a clear bearing on the selected demographic variables . It is

It is assumed therefore, that as these variables of the centres come nearer the city they will behave like that of the city itself and as the places go away more and more from the city, their behaviour will be quite different from that of the city. Again these sets of variables will be examined for rural and urban places separately, as it is presumed that these categories have different behaviour in this respect even if they are in the same distance gradient. It is also important that the two categories should be examined separately in order to ascertain the interaction pattern between Calcutta and those places, as well as to determine the urban potentialities of the rural areas around the city.

For the purpose of understanding the influence of the core region over its immediate hinterland, the data (i.e. census data) need to be subjected to various statistical tests so as to accept or reject our hypothesis. Suitable statistical techniques have been employed whenever these are felt relevant and necessary. For instance, as modernisation of rural areas (village, is a step towards urbanization, so far assessing the urban potentialities of the rural areas around Calcutta, it has been considered necessary to find out at the outset, how far the villages around Calcutta are modernised. This idea can be formed from the data which pertain to amenities



= 21 =

available to each of these villages of the region. These data are available from the District Census Hand books. But it is to be noted that all the items concerning modern amenities do not have the same significances. Moreover, these information do not give quantitative understanding. Hence for the purpose of converting these information into quantitative form, the importance of each item has been decided upon and then within each item different information regarding amenities have been assigned different weights according to the importance and relevance of those subitems.

In the present study, total number of rural units appear to be about five thousand. This is too large a figure, and it has therefore, been decided for the sake of convenience as well as in view of the time constraints, to rely on sample villages only. Accordingly twenty percent villages from each concentric zones has been selected by sampling. For the purpose, the villages in each concentric zones are arranged according to their police stations in a clockwise fashion, and from each such arrangements then every fifth village has been picked up. For each such villages, then on the basis of amenities scores, the cumulative index is derived.

Sample villages are then ranked in accordance with their population size and cumulative score index separately. These readings are then compared with ¹⁴ the help of rank correlation



14. Out of the various items on amenities available in D.C. 4 (1971), it has been decided to take only those items which have relevance in the modernization of the area. Accordingly therefore,

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technique. In this respect, it has been assumed if the correlation coefficients give a fair relationship between the size of the settlement and the quantity of amenities available therein, then the potential of urban development as envisaged is established. Moreover, it is further assumed that the values of correlation coefficients will be positive and these will depend on the distance gradients.

the items such as Education, Medical Electricity, Water Supply, Transport facilities & communication have been selected. Except for communication, in case of all other items the cumulative index is derived by summing up the scores for each sub item within the main item. In case of communication, the highest score is recorded for the purpose of obtaining the cumulative index. The values assigned to each sub items under the main items are as follows:

I. Education

(1) No facility	-	0 score
(2) Primary school	-	2 "
(3) Middle school	-	4 "
(4) Higher Secondary	-	8 "
(5) College eyv.	-	16 "

II. Medical

(1) No facility	-	0 Score
(2) Dispensary	-	2 "
(3) MCW/PHC	--	4 "
(4) Hospital	-	8 "

III Electricity

(1) No facility	-	0 score
(2) With facility	-	4 "

IV Water supply

(1) No facility	-	0 score
(2) Tap facility	-	8 "

V. Transport

(1) No facility	-	0 score
(2) Kutcha Road	-	2 "
(3) Pucca Road	-	4 "
(4) River/Cannel/ Bus ship	-	6 "
(5) Railway connection	-	8 "

=24 =

VI. Communication

(1) No communication facility	- 0 Score
(2) Post Office	- 2 "
(3) Post & Telegraph Office	- 4 "
(4) Phone	- 8 "

Total maximum scores possible = 84.

CHAPTER III

DEVELOPMENT AND GROWTH OF THE CORE REGION AND
ITS IMPORTANCE IN THE CONTEXT OF THE HINTERLAND.

POPULATION GROWTH OF THE CITY

Calcutta's growth and concentration of population in it reveals the trend leading to the transformation of a place from its humble origin to its present importance and dimension. Till 1872 there was no official census in the country. Thus the population of the city prior to official census has been a matter of speculation and estimates¹⁷. Population of Calcutta in 1701 and 1801 were considered by Mitra¹⁸ under 10,000 and 140,000 respectively. Population of Calcutta proper (i.e. Municipality area) which comprises the old Calcutta town as its nucleus thus grew from .1 lakh to 1.4 lakh in one hundred years. The increase was just less than double whereas in fifty years hence, the population of Calcutta was three-times more than what it was in 1801. As the

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17. In 1710, according to Hamilton the estimated population of Calcutta was 12000. In 1752, Hotwell gave the population of Calcutta to be 409,000. Mackintosh (1782) and Grandpre (1789) estimated the population of the city as five and six lakhs respectively. Sir Russel thought it to be a million or so, while General Kyd estimated the population between 4 to 5 lakhs. Calcutta's population estimated in 1837 and 1850 appeared to be 229,714 and 413,182 respectively.
18. Mitra, Asok : Population of Calcutta. In Calcutta ed. by S.N. Sen, Calcutta, 1952 p. 20.

turn of the present century, the census figure of Calcutta proper in this respect was 8 lakhs. It is, therefore, double the population than what it was in 1850 and eighty-times over the population in 1701. The population of Calcutta proper as a whole expanded over three hundred times (1971) since then. Considering City's small area (104 sq.km), the overall growth is enormous. The rapid rise in early centuries as well as the present century is due mainly to the importance of the city as a great commercial centre in the east. Calcutta in the earlier periods expanded in all directions in the west. Recently thinly populated marshy lands of the east are being brought under the fold of the core region.

The population of Calcutta increased between 1921 - 1971 at a compound rate of 3.18% per annum. In the last two decades (i.e. 1951-61 and 1961-71), the population of the city grew by 0.8 and 0.7 per cent per annum respectively. The present growth rates are certainly very low growths underscoring the trend set in the previous decades.¹⁹ Various factors are responsible for the development of such a trend. However, the following may be cited in this connection :

- 1) That the city is nearing the saturation point in respect of population, and it is, therefore, unable to absorb population as before ;
- 2) That during the last two decades Calcutta witnessed tremendous urban growth all around the city ;

- 3) that the service and other facilities (sanitation, transport etc.) are not adequate to bear the strain of higher growth levels ; and
- 4) that during this period the overall situation was no conducive for population growth (for instance, Industrial unrest, political upheaval, shortage of raw materials etc. etc.).

The overall trend, however, fits well with the general pattern of urbanization all over the world i.e., slow growth at the beginning followed by an upswing in accentuated growth and then final tapering off.²⁰

Within the city, the overall growth (1911-61) presents an interesting picture. The wards (26, 27, 21, 23, 68 and 64) have shown increase in population between 100-150% and ~~are~~ are while the wards 53, 58, 69, 70, 67, 66, 65, 62 and 61 expanded in this respect between 50-100% and the rest of the wards below 50%. It is thus obvious that "the overall increase in land use has been determined by the requirements of residence than of

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19. Table AIV : Towns and urban agglomeration classified by Population in 1971 with variation since 1901. General Population Tables. Part II A, Series 22, West Bengal Census of India 1971. New Delhi, 1973 pp. 148.
 20. Mazumdar, N : "Urban Delhi - Past growth and future trend". S.E.R.I., Calcutta, 1969, Vol. 3, No. 2 pp. 7.

Commerce or Industry²¹. Regarding the growth of Commerce and industries within the city during this period it may be said that the wards 53, 27, 24, 39, 42, 37, 26 and 31 experienced increase in commercial function at the tune of 20-60% and above while the wards 72, 62, 48, 49 and 58 registered increase between 20-80% and 10-20% respectively over the period²². Thus it is seen that commercial functions are limited in the western and central regions of Calcutta while industrial functions restricted in the south-western and eastern regions of the city. The remaining areas of Calcutta are, therefore, basically residential in nature.

Hence the whole of area of Calcutta, if assumed to be circular in shape can be divided roughly into three concentric rings - the core one is characterised by trade and commerce function, surrounded by a ring which has predominant residential function while the outermost ring is marked by industrial function. It is then followed by the suburbs where the residential function

21. Bose, N.K. : "Land Use maps". Calcutta -- a social survey. Calcutta, 1968, pp. 94.

22. Bose, N.K.: Calcutta - a social survey. Calcutta. 1968. pp. 91, 92 and 93.

is again most important.

Because of the economic importance of the city and its employment opportunities, a large number of people from very early time are being drawn by it. Many of them are migrants while equally large are daily commuters who come work and leave the city. It is, therefore, not surprising that the growth of population in Calcutta City is contributed to a large extent by the ~~immigrants of Table 4~~ migrants (Table 4).

Table 4²³ : Growth of Natural and migrant population in Calcutta City.

Census years	Natural Population	Migrant Population
1911	100.00	100.00
1921	111.25	93.53
1931	123.58	95.34
1941	227.64	173.82
1951	189.71	349.64
1961	218.29	388.08

23. Ghosh, A : Calcutta - The prionate city. Monograph no. 4. Census of India 1961. New Delhi 1966, Table 2.3 pp. 125.

Out of 2.93 million persons enumerated in the city (1961 census), 1.54 millions were born outside the city. Of which again .55 millions were migrants from countries beyond the international borders of India. These people were in fact mostly the refugees who came to the city after partition of the country in 1947 from Bangladesh (erstwhile East Pakistan). To be more accurate these refugees comprised roughly 96% of the total foreign born migrants in the city. The bulk of other migrants came from different parts of the country as well as from different districts of West Bengal State. More than three-fourths of the migrants came to the city from the rural areas. Migrants to the city belonged mainly to the age groups which would be characterised as young adults and middle aged. Sex ratio increased with the increase in age of the migrants till boys and then slid down in the scale (Table 5)²⁴.

Table 4 : Distribution of Migrants in the city by age and sex.

Age group	Male	Female	Sex ratio (Males per 1000 Femals)
0 - 14	12.22	18.79	1460
15 - 34	49.94	45.54	2460
35 - 59	39.38	29.29	2630
60 plus all ages.	100.00	100.00	2240

24. Chakraborty, K.R. : A study of the life time Migration to Calcutta city (Monograph) In Indian Census Century Seminar 1972. pp. 10.

The same source also reveals that most of the migrants had higher educational attainments than the autochthones in all the categories except the literate and illiterate groups. Males and females had almost similar distributions in this regard. Whereas in occupations the migrants were found mainly in category called "Services", followed by Categories termed as "Trade and Commerce", "Manufacturing" and "Transport" in that order. Percentage distribution of migrants males according to industrial groupings was as follows : Cultivation (0.02), Agri labour (0.29), Mining etc. (0.85), Household industry and Manufacture (24.99), Construction (3.44), Trade and Commerce (25.13), Transport and Communication (12.48) and Service (32.80).²⁵

Development of Calcutta City

The urban polarisation in the city emanated from two growth poles viz. "Bazar Kalikata" (present Burabazar area) and Fort area (the white town). Of all the three villages Kalikata

(both bazar and town area) experienced the heaviest burden of immigration and the land use pattern was, therefore, most urbanised at that point. The area underwent gradual change in terms of land use and non-agricultural activities. The areal equilibrium of the city developed upon the optimality in terms of transport input and market input²⁶. Calcutta's inland transport optimality for the period was developed through numerous land routes and river transports. It completed the interlinking of productive and distributive centres within its command, spread all over Bengal and outside and it also developed the commercial potentiality of these territorial points. Before the emergence of the centre of gravity of in the region of Calcutta several territorial points were alive as independent service centres. The presence of living hinterland i.e. an economic space with scattered territorial productive centres began to operate in a net work system with the emergence of Calcutta. Calcutta's territorial advantage in servicing international and internal trade is its serviceability as a distributing centre and this very scope reached its peak in the middle of eighteenth century.

26. Ghosh, M., Dutt, N.K., Roy, B. Calcutta - A study on urban growth dynamics. Calcutta, K.L.Mukhopadhyay, 1971 pp.

Influence of the core region on the development of satellite towns in its surrounding regions :

Because of the great influence of city and also of the constant interaction between the core region and its hinterland it is expected that there will be uniform development of urban places in the surrounding areas of the city. It is further envisaged that such developments of urban places are dependent on the distance factor i.e. greater is the distance from the city lesser will be the number of urban centres in that area.

In order to test the first hypothesis, the urban units are arranged around Calcutta into four sectors (Table 5).

Table 5 : Distribution of urban centres in different sectors.

Sectors	Observed urban units	Expected urban units
North East	41	26.25
North West	23	26.25
South East	12	26.25
South West	29	26.25
	3 d.f.	16.38

It is evident from the above that 64 (60.95%) of the total urban units are located in the northern half of the area

under consideration. Almost all the big industries and factories are located on both the sides of the river Hooghly in the northern direction. Though it is not denying that there are important industries as well as factories in the southern part as well but their number are not statistically significant is borne out by the chi square test. Assuming that there is no physical constraint in the uniform development of urban centres all around the core region, it is envisaged that there will be equal number of urban centres in all the sectors. So when these numbers are compared with the observed numbers and the chi square value is worked out, it is observed the χ value (16.38) for 3 d.f. even at one percent level is statistically significant which means, therefore, that the hypothesis of uniform development of urban centres in all the sectors is not tenable. Rather as the figures suggest that there is a marked tendency for the urban centres to develop the northern direction mostly along the banks of river Hooghly on either side. The least concentration of urban centres is in the South Eastern sector. Except Budge Budge, Batanagar, Birlapur other urban units in this sector are not worth the name. They are mostly smaller in size and non-industrial in character.

Whereas, to test the other hypothesis it is necessary that the observed numbers on each concentric zones need to be compared with the expected numbers as in Table 6.

Table 6 : Distribution of urban centres in concentric zones at varying distance.

Distance zone	Observed no. of urban units in each concentric zone.	Expected number of urban units in each concentric zones.
Less than 3 miles	15	9.54
3 - 6 miles	11	9.54
6 - 9 miles	14	9.54
9 - 12 miles	14	9.54
12 - 15 miles	11	9.54
15 - 18 miles	10	9.54
18 - 21 miles	7	9.54
21 - 24 miles	5	9.54
24 - 27 miles	5	9.54
27 - 30 miles	8	9.54
30 - 32 miles	5	9.54
Total :	105	105

10 d.f. χ^2 = 15.15

The above table reveals that 75 i.e.71.42 percent of the total urban units under consideration are located upto a distance zone of 18 miles and that there is tendency of declining

numbers with the increasing distance. The fact is also statistically valid. For instance the chisquare value works out to be 15.15 which is lower than the tabulated value at 1, 2, 5 and 10 percent level for 10 d.f. The value is, therefore, not statistically significant. Hence the hypothesis that the development of urban places is dependent on the distance factor is validated.

28. The Chisquare is a statistical technique used for analysing the bivariate relationship. It is given by the formula

$$\chi^2 = \sum_{i=1}^k \left[\frac{(O_i - E_i)^2}{E_i} \right]$$

Where O_i and E_i , are observed and expected frequencies respectively of the i class. The distribution varies $(n - 1)$ which is called the degree of freedom. For different degrees of freedom and for different levels of significance chisquare values are provided in a worked out table. If any value of chisquare works out to be greater than the Tables values at different levels of significance the value is then considered as statistically significant. Since the chisquare test is applied on the basis of Null hypothesis, it is, therefore, in such cases the hypothesis are considered untenable or rejected.

Aslam Mahmood : Statistical Methods in Geographical Studies. New Delhi 1977, pp. 58.

CHAPTER IV

ANALYSIS ON THE BASIS OF SELECTED DEMOGRAPHIC
VARIABLES : CONCENTRIC CIRCLE AND SECTORWISE.

GROWTH OF POPULATION IN URBAN AND RURAL CONCENTRIC
ZONES AND URBAN SECTORS :

The area under consideration (i.e. upto a radius of thirty-two miles) comprises roughly the Calcutta metropolitan area minus a few urban centres constituted by the administrative division. Hence for all practical purpose, the present area is comparable with the Calcutta metropolitan area. Moreover, this area includes the urban agglomeration of Calcutta as well. This agglomeration includes in its fold seventyfive urban units and forms a solid stretch of urban area on both sides of the river Hooghly in the north, west and south-west directions. Other urban centres are, however, scattered along the main transport lines (which will be discussed separately in the following Chapters) in midst of the surrounding rural areas. All these areas are dependent on the core region, however, at varying degree and intensity.

The whole area comprises nearly about seven thousand five hundred square kilometers and contains roughly 1.3 core population. Of which again the bulk (i.e. 58%) is contributed by the urban population. The overall population density works out to

be 1737 persons per km. ; the urban being 10,055 persons per km. and rural 826 persons per kilometer.

Table 7 : Density of Population per sq.km. and percentage of urban and rural total population.

	<u>Area in sq.km.</u>	<u>Population</u>	<u>Density per sq. km.</u>	<u>Percentage to total population.</u>
URBAN	736.58	7406664	10,055	57.94
RURAL	6721.80	5549942	826	42.06
TOTAL	7458.38	12783447	1,737	100.00

Calcutta city comprises roughly 14% of the total urban area but about 43% of the total urban population of the area under consideration. It means, therefore, that roughly half of the total urban population is represented by the core region alone. Consequently, therefore, for such a small area of the core region, the density of population works out to be tremendously high which is over thirty thousand per sq.km.

During the decade (1961-71), the population growth in urban and rural areas in different concentric zone of three miles radius showed increase in all the zones as follows :

Table 8 : Decimal percentage increase of population (urban and rural areas) in different concentric zones.

Zones	Percentage variation of urban population.	Percentage variation of rural population.
Core region	◊ 7.57	-
Upto 3 miles	◊ 31.68	-
3 - 6 miles	◊ 39.53	◊ 108.41
6 - 9 miles	◊ 65.37	◊ 31.09
9 - 12 miles	◊ 49.96	◊ 28.30
12 - 15 miles	◊ 41.83	◊ 33.78
15 - 18 miles	◊ 12.67	◊ 27.76
18 - 21 miles	◊ 4.76	◊ 24.78
21-24 miles	◊ 90.66	◊ 27.03
24 - 27 miles	◊ 40.59	◊ 24.37
27 - 30 miles	◊ 35.84	◊ 28.10
30 - 32 miles	◊ 25.00	◊ 24.41

It is evident from Table 10 that in most of the concentric zones (except π 3 - 6 miles, 15 - 18 miles and 18 - 21 miles), the growth of urban population is greater than the growth of rural population. Lowest urban population growth is evidenced in the 18 - 21 miles zone. This zone contains towns such as Budge Budge,

Birlapur, Batanagar, Champdani, Bhadreshoar etc. etc. which appear to be saturated in respect of population. Moreover, this zone over the decade has lost about 9 sq. km. of urban area than what it was in the previous centres (i.e. 1951) due to reclassification of urban places on the basis of stricter urban definition. This zone is followed by concentric zone 15 - 18 miles and zone limited by 32 miles. The former zone comprises almost all the old towns characterised by Military establishments such as North Barrackpur, Barrackpur Cantonment, Bawria Fort Gloster etc. etc. which have, therefore, limited scope for expansion both from the points of population as well as area. In fact over the decade because of the reclassification of urban centres the zone has lost over eleven miles of urban areas. On the otherhand the concentric zone 30 - 32 miles contains towns such as Bansberia, Kanchrapara, Halisahar, Diamond Harbour, Jaynagar, Muzilpur etc. etc. which are mostly residential towns and have not practically witnessed any industrial development during the last decade. Hence the population has not grown much in this zone.

The same table reveals that highest urban population growth is evident in the concentric zone 21 - 24 miles which has of late included new urban places in its fold such as Uttar Raypur, Guradah etc. etc. and hence rise in urban population.

This is followed by 6 - 9 miles, 9 - 12 miles, 12 - 15 miles, 24 - 27 miles and 6 - 9 miles concentric zone. Not only these zones have important industrial towns but also over the decade included many new urban centres. Consequently, thereafter, with the increase in number of urban units vis-a-vis urban areas and also with the increased tempo of development in the existing urban centres, the areas recorded higher growth of urban population. From the analysis it appears, therefore, that upto 15 miles distance from Calcutta, the urban population has maintained increase in urban population more or less in the same proportion. It is followed by a zone of low to very low increase in urban population and then again followed by zones of high urban population growth over the decade. Thus, it is evident that there are two zones of high urban population growth with a buffer zone in between. It is, however, to be noted that such phenomenon is valid only if the change in population in urban places (over the decade 1961-671) is taken into account without considering the changes in the urban areas in different concentric zones. Although only about 7 km. has been added to total urban areas in 1971 since the previous census, there is, however, a lot of adjustments in the areas of the urban places within the concentric zones. Hence the low growths in concentric zones 15 - 18 miles and 18 - 21 miles do not, therefore, reveal the actual picture. Infact there are due to reclassification of urban places according to stricter criteria of 1971 census. Many

areas in these concentric zones which have been declared urban in 1961 have been stripped of that status in 1971 census. Accordingly, therefore, the base (urban population of 1961) has become broad and the growth over the decade appears to be low. But when the adjustments of the base accordingly to 1971 areas is made, the growth registers an increase in these zones as well.

It may, therefore, be pointed out here that only the core region (city) has registered actually a low growth of urban population over the decade. While the low to high growths registered in other concentric zones are due to ~~the~~ either accretion or depreciation of urban areas in the main.

As regards growth of urban population in the concentric zones the most salient feature is the greater increase in female population in all the concentric zones except zones marked by 15 - 18 miles, 18 - 21 miles and 27 - 30 miles distances. Hence, it may be concluded that increasing growth in urban population in different concentric zones has been contributed mainly by the female population while rest of the concentric zones are more masculine in nature. Perhaps these zones represent the areas of the recent migrants.

Further, it is interesting to note that the growth of

urban population has definite pattern. This is evident if the whole area is divided into four sectors viz., North East, South East, North West and South West as in Table 9.

Table 9 : Percentage variation of population (urban) by sex (1961 - 1971).

	Persons	Male	Female
South West	♦ 28.82	♦ 24.14	♦ 35.07
South East	♦ 92.77	♦ 107.34	♦ 76.04
Core region	♦ 7.57	♦ 5.99	♦ 10.14
North West	♦ 29.03	♦ 21.89	♦ 40.46
North East	♦ 37.06	♦ 35.25	♦ 39.41

The ~~xxx~~ table ~~xxxx~~ 9 reveals that the growth of urban population has been confined to the eastern parts of the area under consideration. It is highest in the South Eastern Sector which of late included several units which were hitherto rural in nature. Moreover this sector contains urban units which are mostly non-industrial in nature. Infact these places are providing

shelter to a good number of persons who are dependent on Calcutta city for their livelihood. This is further evident that unlike concentric zones, the growth of urban population in the South Eastern Sector is contributed mainly by the male population. In all other sectors, on the other hand, the growth is due to increase in the female population. Most of the towns in the South Western, North Eastern and North Western are old towns and are characterised by manufacturing activities. These places at the beginning drew males (in the form of migrants) in large numbers but with the passage of time they are becoming gradually settled in nature with the absorption of more female population than the males.

When the share of urban population is viewed sectorwise it is observed that the share increased in all the sectors at the expense of the core region i.e., Calcutta City. However, the highest increase in the share is seen in the North Eastern Sector followed by the South Eastern. In other words, the eastern sectors together received about three fourths of the increase in the share of urban population of all the sectors over the decade.

Table 10: Share of urban population in different sectors over the decade (1961-71).

Sectors	1961	1971	Difference
South West	10.51	11.12	◊ 0.61
South East	2.04	3.23	◊ 1.19

Calcutta	48.14	42.51	+ 5.63
North West	16.60	17.58	+ 0.98
North East	22.71	25.56	+ 2.85
All Sectors	100.00	100.00	0

As regards the growth of rural population in different concentric zones, it is apparent that the growth is highest in the immediate zones (Table 13). The decadal growth of rural population, although not of the same magnitudes as that of the first concentric zone of rural area (i.e. 3 - 6 miles), however, maintains a high trend upto the distance zone of fifteen miles from the city. Thereafter, the rates of growth has fallen considerably. From the comparison of the growth rates of population in both urban and rural areas, it is clear that the zone upto the distance of 15 miles from the core is exhibiting similar trends i.e., high growth rates of population. It appears that the rural places within fifteen miles radius around Calcutta are attracting more people due to the proximity of those places from Calcutta. Moreover, the immediate neighbouring rural areas and Calcutta which form the part of suburbia contain a good number of urban spill over population as well as the refugees from Bangladesh (erstwhile East Pakistan). It is, therefore, also indicative that the influences of the core region is felt maximum upto this distance zone.

**DENSITY OF POPULATION IN URBAN CONCENTRIC ZONES AND SECTORS,
AND RURAL CONCENTRIC ZONES :**

Population concentration in an area itself is an indicator. Because beyond certain level it fails to sustain population at subsistence level by tilling land alone, and therefore, such population in order to maintain its existence switches over to other vocations. So it is necessary that one should examine concentration pattern of population in the urban and rural concentric zones as well as in the urban sectors so as to form an idea how different zones behave in this regard and what is the influence of the Calcutta city and how far the influence is significant.

**Table 11 : DENSITY OF POPULATION PER SQ.KM. IN
RURAL AND URBAN CONCENTRIC ZONES.**

ZONES	DENSITY OF URBAN POPULATION	DENSITY OF RURAL POPULATION.	DENSITY OF TOTAL
Core	30276	-	-
0 - 3 miles	9744	-	9744
3 - 6 miles	6654	1578	3437
6 - 9 miles	5755	1550	3026
9 - 12 miles	6474	956	1661
12 - 15 miles	6081	943	1564

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15 - 18 miles	5935	952	1242
18 - 21 miles	5516	822	1021
21 - 24 miles	2931	806	867
24 - 27 miles	2276	798	907
27 - 30 miles	4988	840	1053
30 - 32	5399	667	903
All zones	10055	826	1737

The above Table reveals that the density of population per sq. km. in urban zones shows some interesting trends. It is highest (30,276 per sq.km.) in the core i.e. Calcutta city and then decreases with the distance upto 27 miles from the core and thereafter records rise again. More precisely, it may be mentioned that there are some certain break points. For instance upto the zone 6 - 9 miles the fall in density is quite regular and then it rises in the concentric zone 9 - 12 miles and then it slides down again and reaches the lowest limit in the concentric zone 24 - 27 miles. Beyond 3 miles limit excepting (eg. Panchur, Podera) a few most of the towns such as Bankura, Krishnagar, Mukhia, Chakpara smaller size classes of towns and have been declared urban recently. However, these towns form the suburbia of the core regions and

are mostly non-manufacturing in character. While towns beyond this distance zone are either manufacturing or residential in character, therefore, may reveal higher concentration of population. Within these distance zones towns such as Titagarh, Konnagar, Khardah, Rishra, Serampore, Batanagar, Birlapur, Ichapur Defence Colony, Budge Budge etc. appear which are usually of bigger sizes and are mostly manufacturing in nature. The zone which falls between the distance zone 24-27 on the other hand includes such towns as Haripal, Madilfingipura, Naryanpur which were big villages even in the census of 1961 hence they have density which is comparable with the rural concentration. Beyond 27 miles distance again there appear big and old towns such as Naihati, Chandannagore, Habra, Canning, Bansheria, Kanchopara, Diamond Harbour which are either manufacturing or residential in character and, therefore, register higher population concentration. It is thus evident from the above analysis that there are clearly two break points one in the concentric zone limited by 6 - 9 miles and the other in 24 - 27 miles and both these zones include urban centres which have been declared so only in the last census i.e. 1971.

The same Table (11) reveals on the other hand that the density of population in rural areas records steady fall with the increasing distance from the core region. Unlike

the urban areas the density pattern in the rural concentric zones registers only one break point. It appears, therefore, that the influence of Calcutta city gets reduced in respect of population concentration in the rural areas with the increasing distance. It is also interesting to note that the density of urban population in all the concentric zones except the core is below the overall density of the urban areas while in rural areas, the concentration of population except the concentric zones 24 - 27 miles and 30 - 32 miles is higher than the overall density of the rural areas. One may, therefore, conclude that upto 9 miles distance in rural areas, the city weilds appreciable influence in the form of providing urban spill over in those areas. Thereafter, ^{it} continues but with lesser intensity upto 21 miles and beyond this limit there emerges another pattern. May be in the development of this pattern, the influence other urban centres is greater than the core region.

The concentration of population in different sectors presents an interesting pattern.

Table 12 : Sectorwise distribution of population density per sq. km. as per 1971 data.

SECTOR	Area in sq.km.	Population	Density per sq.km.
North East	265.09	1915065	7224
North West	117.19	1302289	11113
Calcutta City	104.00	3148746	30276
South East	116.94	217135	3516
South West	133.36	823429	6174
All Sectors	736.58	7403664	10055

The Table 12 shows that the North East, North West, and South West Sectors apart from the core region are thickly inhabited. It is further evident that barring Calcutta City, highest concentration is in North West and lowest in the South East sector. Whereas the other two sectors represent more or less similar characteristics in this regard. Thus it may be inferred that the Sectors North East and South West represent the transition or intermediate phase between highest and lowest density areas around the core region. The fact finds support if one examines the distribution of industries (mills, factories etc.) and transport networks (rail, road, navigable rivers etc.). The main concentration of industries and transport

networks are in the Eastern and Western banks of the river Hooghly, and the bulk of which falls in the North Eastern sector. The remaining is in the North Western and South Western sectors while there is practically ~~none~~ none in the South Eastern sector. In respect of transport networks the North Eastern and North Western sectors are well provided with both main and suburban railways, National and State High ways and feed roads. (Detail discussion of these in the form of corridors will be made in the next Chapter). The South Eastern sector is least provided with rail and road networks. Moreover, this part of the area locatioally from the geographical point of view is in disadvantageous position because of the presence of ^{numerous} ~~innumerable~~ creeks and crevices.

SEX RATIO IN URBAN AND RURAL POPULATION IN CONCENTRIC ZONES AND URBAN SECTOR :

It is well established fact that more a place is urbanised or industrialised it exhibits darth of females in the population. The reverse is true for the moral areas. It is therefore, necessary that the sex ratios of the urban and rural areas of different distance zones need to be examined.

Table 13 : SEX RATIO OF POPULATION IN URBAN AND RURAL CONCENTRIC ZONES.

ZONES	Sex ratio in urban concentric zones.	Sex ratio in rural concentric zones.	Sex ratio in the total area
Core	636	-	636
Upto 3 miles	747	-	747
3 - 6 miles	759	861	787
6 - 9 miles	821	886	842
9 - 12 miles	746	917	828
12 - 15 miles	790	918	855
15 - 18 miles	750	907	862
18 - 21 miles	678	991	908
21 - 24 miles	787	986	467
24 - 27 miles	882	929	931
27 - 30 miles	857	908	895
30 - 32 miles	767	941	883

From the above Table 13, it transpires that the sex ratio of the urban population exhibits an interesting pattern. Calcutta's sex ratio is the lowest. It then increases and reaches a high value of 821 in the distance zone limited by 9 miles radius. Thereafter the sex ratio falls and records the lowest

value in concentric zone of 18 - 21 miles. The sex ratio then again increases in the following concentric zones. As is expected upto 6 miles distance from the core region the sex ratio is quite low. These are the areas which inhabit the urban spill over which is characterised by excess of males in the population while the distance zone between 6 - 9 miles represent the settled suburbia of the core region and, therefore, presents better balance of the sexes in the population. The distance zone between 9 to 24 miles on the other hand includes mostly the industrial towns which attract migrant male labourers from within and outside the State. Hence this area is characterised by smaller number of females per ~~unemployed~~ males in the population. Beyond this area the towns are mainly settled in nature and includes many places which ~~have~~ have been declared urban only in the last census. Hence this area presents more or less a high sex ratio.

When the rural sex ratios are examined from the same table it is apparent that upto a distance of 9 miles the sex ratio is appreciably low. Because these rural areas accommodate commuters who are mainly dependent on the core region for their livelihood but find it difficult to get accommodation in the neighbouring urban areas due to high cost of living. Beyond this distance zone the sex ratio is quite high and shows a tendency to rise with increasing distance from the core region.

The analysis, therefore, reveals the fact that the influence of core region is evident more in the neighbouring urban and rural areas than the distant places. In other words it means that the distance has a positive bearing on the shaping of the population structure of region. It appears plausible that the neighbouring areas (especially the rural areas) around Calcutta are the abode of the migrants who are more selective in respect of male sex.

Sex ratios when viewed in different urban sectors also corroborate the fact they are dependent on the nature of the development of the area and their connections with core region. It is, therefore, quite low in the North Eastern and North Western sectors and highest in the South Eastern Sector. The first two sectors are well provided with transport networks and have most of the urban centres characterised by the manufacturing activities while the last mentioned sector is not so well provided with transport networks nor is there any industrial town. The South West Sector presents a sex ratio which is intermediate between the two extremes.

In the preceding pages the characteristics of the sex ratio in the general population was discussed in respect of rural and urban areas. In terms of sex ratio importance of such discussion though revealing in many aspects has, however, limited

significance. It is, therefore, proposed to examine sex ratios in other population segments such as scheduled Caste, scheduled Tribe, literate section of the general population and workers among the general population in the following pages.

Table 14 : Sex ratios among Scheduled Caste, Scheduled Tribe, literate and workers among the general population in Rural and Urban by concentric zones.

ZONES	Sch. Caste		Sche. Tribe		Literates		Workers	
	U	R	U	R	U	R	U	R
Calcutta	507	-	328	-	540	-	63	-
Upto 2 miles	766	-	702	-	580	-	42	-
3-6 miles	832	538	933	1260	580	549	63	61
6-9 miles	852	837	860	1023	717	510	55	35
9-12 miles	691	938	637	836	545	479	46	28
12-15 miles	755	984	675	991	601	447	47	27
15-18 miles	780	956	718	911	561	390	38	33
18-21 miles	669	941	790	947	468	394	41	28
21-24 miles	769	968	670	869	497	361	41	23
24-27 miles	918	843	1024	848	395	401	66	19
27-30 miles	864	890	801	940	666	369	55	23
30-32 miles	795	861	752	924	546	419	58	23

In the urban concentric zones, the population of females per 1000 males is lowest in the core region whereas concentric zones 9 - 12, 12 - 15 upto 3 miles, 21 - 24 miles, 15 - 18 miles, and 30 - 32 miles are characterised by low sex ratios. Among these concentric zones again 10 - 21 miles, and 9 - 12 miles are pronounced in having lower population of females in population than the populations in other concentric zones. All these zones represent the industrial concentration of the area under consideration. In respect of the sex ratio among the Scheduled Caste population, the ratio is low upto 6 miles distance from Calcutta and , thereafter, the value rises in the following concentric zones. However, comparatively, the greater proportion of females per 1000 males is limited in the area bounded by 9 - 24 miles radii. Proportion of females per 1000 males among the Scheduled Tribe population presents almost similar picture as that of the Scheduled Caste population. However, one salient feature of the Scheduled Tribe population in respect of the sex ratio is that there is excess of females among the Scheduled Tribe population in the distance zone which form the neighbouring regions of the Core region i.e., upto the distance of 9 miles.

As regards distribution of the proportion of females per 1000 literate male population, it is evident that upto the distance zone of 18 miles from the city and again in the

concentric zone 27 - 30 miles, the population is literate in both the rural and urban areas. It means, therefore, that the proportion of female 'literates' decreases with the increasing distance from Core region, and it is dependent upon the influence of the metropolis as well as the neighbouring urban areas.

The proportion of females workers per 1000 males workers on the other hand reveals interesting feature. The distance zone marked by 9 - 24 miles in urban centres is an area of low participation for females while the distance zones upto 9 miles from Calcutta city and beyond 24 miles from the Core region is an area of high female participation in the working force of the region whereas in the rural areas, the high participation area is marked by the distance zone upto 9 miles from the Core region. The remaining areas are characterised by the low participation of females per 1000 male workers. In respect of workers two, the sex ratio decreases with the increasing distance from the Calcutta city. It is, therefore, apparent that the influence of the city has definite bearing on the making of sex ratios in different segments of the population in and around the Core region.

LITERATE POPULATION IN DIFFERENT URBAN AND RURAL
CONCENTRIC ZONES AS WELL AS URBAN SECTORS :

The proportion of literates in the total population

of the area and the proportion of male and female literates to the total population are good indicators. It is, therefore, necessary that those indicators need to be examined for the purpose of determining the influence of Calcutta city on rural and urban areas at different distance gradient.

Table 15 : Percentage of literates to total population in urban and rural areas by distance zones.

Zones	URBAN	RURAL
Calcutta	60.32	-
- 3 miles	58.46	-
3 - 6 miles	54.17	43.47
6 - 9 miles	64.55	39.80
9 - 12 miles	53.30	29.30
12 - 15 miles	57.75	35.75
15 - 18 miles	49.76	31.76
18 - 21 miles	45.19	29.16
21 - 24 miles	41.82	28.20
24 - 27 miles	58.72	28.07
27 - 30 miles	55.98	27.04
30 - 32 miles	52.41	23.75
All zones	58.08	29.75

The above Table (15) reveals that the zone upto 15 miles from Calcutta both rural and urban areas is characterised by comparatively higher proportion of literates. The urban zone between 15 - 24 miles is a zone of low literacy between two zones of high literacy i.e. 0 - 15 miles and 24 - 32 miles. In the rural areas on the other hand, the proportion of literates decreases both the increasing distance from the Core region. Thus, it is evident that there is marked difference in the pattern of literates in rural and urban areas around Calcutta. There is clear break points in the distribution of literates in the urban concentric zones while there is no such break point in the distribution of literates in the population in the rural areas. In the urban areas between two humps there is a crest while in the rural areas there is a gradual sloping trend with the increasing distance from Calcutta.

Percentage of literates in different sectors on the other hand present an interesting picture. Except South East sector all other sectors represent more or less similar trend. The Core region and the South Eastern sector are unique in having higher percentage of literates in the population. In fact the urban area of the South Eastern Sector has the highest percentage of literates i.e. 62.48% among the sectors under

examination. It may be said, however, that the sectors North Eastern and South Eastern which form the Eastern half of the area under examination, is more represented by literates in the population than the other half. But higher representation of female literates is seen in the South Western and South Eastern Sectors i.e. the Southern half of the area under consideration. The sex ratios of literates in the South Western and South Eastern sectors are 675 and 688 respectively.

Percentage of male literates to total male population and female literates to total female population in urban and rural concentric zones give more information in this regard.

Table 16 : Percentage of male and female literates to total population in the Rural and Urban concentric zones.

Zone	Percentage of male literates to total population		Percentage of female literates to total population.	
	URBAN	RURAL	URBAN	RURAL
Calcutta	64.08	-	54.40	-
Upto 3 miles	64.64	-	50.20	-
3-6 miles	60.28	52.25	46.12	33.28
6-9 miles	68.45	49.71	59.79	28.62

9-12 miles	60.21	43.02	44.05	22.45
12-15 miles	64.57	45.79	49.13	24.81
15-18 miles	55.86	41.86	41.55	20.63
18-21 miles	51.64	41.77	35.66	16.44
21-24 miles	49.92	40.18	31.54	16.06
24-27 miles	66.85	39.99	49.62	15.37
27-30 miles	62.39	36.81	48.49	16.27
30-32 miles	59.89	33.63	42.67	13.21

Both in respect of male and female literates in urban & areas, the concentric zone 6 - 9 miles records highest incidences. In fact upto 15 miles distance from the core region the percentage of male to total male population is appreciably high and the same trend is evident again beyond 24 miles range. In respect of females two similar trend is evident. Thus it may be ~~concluded~~ concluded that the literates in rural and urban areas have almost the same trend, and have an area of low literacy (i.e. 18-24 miles) between two areas of high literacy viz. 15 miles and 24 - 32 miles distance from the city. There is no buffer zone between two zones of higher concentration of literates among male and female population in the rural areas. In fact the trend is that of decreasing percentage of literates both

the increasing distance from the core region, in the rural areas. It means, therefore, that the percentage of literates among both the sexes decreases with the decreasing influence of the Calcutta city which is, however, not valid for the urban zones.

ECONOMIC ACTIVITIES IN THE URBAN AND RURAL CONCENTRIC ZONES AND URBAN SECTORS :

Participation in agricultural or non-agricultural activities is an indicator for deciding whether a place is a rural or urban. The hypothesis is here that more the areas are nearer the core region, the economic activities will be more and more non-agricultural in nature, and as the distance increases the agricultural activities will tend to rise. Moreover, this will be more accentuated in the rural concentric zones than in the urban zones.

With this background in mind when the overall picture in respect of economic activities is viewed as in Table , is evident that there is marked distinction between rural and urban in respect of the distribution of economically active populations in Primary, Secondary and Tertiary Sectors.

Table 17 : Distribution of workers in different sectors
of ECONOMIC ACTIVITIES IN RURAL AND URBAN AREAS.

	PRIMARY			SECONDARY			TERTIARY		
	P	M	F	P	M	F	P	M	F
URBAN	2.31	2.36	1.50	40.18	41.29	19.98	57.51	56.35	78.52
RURAL	70.37	70.75	55.57	15.32	15.30	15.91	14.31	13.95	28.52
TOTAL:	26.91	27.53	13.14	31.19	31.73	19.11	41.90	40.74	67.75

While the Primary Sector in urban area constitutes 2.3 percentage only, it is over 97 percent in Secondary and Tertiary Sectors of economic activities taken together. The corresponding figures for the rural areas are on the other hand, 70 and 30 percent respectively. Moreover, in the urban areas, the participation of males and females is of similar nature i.e. maximum participation in the non-agricultural pursuits whereas in the rural areas the pattern is somewhat different for the sexes. Males in overwhelming majority are engaged in Agricultural activities while the participation of females are more or less evenly balanced in agricultural as well as non-agricultural activities. Although the balance is slightly tilted in favour of the former activities with the above information in mind let us now examine the hypothesis as described earlier.

Table 18 : PERCENTAGE DISTRIBUTION OF WORKERS
IN DIFFERENT SECTORS OF EXH ECONOMIC
ACTIVITIES BY URBAN AND RURAL CONCENTRIC
ZONES.

ZONE	PRIMARY		SECONDARY		TERTIARY	
	U.	R.	U.	R.	U.	R.
Calcutta	0.49	-	30.20	-	69.68	-
Upto 3 miles	2.49	-	44.17	-	53.34	-
3-6 miles	3.46	45.70	59.20	26.79	36.84	27.51
6-9 miles	4.12	45.89	43.18	31.00	42.70	23.11
9-12 miles	4.20	61.49	64.18	24.42	41.60	14.09
12-15 miles	4.96	57.63	48.12	26.05	46.92	16.31
15-18 miles	4.72	59.60	63.98	25.16	31.30	15.34
18-21 miles	3.59	57.16	69.99	21.68	26.42	21.16
21-24 miles	10.17	81.84	63.28	10.47	26.55	7.21
24-27 miles	7.98	84.93	30.87	8.42	61.15	6.62
27-30 miles	7.31	75.67	40.18	7.40	50.76	16.92
30-32 miles	5.36	87.22	41.93	5.84	40.57	14.45

From the Table 18 it is seen that in the urban concentric zones, the percentage of workers in the Primary Sector increases with the increasing distance from Calcutta city. The

reverse is true for the workers in the Tertiary Sector of economic Activities. However, workers in the Secondary Sector show a peculiar trend. It is increasing upto 21 miles from the core region and falls beyond this distance range.

The percentage of workers in different sectors in the rural concentric zones reveals that it is low upto a distance zone of 9 miles from the core region. It is moderately high between the distance zone (12 - 21 miles) and beyond this the percentage of workers is quite high. The percentage of workers in Secondary Sector is pretty high upto 21 miles from Calcutta and then it is low and declining in the subsequent zones. In respect of workers in the Tertiary Sector, the pattern is somewhat interesting. The percentage of workers in Tertiary Sector is quite high upto 9 miles distance from Calcutta, it is moderately high in the areas between 9 - 16 miles. Beyond this distance limit the percentage of workers in the Tertiary Sector shorts up again in 15 - 18 miles zone. Thereafter it becomes very low upto the distance zone limited by 27 miles.

The above pattern of the participation of workers in different concentric zones in urban and rural areas clearly support the hypothesis as mentioned at the out set of this

discussion. That is, in the urban areas the economic activities (viz. Secondary and Tertiary) declines more and more with the increasing distance from the city while the rural functions in this respect rises more and more as the rural areas tend to approach the core region. Or in other words the influence of the core region is responsible for the shaping of such pattern.

The percentage of workers in different urban sectors (i.e. North West, North East, South West and South East) give again a similar picture as has been discerned with the help of percentage of literates in population. South Eastern Sector is marked by highest percentage of workers in Primary Sector of Economic activities while other sectors present more or less similar distribution. High percentage of workers in Secondary Sector is evident in North East, South Western Sectors which are having urban centres mainly manufacturing in function while lowest percentage of workers is seen in the North Eastern Sector which has towns such as Baruipur, Jaynagar, Diamond Harbour or the Southern suburbs of Calcutta which are predominantly urban centres having functions of the tertiary sector of Economic activities. All

other sectors in respect of tertiary sector of economic activities show equal distribution of workers.

Thus, it is born out from the above analysis that the pattern of the distribution of workers in different sectors of economic activities in areas around the core region reveal that except South Eastern sector all other are urbanised in nature. The South Eastern sector on the other hand has the highest literacy figure and this sector of population because of higher educational achievements are mostly engaged in economic pursuits (mainly service function which ~~have~~ belong to the Tertiary sector of economic activities and ~~have~~ hence are dependent on Calcutta city.

PROPORTION OF WORKERS IN SECONDARY AND TERTIARY SECTORS TO PRIMARY SECTOR :

This index is a good indicator for appreciating the stages of urban development in respect of workers in different economic activities viz. agriculture and non-agriculture. It is assumed ~~that~~ if the proportion of workers in PRIMARY to Secondary and Tertiary sectors together stands at one, it gives the cutting point between rural and urban position. If on the other hand the index is above one, it is

clear indicative of the Rural activities while below one is an indication of urban state of affair.

Table 19 : Porportion of Ba workers in Primary Sector to Secondary plus Tertiary Sectors of Economic activities in urban and Rural concentric zones.

ZONE	U R B A N			R U R A L		
	P	M	F	P	M	F
Calcutta	0.004			-	-	-
Upto 3 miles	0.025			-	-	-
3-6 miles	0.041			0.85	0.85	0.77
6-9 miles	0.042			0.85	0.85	0.80
9-12 miles	0.045			1.60	1.61	1.38
12-15 miles	0.052			1.36	1.38	0.84
15-18 miles	0.049			1.47	1.54	0.37
18-21 miles	0.137			1.33	1.36	0.73
21-24 miles	0.113			4.63	4.82	1.34
24-27 miles	0.088			5.42	5.69	4.07
27-30 miles	0.078			2.11	3.14	2.26
30-32 miles	0.056			4.30	3.91	5.40
All zones	0.23			2.38	2.42	1.25

In the urban concentric zones the proportion is far below 1 and this is very low upto the distance zone of 21 miles from Core region. This is obvious because almost all the important and industrial towns are situated within this distance range. The proportion though below one but comparatively high in the distance zone between 21 - 30 miles. Here we have towns which have a good primary economic activities as well. For instance, we may cite the examples of Baruipur, Jaynagar, Canning etc. etc.

In respect of different sexes as well the pattern is more or less of similar nature.

However, this ratio has an interesting pattern in the rural concentric zones. The zone marked upto 9 miles. ~~XXXXXXXXXX~~ from the Core region has a ratio which is below one, while it is above one but below 2 in the distance zone lying between 9 - 21 miles, and beyond ~~this~~ this limit the ratio shorts up for above the cutting point i.e. one. It means, therefore, that the distance zone upto 9 miles though rural has pronounced urban characteristics in respect of economic activities. The remaining rural areas beyond this limit is clearly rural in respect of economic activities, and this character gets pronounced with the increasing distance from the Calcutta city. Hence the whole rural area around Calcutta on the basis of the

ratio and distance factor can be divided into three stages of development viz. (1) The rural areas immediately around Calcutta show pronounced urban characteristics in respect of Economic activities, (2) the areas beyond this limit has urban activities and (3) the areas beyond 21 miles range has practically no urban features in respect of the economic activities.

Sex-wise the ratio in rural areas presents further interesting facts. The males in this respect compare well with the ratio given by the general population. The female ratio on the other hand suggests that upto a distance of 21 miles from Calcutta city, the females are engaged more in urban economic activities than the rural ones. Beyond which, however, the females are more engaged economic activities which are classified under Primary Sector (more precisely Agriculture).

SCHEDULED CASTE AND SCHEDULED TRIBE POPULATION IN DIFFERENT URBAN AND RURAL CONCENTRIC ZONES ; AND URBAN SECTORS :

Although the percentage of scheduled caste/scheduled tribe has no bearing on the determination of the influence of Calcutta city, however, the distributions of these two segments

of population provide certain trends which are of some importance in understanding the interaction pattern between the Core region and its surroundings.

In the urban concentric zones there low concentration of Scheduled Castes and Scheduled Tribes in the immediate neighbourings zones. However, there is an interesting pattern with the increasing distance from the city region. Highest percentage (12.65) is recorded in the South Eastern Sector in this respect while all others sectors show more or less similar pattern.

In the rural concentric zones, there is clear trend in respect of the distribution of the Scheduled Castes but no such trend is evident in respect of Scheduled Tribes population. High percentage of Scheduled Caste Population is found upto a distance zone of 15 miles from Calcutta and the rest of the areas show lower distribution of the Scheduled Castes. Moreover, the incidence decreases with the increasing distance from the Core region. This is no because of the fact that the refugees from Bangladesh settled more in the neighbouring region of the Calcutta city than in the distant places. Since majority of these people in the absence of sufficient land and dependend on Calcutta for their livelihood.

C H A P T E R V

ANALYSIS OF CORRIDORS ON THE BASIS OF SELECTED
DEMOGRAPHIC VARIABLES

In the previous chapter analysis of the selected variables pertaining to concentric zones or sectors has been attempted for rural and urban separately. However, it is to be noted that such an analysis has an inherent defect. Because such analysis gives an impression as if the whole of the concentric zone or sector is either urban or rural. But really this is not the case. There are patches or strips in these concentric rings or sectors which in fact locate the urban centres. In fact these strips are usually along the transport net work such as National or State Highways, railway lines of the navigable rivers. Hence with the core region which is fully urbanised, other urban areas from the corridors which radiate from it. It is therefore expected that these selected demographic variable will give different picture than the concentric circles or the sectors. It is further expected that urban characteristics would be accentuated both the urban and rural areas in these corridors since greater interaction with the core region is effected in those areas.

For the purpose of determining corridors, the areas of two miles on either side of the transport net works are marked out. Accordingly therefore, radiating from Calcutta region in all eight corridors can be marked out. These corridors are as follows:-

(1) Calcutta Budge Budge corridor comprised the area between the east Bank of River Hooghly and the Budge Budge Calcutta suburban line and the area of two miles in the East parallel to the suburban line.

(2) Calcutta Jaynagar - Canning corridor comprises the area two miles on either side of the suburban line connecting these points with the Calcutta city.

(3) Calcutta-Diamond Harbour corridor comprises, the area two miles on either side of the State High way connecting Calcutta and Diamond Harbour; and the area on either side of the railway line connecting these two points.

(4) Calcutta Bijpur Corridor which forms a solid mass of area on the eastern bank of the river Hooghly in the northern direction core region.

(5) Calcutta- Habra corridor comprises an area on either side of the railline and the State High way in the North Eastern direction.

(6) Calcutta -Ulberia corridor comprises an area on either side of the main line and National High way in south eastern direction from Calcutta region.

(7) Calcutta-Bansberia corridor is formed in the Western Bank of the river Hooghly along the main lines and

National High way in North Western direction of the Calcutta region.

(8) Calcutta -Singur-Haripal Corridor though not a direct corridor from Calcutta is formed along the rail-lines and State High ways midway from the Calcutta-Bansbaria corridor from East to West direction.

The corridors along with the core region include in their fold 98.32% of the urban areas and ^{18.90} percent of the rural areas under consideration. This in respect of population marks out 98.09 and 20.88 for urban and rural areas respectively. It is thus evident from the above that the corridors are overwhelmingly urban in nature and they really comprise the urban places of the area that is being examined. This means therefore that the urban centres are not scattered all over the area around the core region but followed a definite pattern. That is almost all the urban areas are situated in the transport net works of the region

TABLES 20 : PERCENTAGE SHARE OF SELECTED VARIABLES
IN THE CORRIDORS OUT OF TOTAL URBAN AND
RURAL AREAS UNDER EXAMINATION

Demographic Variable	URBAN	RURAL
Area(in sq. Km)	98.32	10.90
Occupied H.H.	99.33	21.47
<u>General Population</u>		
Persons	98.09	20.88
Male	98.75	22.08
Female	97.18	14.60
Sch.Caste Population		
Persons	92.21	17.51
Male	93.10	17.60
Female	90.57	17.42
Sch.Tribe population		
Persons	95.44	11.76
Male	99.72	12.42
Female	89.04	11.05
Literates		
Person	99.21	26.84
Male	99.46	23.19
Female	98.78	35.55
Workers		
Persons	98.84	20.46
Male	99.20	20.23
Female	92.32	29.23

Likewise it is evident from the Table that the corridors include only a fraction of the rural area of the region under examination. It is however, interesting to from the table that the rural areas within the corridors includes comparatively higher percentage of female literates as well as female workers.

The Urban-rural differentiations in respect of selected variables (i.e. density, persons per occupied Households and sex ratios in different segments of the population) within the corridors are well marked out as follows:

TABLES 21. DENSITY OF POPULATION (KM), PERSONS PER OCCUPIED HOUSEHOLDS AND SEX RATIOS IN DIFFERENT SEGMENTS OF POPULATION WITHIN THE CORRIDORS.

Selected Variables	URBAN	RURAL	TOTAL
Density (in sq. km.)			
HOUSEHOLD SIZE	5.5	6.0	5.8
SEX RATION IN T.TYPE POPULATION	79.4	831	7.68
SEX RATIO IN SCH.POBBLATION	661	910	786
SEX RATIO IN SCH.TRIBE	598	830	714
SEX RATIO IN LITERATE POPULATION	566	543	605
SEX RATIO IN WORKING POPULATION	52	38	45

It is to be seen from the Table 23 that there is more crowding in the Households in rural areas than in the urban areas within the corridors likewise there are more literate but lower participation in working force among the females in the rural areas of the corridors. The trend is just the opposite in the urban areas. The reasons are not far to seek. In the urban areas the population is comprised of a good portion of migrants who are predominantly selective in respect of male sex. Moreover in these urban centres there is a good scope for even unskilled female labourers. Consequently therefore these areas because of the paucity of female but with better job opportunities exhibit this particular trend i.e. lower sex ratio among the literates but higher participation among the females in the working force. On the contrary the people in the rural areas within the corridors are settled in nature which means better balance among the sexes. There is therefore, larger number of females in the population. Furthermore, because of the location of these rural areas within the transport networks and at closer proximity of the urban places, these rural places get better opportunity regarding education facilities. Whereas the employment opportunities are limited for the educated section of the females in these places. Hence we find a reverse trend than what is observed in the urban places within the corridors.

TABLE 22B.: CHARACTERISTICS OF SELECTED DEMOGRAPHIC VARIABLES IN MAJOR
URBAN AND RURAL CORRIDORS RESPECTIVELY.

CORRIDORS	DENSITY		AV. SIZE OF H. HOLDS		SEX RATIO GEN. POP.		SEX RATIO SCH. CASTE		SEX RATIO SCH. TRIDE		SEX RATIO LITERATE		SEX RATIO WORKER	
	U	R	U	R	U	R	U	R	U	R	U	R	U	R
I	7191	3143	6.07	6.2	730	540	787	909	177	693	490	518	48	33
II	3593	844	6.8	5.8	883	887	913	933	727	884	694	500	69	38
III	7537	1499	5.9	5.9	852	946	807	883	788	-	658	413	66	14
IV	9398	6970	5.0	6.5	746	899	786	898	623	857	620	621	40	59
V	3484	874	6.1	6.0	918	853	924	876	797	835	685	577	79	56
VI	1892	1515	5.8	5.8	700	900	840	948	316	1196	396	429	35	19
VII	8075	2037	5.2	5.8	779	865	688	875	820	669	552	441	16	49
VIII	1562	1235	5.7	6.3	885	929	957	922	937	949	597	567	81	70

However, when the corridors are compared among themselves in respect of the selected variables for urban and rural, it gives an interesting picture

TABLE 22.

The corridors Calcutta Budge Budge, Calcutta Ulberia, Calcutta Bansberia and Calcutta Bijpur have very low sex ratio in the urban general population. It may be noted that these two corridors together constitute the majority of the industrial towns of the region. Similarly it may be noted that the Calcutta Bijpur and Calcutta Bansberia corridors have average persons per occupied Households 4.9 25.0 respectively while the other corridors have quite higher Household size. These two corridors again have the highest population concentration among the urban corridors. The figures are 9398 persons per sq. km. and 8075 persons per sq. km. for Calcutta Bijapur and Calcutta Bansberia corridors respectively. In fact there two corridors are the most industrialised in nature i.e. largest

number of mills & factories are situated within those corridors. The comparison of the corridors further reveal that the sex ratio among the literate sections of the urban population are lower in the corridors which are more industrial in nature than those corridors which are not characterised by the existence of mills and factories. Similar trend is evident in respect of the sex ratio among the workers. The reason is that there are two sets of corridors because of their functional characteristics inhabit different nature of people. The corridors which have been characterized by industrial establishments draw migrants who are selective in respect of male sexes while the other corridors are functionally nonindustrial in nature where the activities require not only education but also provide better job opportunities to literate males as well.

Moreover in this category of corridors the urban centres are mostly residential and settled in nature. Here too the migrants have been drawn in large number but they have come and settled with their families. It is to be further observed that in these corridors the refugees from Bangladesh have concentrated in large numbers. Although they are also migrants but because of the peculiar situation their movements are of permanent nature and therefore they have a balanced population in respect of sexes. Similar trends are observed in the rural places within those corridors as well.

The comparison of the results on the basis of selected demographic variables among the corridor reveals that the population density apart from Calcutta city, is highest (15349 per sq. km) in the North Eastern corridor viz. Calcutta- Bijnor within three miles distance from the core region. This pattern also holds good for all other important corridors which have direct links with the Calcutta city. The concentration of population per square kilometer in corridors namely Calcutta-Bansberia, Calcutta-Ulberia and Calcutta - Jaynagar or Canning or Diamond Harbour varies from roughly ten thousands to thirteen thousand persons. In all these corridors, there is a fall in densities as the zone moves away from Calcutta region. However, in the North Western corridor i.e. Calcutta-Bansberia, the trend is slightly of different nature. The density in this corridor is very high in the immediate vicinity of Calcutta city. Then there is fall in the densities up to a distance zone of 12 miles from Calcutta. Hereafter the density picks up again. It is in fact highest within the zone which is lying between 12-18 miles distance from the core region. Beyond this distance zone fall in density sets in again. The phenomena is not very difficult to be explained. It is to be noted that round Calcutta city out of nine cities (i.e. Urban centres with a population of at least 1 lakh) four are situated. These cities are again most populous among the cities found within the

TABLE 22A. No. of Urban Units in Different corridors at different distance gradients.

CITIES AND TOWNS IN MAJOR CORRIDORS

DISTANCE	I	II	III	IV	V	VI	VII	VIII
- 3 miles	Garden Reach	Jadavpur, Santoshpur, Rajpur, Kasba, Garfa, Banskroni, Kandahari	South subarban	South Dum Dum Bahagar.	-	-	Howrah	-
3-6 Miles	Pancher	-	-	Kamarhati, Jaynagar, Krishnagar, Arjunpur N. Dum Dum Dum Dum Aeordrome	-	Bankura, Padeta.	Bally	-
6-9 Miles	-	Badmeser Rajpur	-	Panihati	New Barrack-pore	Hibra, Dhulia, Mahihari, Angul, Jhorhat, Sankrail	Uttarpara -Kotrung Makha, Jagadishpur Chakpara.	-
9-12 Miles	Batanagar Krishnagar	-	-	-	-	Hasila, Manikpore Sarenga.	Konnagar.	-
12- 15 Miles	Jagannath -garh.	Baruipur	-	-	Borasat, Navapally, Madhyam-gram.	-	Baidyabati, Sreerampore Rishra,	-
15-18 Miles	Nungi	-	Kanyagarh	N. Brackpore Barreckpore Cant Ischa-pur Defence Colony.	-	Bauria, Fort Closter, Kalra Chengail Surakhali.	-	-

TABLE No.22A continued.

DISTANCE.	1	2	3	4	5	6	7	8
18-21 Miles	Birlapur. Budge Budge.	-	-	Patulia	Nebadi Duttapukur	-	Ghampdani	-
21-25 Miles	Uttarray- pur.	-	-	Guradah Garulia	-	Bani Tabla -	Singur	
24-27 Miles	-	-	-	Madri- fingripara, Nagayanpur	-	Ulberia	Chinsurah, Chandannagar	Harip
27-30 miles	-	Canning	-	Panpur, Naihati.	Habra, Asoknagar, Kalyangary	-	-	-
30-32 Miles	-	Jaynagar Manjilpur	Diamond Harbour	Kanchrapara Halishar.	-	-	Bansberia	-
No. of Urban Centres	0	12	3	29	7	18	14	2

the area under examination. For instance Howrah has 7.38 lakh population while Garden Reach South suburban and Baranagar have 1.55, 2.73 & 1.3 lakh respectively. All these cities are characterised by industries and inhabit a large chunk within their population who are migrants. It is also interesting to note that except the corridor (cal. Howrah- Bansberia), all other corridors have location of large urban centres within closer proximity of the Calcutta city whereas the North Western corridor viz. Calcutta - Howrah - Bansberia has large urban centres well distributed all along the length because of the heavy concentration of mills and factories on the Western bank of the river Hooghly. Five out of nine cities are located in this corridor. These are Howrah, Serampore, Champadni, Chinsurah and Chandanagar and they are located at different distance zone from Calcutta city. The N.Eastern corridor (i.e. Calcutta - Brijpur) though has large concentration of Urban places, however, the cities (viz. Panihati, Kamarhati, Baranagar) are located within twelve miles from Calcutta city along the Eastern bank of river Hooghly. Thus it may be seen that all the cities are located on either side of the River Hooghly and within the corridors (mainly Calcutta- Bijapur and Calcutta - Bansbaria) (Table 22 A)

The same table also reveals that there is greater congestion of persons per occupied households in the urban place within the corridors. Greatest congestions are found in the

neighbouring regions of the Calcutta city. The congestion, however, eases with the increase in distance from the core region. This may be explained by the fact that the migrants concentrate and large numbers in these areas and therefore, cause greater congestion because of the non availability of accommodations. Likewise the sex ratio in the general population exhibits similar trend. It is very low in the adjacent regions of Calcutta while it improves with the increasing distance from the city core. The urban centres all along the western bank of the river Hooghly show comparatively low sex ratios in this respect. This is as the area is predominantly industrial in nature and it draws into this area mainly the male migrants.

It is to be noted that the distance zones lying between 12-18 miles in all the corridors have comparatively lower sex ratios in the general population. All the urban centres within the distance zone are pre-dominantly industrial in nature. Hence these areas around Calcutta draw a large number of persons to be absorbed in the mills and factories. Like the North Western corridor this belt draws male migrants in large number as well.

The North East (viz. Calcutta - Hijapur) the South East (Calcutta- Jyanagar - Canning or Diamond Harbour) and Eastern corridors (viz. Calcutta - Habra & Barasat - Basirhat) have in general

higher population of educated females in the population with exception however, Baresat - Basirhat corridor. Similarly the participation of females in the working force is also quite high in these places. This is because of the fact that except a few most of the urban centres in these corridors are mainly residential in nature and the inhabitants of these places depend mainly on the tertiary sector of Economic activities viz- Service, Trade and commerce, construction work etc. etc. That is in all these urban centres the economic activities revolve round Service, Trade, Commerce which require higher anticipation of literate females. On the Western Bank of river Hooghly only the Haripal - Singur corridor exhibits such similar pattern. It may be seen that this corridor has only two urban places of which one (i.e. Haripal) was a big village prior to last census (1971) The other town viz. Singur is also not a very old urban centre. Moreover, these urban centres are not industrial in nature. Majority of the working population depend on either Calcutta or neighbouring large cities for their livelihood. Consequently therefore, the population in these two urban centres have higher proportions of female per 1000 males in the population as well higher participation of females in the working force.

The rural areas within the corridors in respect of selected demographic variables show interesting characteristics. In the Calcutta- Jaynagar - Canning - Diamond Harbour corridor, the highest density as expected is evident in the Jadavpur Police Station which forms the immediate neighbourhood of the Calcutta City. The density falls as one moves away from Calcutta along these corridors. However it is interesting to note that the average persons per occupied Households in the rural areas within these circles increase with the increasing distance. For instance it is 6.1 person for occupied households in the Jadavpur P.S. and 6.3. in Diamond Harbour P.S. The former falls within three miles distance from Calcutta while the latter is situated about 30 miles away from Calcutta. The rural areas within this corridor which fall in Baruipur P.S. however, show a lower value (i.e 5.4) in the respect . Similar pattern is also evident in respect of sex ratio in the general population. The trend is however not applicable for the rural areas which fall in the Diamond Harbour P.S. Although these places are furthest from the city region but show a lower sex ratio which is comparable to the sex ratio of the neighbouring areas of Calcutta within this corridor. Similar trends are also observable in respect of sex ratios among the scheduled caste and Scheduled Tribe population. But in respect of sex ratio among the literate population within the rural areas of this corridor, it gives a reverse trend. The ratio falls down considerably with the

the increasing distances from Calcutta. The participation of females in working population also exhibits similar pattern. It is because of the fact that education and participation of females in the working force has direct relationship.

The rural areas included in the North Eastern corridor in Calcutta - Bijnor do not however, present a clear trend or a pattern as has been observed within the South Eastern corridors. This is because of the fact that the two sets of corridors have different functional characteristics. The North Eastern corridor is functionally manufacturing in nature while the other one is service in character. Within the North Eastern corridor the rural areas found in Dum Dum P.S. which constitute the immediate neighbouring region of Calcutta have distinct features in respect of the selected variable than those found in other rural areas at different distance gradients from the city of Calcutta. The sex ratios among the literate and working populations are quite low in the rural areas of Dum Dum P.S. as compared to higher values in the rural places beyond this distance zone. Similarly the sex ratios among the general populations, Scheduled Caste and population show similar trend i.e. improvement of sex ratios with the increasing distance from the Calcutta region. The above pattern as well as the trend are also evident in the rural places of all other corridors.

The comparison of individual demographic variables of rural areas of different corridors will throw light on the nature of these corridors. It is expected that the corridors which have direct links with Calcutta City will show characteristics quite different from those which have no direct link. Moreover, the functional nature of the corridors will also influence the results in those places in respect of these selected variables. Highest density is found in the North Eastern corridors i.e. Calcutta- Bijpur, Calcutta- Habra, Basrsat - Besirhat while lowest density - in the rural areas is observed in the North Western corridors i.e. Calcutta - Bansberia & Singur - Haripal. The South Western Corridors (Calcutta - Budge Dudge Calcutta = Bagnon) and South Eastern Corridors (viz. Calcutta Jaynagar - Canning - Diamond Harbour) have densities intermediate between the two extremes. This patten can be explained easily. Although North Eastern corridors have the largest concentration of urban centres, the rural areas are not heavily concentrated because of the large migrant who like to stay in urban Centres. Moreover, in this corridor the bulk of the migrants has come from different socio cultural background who do not find the neighbouring rural areas congenial for living whereas the rural areas of South Eastern, South Western and North Eastern corridors accommodate migrants who are dependant on the neighbouring urban centres and Calcutta in the main for their living. It is to be noted that the migrants

in the rural areas in those corridors belong mostly of the same socio cultural background and they are mainly dependent on Calcutta city or large cities for their livelihood and that they are engaged in the economic activities which are grouped under the Tertiary Sector.

The average size of Household in the South Eastern corridors is quite low and reveals more or less similar value throughout their length. It varies between 5.8 to 5.9 persons per occupied household- This figure is quite high which ranges from 6.0 to 6.5. in all the corridors located on the eastern bank of the river Hooghly. The highest congestion per household is seen in the North Western corridor (i.e. Calcutta - Rajpur). This corridor like the North Western corridor contains high concentration of industrial towns. The South Western corridors (viz - Calcutta - Budge Budge and Calcutta - Bagnan) show slightly different pattern. It is more so in respect of Calcutta - Budge Budge corridor which has a direct link with Calcutta city and it is situated on the eastern bank of river Hooghly. ~~XXXXXXXX~~ More or less similar trend is seen in the North Western corridors (viz. Calcutta - Bansberia & Haripal - Singur) as well. These corridors are all situated on the Western bank of the river Hooghly. Of the two North Western corridors again the former has a direct connection with Calcutta City viz. Howrah and contains most of the industrial towns of the area under consideration.

Again of all the corridors, the rural areas of Calcutta - Bijpur, Calcutta - Bansberia, Calcutta - Budge Budge have direct connections not only with Calcutta city but are situated within the direct influence of other large urban centres of the region. So it will be worth while to compare the results in respect of the selected variables relating to these corridors more in details.

The concentration of population per sq. Km. in rural areas within these corridors show comparatively higher values. The highest is found in the Calcutta corridor (i.e. 6870 persons per sq. Km.) followed by Calcutta - Budge Budge which has a concentration of 3143 persons while Calcutta - Bansberia shows density of 2037 persons per sq. Km. This analysis through therefore indicates that the rural areas contained in the corridors which belong to the eastern part of the area and have direct link with Calcutta have higher concentration of population than other corridors. Similarly the sex ratio's among the General population, Scheduled caste and Scheduled Tribe populations in respect of the corridors, Calcutta - Bijpur, Calcutta - Bansberia and Calcutta-Budge Budge appear to be 899, 838, 857, 865, 875, 669, & 540, 909, 693 respectively. This means, therefore, that the rural areas of Calcutta - Bijpur corridor is most balanced in respect of sexes in the population while the population of corridor Calcutta- Budge Budge is masculine in this respect. In respect of females per 1000 males among the literates as well as

working population it is to be noted that highest population of female literates and largest participation of females are evident in Calcutta - Bijpur corridor while lowest in the Calcutta - Budge Budge corridor, when these figures are compared with the corresponding figures of the rural areas and other corridors it is to be seen that these three corridors represent comparatively lower sex ratios, higher concentration of population and higher congestion of persons per household. This particular trend is comparable with the trend seen in urban areas of the region under consideration. Similarly these three corridors stand quite distinct in respect of preparation of females among literates and working populations. In these respect also these three corridors showed more of urban natures than rural. In respect of percentage of workers in primary sector of economic activities again these three corridors differ quite distinctly from other corridors of the area under consideration. In fact in these three corridors the participation of workers is more in Secondary and Tertiary sectors of Economic activities than the Primary sector as evident in other corridors. This factor together with other features as indicated above clearly bring out the fact that the rural areas of these corridors have definite urban potentials.

The growth of urban population in different corridors over the decade reveals that the South Eastern corridor (i.e. Calcutta - Jaynagar - Canning - Diamond Harbour)

TABLE 22C. GROWTH OF URBAN POPULATION IN DIFFERENT
CORRIDORS DURING 1961-1971 .

CORRIDORS	PERSONS		MALE		FEMALE	
	DIFFERENCE(1961-71)	% growth	Difference(1961-71)	Percentage growth	Difference (1961-71)	Percentage growth.
I.	+ 119780	+ 48.30	+ 63563	+ 42.15	+ 56217	+ 56.81
II	+ 70348	+ 64.55	+ 33737	+ 54.86	+ 3661	+ 77.11
III	+ 95355	+ 48.66	+ 49110	+ 45.41	+ 46245	+ 52.67
IV	+ 476104	+ 42.34	+ 23069	+ 34.90	+ 239035	+ 53.70
V	+ 75229	+ 51.10	+ 38806	+ 50.11	+ 36523	+ 52.21
VI	+ 7244	+ 6.74	+ 6364	+ 10.41	+ 880	+ 1.90
VII	+ 168772	+ 14.15	+ 77678	+ 11.30	+ 91094	+ 18.03
VIII	+ 11487	+ 145.13	+ 6129	+ 147.26	+ 5358	+ 142.77.
CORPORATE CITY (CALCUTTA)	+ 221457	+ 7.67	+ 108714	+ 5.99	+ 112743	+ 10.14
TOTAL URBAN CORRIDORS	+ 1245776	+ 20.56	+ 621079	+ 17.04	+ 624706	+ 25.80

has registered highest growth of 64.55% between 1961 - 1971 followed by growth of 51.10% in the Eastern Corridor (i.e. Calcutta - Habra) whereas the corridors Calcutta-- Bijapur, Calcutta - Diamond Harbour & Calcutta - Budge Budge shows more or less similar growths i.e. between 40% - 50%. The growths of urban population in the Western corridors (viz. Calcutta - Bansberia & Calcutta Ulberia) are quite insignificant which are 14.15% and 6.74% respectively. These figures compare well with the growth of Calcutta's population which is only 7.57 per cent over the decade. This means therefore, that the growth of urban population has showed down considerably in the urban places of corridors which are situated on the Western bank of river Hooghly. It is also interesting to note that except Calcutta Ulberia corridor, in all other corridors the growth of urban population has been contributed by the female population has been contributed by the female population in the main. It therefore appears from the above discussion that the places within the Western corridor (Calcutta - Banberia and Calcutta Ulberia) like the city of Calcutta are now almost saturated with population and therefore, not able to absorb more people at present. Moreover, the growths furnished by the corridors indicate the presence of comparatively larger male migrants in the population than other corridors.

The overall analysis therefore, reveals clearly that the corridors have the main concentration of urban places. It is also evident that the rural places within the corridors are quite different from the rural areas which are outside the limit of the corridors. In many respect the rural areas within the corridors exhibit more of urban characteristics than rural.

Since corridors have been formed along the main transport networks such as Railway lines, National state High ways and Navigatable rivers, it is therefore, indicative that urban centres trend to develop along the main transport lines. This is because of the fact that such net work affords direct communicational link between Calcutta and other places and therefore under the direct influence of the city. Likewise the rural areas within the corridors are also under direct influence of Calcutta and neighbouring urban centres and therefore acquire potentials for urban development.

CHAPTER VI

COMPARISON WITH RESPECT TO SELECTED DEMOGRAPHIC VARIABLES OF THE URBAN AND RURAL PLACES WITHIN THE CORRIDORS AND URBAN AND RURAL PLACES OF THE AREA UNDER EXAMINATION.

It is presumed that the places within the corridors in respect of selected demographic variables will differ from the findings in these respect for the places as a whole under examination. It is further presumed that the urban characters in the urban places within the corridors will be more marked than these outside the corridors. On the same reasoning it is, therefore, expected that the rural places within the corridors will show characteristics which will lean more towards the urban characteristics than those found in rural places outside the corridors. In other words it will mean that the rural places within the corridors will have greater urban potential than the rural places outside the corridors. Because of the fact that these places have direct communicational link with the Calcutta region as well as with the neighbouring cities and towns. So the influence of Calcutta and other urban places are more on those places than those situated outside the transport networks.

It is also expected that the character of these selected

TABLE 22D. CHARACTERISTICS OF THE SELECTED DEMOGRAPHIC VARIANCES

WITHIN AND OUTSIDE THE URBAN AND RURAL CORRIDORS RESPECTIVELY

ZONES	DENSITY		Av. Size of the Household		Sex Ratio Genl. Popu.		Sex Ratio Sch. Castes		Sex Ratio Sch. Tribe		Sex Ratio Literate		Sex Ratio Workers	
	URBAN	RURAL	U	R	U	R	U	R	U	R	U	R	U	R
WITHIN CORRIDORS	10089	1083	5.5	6.5	713	788	661	846	598	726	570	596	52	38
OUTSIDE CORRIDORS	8119	777	5.2	6.3	880	967	928	921	2504	948	409	352	53	23
ALL CORRIDORS	10055	826	5.5	6.2	715	937	679	919	670	933	570	419	55	26

variables both in urban and rural places will vary with the distance from the core region vis-a-vis other urban centres. With these hypothesis in mind let us compare the character of the variables of the places within the corridors as well as outside the corridors and at different distance gradient.

It is evident from Table 22D that the density of urban places within the corridors far exceeds the density of population in urban places outside the corridors. Similarly in respect sex ratios also we find that the proportions of females per 1000 males in General Population, Scheduled Caste and Scheduled Tribe population are very low in the urban corridors than those outside the corridors. However, in respect of sex ratios among the literates and working population the trend is just the opposite. Higher proportion of females per 1000 males is evident among the urban population within the corridors compared to sex ratios among the urban population outside the corridors. In respect of sex ratio among the working population the pattern is somewhat similar both in the urban places within and outside the corridors.

Likewise when the rural places within and outside the corridors are compared in respect of population density it is

observed that the density is high in rural places within the corridors. The proportions of females per 1000 males are low among the general population, scheduled castes and scheduled tribe population in the rural places within the corridors whereas these are quite high among the literate and working populations.

It is further interesting to note that the findings on the basis of these selected demographic variables pertaining to the urban places outside the corridors compare well with the rural places within the corridors. This means, therefore, that the urban features are found accentuated in urban places within the corridors. It is also evident that the urban places outside the corridors do not differ, much from the rural places within the corridors in respect of the selected demographic variables.

It is thus clear that the transport networks whether they may be railway lines, National or State High Ways or navigable rivers exercise greatest influence in shaping a place urban and modify the characteristics of the rural places within their sphere of influences more towards the urban features. Because through these channels of communications, the

influence of the core region (i.e. Calcutta city) and the neighbouring urban centres passes through the adjoining places. In these places the interaction is, therefore, highest and that those places provide the maximum amenities modern facilities which are necessary for transforming a place into a developed one.

When the results obtained on the basis of selected demographic variables in urban areas within the corridors are compared with the findings in this respect in the urban areas as a whole which is under examination, it is seen that the values in respect of urban places within the corridors are distinctly different from the results obtained in the total urban places in different distance zones. For instance, the densities within the corridors at different distance zones are considerably higher than those recorded in the urban places as a whole at respective distance zones. Similarly, the sex ratios in general population in the urban areas at different distance zones within the corridors are lower than that those recorded in urban places as a whole in the corresponding distance zones. However, both sets exhibit similar trend with the increases in distance from the Calcutta city i.e. the sex ratio rises somewhat with the distance. This holds good for the sex ratio among the literate populations as well. It is

distinctly greater among the urban population within the corridors. High sex ratios among the literate populations within the corridors are found in the immediate neighbouring region of Calcutta, the distant region and the region half way within the area under consideration. So in order of occurrence the highest sex ratio in this respect is observed in distance zone lying within three miles from the city region. Next highest is observed in the distance zone situated between 24-30 miles and their highest is in the distance zone 12-18 miles. Whereas outside the corridors, the highest sex ratio is observed in the distance zone between 6-12 miles and the next highest sex ratio appears in the distance zone as has been the case in respect of urban places within the corridors. This means, therefore, that the 24-30 miles distance zone from Calcutta city is characterised by high concentration of female literates in the population. It is to be noted that within this distance zone are located urban places such as Habra, Ulberia, Haripal, Singur, Canning, Jaynagar, Mazilpur, etc. etc. which send daily commuters in large number to the Calcutta city.

Similarly, the proportion of females per 1000 males among the working population is distinctly higher among the urban places found within the corridors. Except for the distance

Zone (30-32 miles) from Calcutta all other distance zones in respect of urban workers population within the corridors show more or less similar participation of females in the working force. This is, however, not the case when the total urban working population is taken into account and the participation of females is observed at different distance zones. It is observed when the total urban working population is taken into account that the distance zones (3-6 miles) and (24-30 miles) have higher participation of females per 1000 male working males while the lowest participation is recorded in the distance zone which forms the immediate neighbouring urban region of Calcutta city.

Thus, from the comparison of the results of the selected variables obtained in respect of urban centres within the corridors at different distance zones with that of the urban centres within the concentric rings, it is quite evident that the corridors show more accentuation of urban characteristics than shown by the urban centres within the concentric rings. This is so, because of the fact that most of the urban centres around Calcutta are situated along the transport network radiating from Calcutta in different directions. The influences of the city region on other places is dependent on the distance factor is evident both in the corridors as well as in the

concentric rings. But the influence of Calcutta and other urban centres on the surrounding rural areas is felt maximum within the corridors than those outside the corridors or in concentric zones. The same explanation as has been founded in respect of urban places within the corridors at different distance gradient holds good in this respect as well.

CHAPTER VII

SOCIAL AMENITIES IN THE RURAL AREAS AROUND CALCUTTA
CITY AND URBAN POTENTIALITIES, OF THOSE PLACES.

SETTLEMENT SIZE OF RURAL PLACES IN DIFFERENT DISTANCE ZONES :

In the previous Chapter demographic analysis on the basis of selected variables is made to assess the influence of Calcutta in and around its region. In this Chapter, it is proposed to examine with the help of social amenities scores the urban potential of the rural areas around Calcutta. The method employed for the purpose has been described in detail in the section two of the Chapter two of this report.

Before the examination of modernization process operative in different rural places in different distance gradient, it would be necessary to have an idea about the distribution of different rural places by size classes. Since it is envisaged that distance from Calcutta has definite say in the development of large rural centres and concomitant modernization.

Table 23 : PERCENTAGE DISTRIBUTION OF VARIOUS SIZE CLASSES OF RURAL PLACES BY DISTANCE GRADIENT.

DISTANCE ZONE	10,000	5000-9999	2000-4999	1000-1999	500-999	Less 500
3 - 6	7.69	23.07	53.86	15.38	-	-
6 - 9	-	10.34	48.28	24.48	3.45	3.45
9 - 12	-	3.45	43.10	25.86	18.97	8.62
12 - 15	1.41	5.63	26.76	39.43	21.13	5.63
15 - 18	-	6.40	25.60	37.60	18.40	12.00
18 - 21	0.79	6.35	17.46	29.37	29.37	16.67
21 - 24	-	1.49	18.66	37.31	26.87	15.67
24 - 27	-	0.75	17.91	28.36	31.34	22.39
27 - 32	0.67	1.32	21.19	28.48	25.83	22.52
All RURAL ZONES.	0.47	3.91	23.75	32.06	24.22	15.59

The Table 23 reveals that the whole rural areas around Calcutta possess only about 4 percent villages which can be said to be large settlements. About 56% of settlements can be said to belonging in moderate size while rest 40% can be termed as small villages. It is further evident from the same Table that the immediate neighbouring

areas around Calcutta (i.e. 3 - 6 miles distance) have large and medium sized rural settlements. This trend more or less holds good for the distance zone upto 18 miles from the city regions as well. Beyond this distance zone the appearance of small and medium sized rural settlements is of the same order.

Settlement size between 1000 - 10000 plus decreases with the increasing distance from the city region. Whereas the rural settlements of sizes upto 999 increase with the increasing distance from Calcutta city. Hence, it is quite obvious that the size and distance are related. ~~Higher~~ Incidences of large sized rural settlements have inverse relationship while small size settlement have direct relationship with the increasing distance from Calcutta city.

With this background in mind, let us now examine the quantum of modern amenities available to each settlement of different size classes and at different distance zones from Calcutta city so as to assess the extent of modernization achieved and the bearing of the distance on it.

Table 24 : DISTRIBUTION OF CUMULATIVE SCORES OF AMENITIES ACCORDING TO SIZE CLASSES OF RURAL SETTLEMENTS IN DIFFERENT DISTANCE ZONE.

Distance Zone	10000 +	5000-9999	2000-4999	1000-1999	500-999	Less 500	
3 - 6	16	24	13	23	-	-	23
6 - 9	-	29	35	20	14	14	24
9 - 12	-	18	19	16	14	11	17
12 - 15	26	25	21	14	14	12	18
15 - 18	-	31	21	17	15	13	18
18 - 21	24	35	25	17	16	14	18
21- 24	-	29	19	16	13	13	16
24 - 27	-	20	22	16	15	12	15
27 - 32	28	21	19	16	15	12	16
All Rural	10	26	22	17	13	11	17

TOTAL POSSIBLE SCORES = 84.

From the Table 24 it is seen that the average cumulative scores of amenities available in the rural settlements

of size 10,000 plus increase with the increasing distance from the city core. This trend is also valid for the settlements of sizes 5000-9999 and 2000-4999. However, in respect of settlements of moderate sizes (i.e., 1000-4999), the scores increase upto 21 miles from Calcutta ~~and~~ and thereafter the scores decrease with the increase in distance. In case of small settlement sizes, however, the decrease in the amenity scores is regular with the increasing distance.

It is again interesting to note that in the immediate rural zones (3 - 6 miles) around Calcutta city, the average amenity scores are lower than the scores recorded in the subsequent zones. Since this zone is at the closest proximity of Calcutta city, the rural settlements belonging to this zone can, therefore, afford to do away without the modern amenities because these are easily and at a greater level available in the city itself which can be taken advantage of by these settlements. Because of this umbrella effect of the city on these rural places they have not shown such developments in respect of social amenities. It is also evident from the same Table that the modern amenities are provided mainly to the settlements of larger and medium sized population. It is to be noted, however, that the maximum amenities are available in the settlements of

no size class 5000-9999 which can be said large village. Since largest size class (10,000 plus) villages are located in the neighbourhood of important urban centres, therefore, these villages avail of the amenities found in those urban places. So, the modernization in terms of social amenities are best experienced in the villages which form the lower and upper limits of large sized and medium sized rural settlements. It is also apparent from the same Table that the availability of social amenities vis-a-vis modernization ~~from~~ decline with the increasing distance from the city region.

Whether the ~~it~~ trend thus observed through the analysis of data have any statistical relevance or not, can be tested with the help of Spearman Rank Correction Technique by developing a hypothesis that there will be a relationship between size of settlements and amenities scores and that such correlation will vary with the distance factor.

For this purpose, the settlements in each concentric zones and ranked according to the strength of population as well as according to the cumulative scores. The two rankings are then compared. Since modernization of a village is a step towards urbanization and such modernization is related to the size of

the settlements, so the urban potential of rural settlements in different concentric zone is related to the fact that how far the villages are modernized. It is, therefore, expected that if we find a fair relationship between the size of settlements and quantum of social amenities therein then the potentials as envisaged is established.

Table 25 : URBAN POTENTIALITIES OF THE RURAL AREAS AROUND CALCUTTA AS DETERMINED BY RANK CORRELATION.

Distance Zone.	No. of Rural Units.	Summation of the squares of differences between two rankings (i.e. $\sum d^2$)	Square of number of units (i.e. $N(X^2 - 1)$)	Correlation coefficients.
3 - 6	13	337	2184	0.07
6 - 9	29	2709	24360	0.33
9 - 12	58	16095	195054	0.50
12 - 15	71	70819	357840	0.19
15 - 18	125	426519	1953000	0.31
18 - 21	126	438549	2000250	0.78
21 - 24	134	528434	2423926	0.30
24 - 27	135	590916	2460240	0.44
27 - 32	151	933897	3455601	0.61

It may be seen from the Table 2.5 that there is a weak but a positive correlation between size classes of settlements and the amenities upto a distance of 12 miles, from Calcutta city. Thereafter, the correlation is negative and high. It means, therefore, that upto the distance zone of 12 miles from Calcutta, the rural places have inclination for urban developments. In other words, these places have definite urban potentialities. Within this distance zone again, the correlation is high beyond these miles limit from the city. This area is, in fact under the umbrella effect of the Calcutta city. Hence the correlation value though positive is weak here. Whereas the rural places beyond twelve miles distance from Calcutta are characterised with rural settlements of smaller size classes. These places are, therefore, provided with smaller quota of modern amenities. Hence, these places are not modernised enough to indicate that they have urban potentialities at the moment. Furthermore, it is also evident that the amenities get reduced considerably in the rural settlements as they move away from Calcutta city.

The above ~~conclusions~~ contentions find ample support from the distribution of urban centres by different size class in the concentric zones of varying distances. Since it is observed that the rural areas lying between the distance zone ~~from~~ three

to twelve miles from Calcutta have urban potentialities, it is thus expected that this area will have comparatively greater development of large sized urban centres than other zones.

Table 26 : PERCENTAGE DISTRIBUTION OF URBAN PLACES BY SIZE CLASS IN DIFFERENT CONCENTRIC ZONES :

Distance Zone.	10,000+	50000-99999	20000-49999	10000-19999	5000-9999	-5000	All si- zes.
	I	II	III	IV	V	VI	
Upto 3	20.00	13.33	33.34	20.00	13.33	-	100.00
3 - 6	9.09	27.28	9.09	27.28	18.19	9.07	100.00
6 - 9	7.14	7.14	14.29	21.43	50.00	-	100.00
9 - 12	9.09	27.28	33.34	20.00	-	13.33	
9 - 12	-	7.14	14.29	21.43	50.00	7.14	100.00
12 - 15	9.09	27.28	36.36	0.09	-	18.19	100.00
15 - 18	-	10.00	20.00	50.00	20.00	-	100.00
18 - 21	14.29	14.29	14.29	28.57	28.57	-	100.00
21 - 24	-	20.00	-	40.00	40.00	-	100.00
24 - 27	20.00	-	20.00	-	40.00	20.00	100.00
27 - 30	-	37.50	25.00	12.50	25.00	-	100.00
30 - 32	-	60.00	-	40.00	-	-	100.00
All Rural	7.62	18.10	19.05	23.81	26.66	4.76	100.00

From the Table 26 it is clear that in the first concentric zone (i.e. 3 - 6 miles) which is purely an urban area two thirds of the local urban centres are large sized (i.e. 50000 +) whereas the next concentric zones has a fifty fifty distribution of large and small size settlements. The distance zone upto 12 miles on the other hand is characterised mainly by the presence of small sized urban settlements (i.e., settlements of size less than 20000). Beyond 15 miles distance from Calcutta, the proportion of classes I, II, and III settlements far exceeds the proportion of small sized urban centres such as IV, V and VI. The last two concentric zones have, however, a reverse trend again.

In terms of percentage it is clear that out of total class I centres 37.50% belong to distance zone upto 3 miles and about 63% within nine miles from the city. Whereas about 75% of all the class I centres is to be found within fifteen miles from Calcutta. Similarly one third or about 32% of the total class II towns found within the area under consideration is located within 9 miles and more than half to be found within 15 miles distance from Calcutta. The same trend holds good for class IV, V and VI towns as well. However, class VI towns are found more beyond 15 miles distance than within that distance zone. This means, therefore, that except class VI towns.

Others have major concentration nearer to the city region. Since class V & VI towns are dependent mainly on the large sized settlements their incidences are more in zones which are nearer the Calcutta city and are characterised by large sized settlements.

It is thus apprent from the distributional pattern of the urban settlements in different concentric zones that the concentration of urban settlements (especially large size urban settlements) is more in the areas which form the immediate neighbouring regions of the city (i.e. Calcutta). In other words, the influence of Calcutta is main determinant for the urban developments . These findings therefore, corroborate the fact that the rural areas which are found in the immediate vicinity of Calcutta city will have greater urban potentialities than places which are distently placed. In other words this means that such potentialities loose their importance with the increase in distance i.e. with the decline of Calcutta's influence over the rural areas.

**FUNCTIONAL CHARACTERSTICS OF THE URBAN
CENTRE AROUND CALCUTTA AND THEIR INFLUENCE
ON THE DEVELOPMENT OF THE REGION.**

Functional characteristics of each city and town (based on Teney diagram Technique) have been given in the District Census Handbooks (i.e. Publications of 1971 centres) The urban centres in each centric zones of various distance gradients have been thus categorised functionally in order to

derive the overall functional characteristics of the region as a whole

TABLE :27 PERCENTAGE DISTRIBUTION OF URBAN CENTRES ACCORDING TO THEIR FUNCTIONAL CHARACTERISTICS BY CONCENTRIC ZONES OF DIFFERENT DISTANCE & GRADIENTS.

Distance Zone	INDUSTRIAL TOWNS	SERVICE TOWNS	TRANSPORT TOWNS	SERVICE CUM INDUSTRIAL.	SERVICE CUM TRADE AND COMMERCE	INDUSTRIAL CUM TRADE AND COMMERCE
Upto 30	46.67	33.33	-	20.00	-	-
3 - 6	45.45	36.37	9.09	-	-	-
6 - 9	78.57	21.43	-	-	-	-
9 - 12	57.14	14.28	-	14.28	14.28	-
12- 15	36.36	9.09	-	36.36	9.09	9.09
15- 18	70.00	20.00	10.00	-	-	-
18- 21	71.43	28.87	-	-	-	-
21- 24	40.00	20.00	20.00	20.00	-	-
24- 27	60.00	20.00	20.00	-	-	-
27- 30	25.00	50.00	25.00	-	-	-
30- 32	40.00	60.00	-	-	-	-
ALL	53.33	26.67	13.33	4.76	0.95	-

It is seen from the Table that the concentric zone upto 21 miles from Calcutta city has towns which are functionally industrial in nature. The zone which is situated between 21.24 miles distances from Calcutta has towns which have mixed functions

viz. SERVICE AND TRADE ETC. whereas the distant most zone (i.e. the areas between 30-32) has towns where service is the dominant function. So the overall functional characteristic of the region is Industrial and 'Service', of which again industrial function has the main say.

When the distribution of the towns & cities of different functions in different concentric zones are analysed vertically, it is observed that out of 56 industrial towns as many as 23 (or 41.07%) fall within the distance zone of 9 miles from Calcutta and 35 (or 62.50%) within 15 miles from the city. Almost all the industrial towns are located within the distance zone upto 21 miles from the city. Within this distance zones about 84% of the total is found. Moreover less similar trend is also evident in respect of towns which are functionally classified as 'Service towns'. For instance out of 28 such towns as many as 12 towns (i.e 42.86%) are located within 7 miles distance from the city and 15 (i.e. 53.57) within 15 miles distance from Calcutta. More than two thirds of service towns are concentrated within 21 miles distance from Calcutta, whereas the rest one located in the distance zone lying between 21-32 miles.

In respect of towns mixed functions, it is to be seen that the distance zone upto 9 miles, 15 miles and 21 miles have registered 'SERVICE CUM INDUSTRY' as 21.43, 64.29 & 71.43 percent respectively while the same distance zones record SERVICE CUM TRADE AND COMMERCE' as 20.00, 80.00 & 80.00 per cent respectively.

So from the above analysis it appears that the distance zone up to 9 miles from Calcutta city has the largest concentration of

towns which have mainly Industrial and service as functional characteristics. These towns have grown as satellites around Calcutta under its influence. The influences of these towns in turn as well as the influences of Calcutta city have made the rural areas within the orbit of nine miles from Calcutta City more potent for urban development..

The cities and towns around Calcutta when viewed in respect of manufacturing activities (this means other than household industry) it is seen that forty seven towns around Calcutta have workers in the manufacturing activities which range from 20 - 40 percent of the total workers in those urban centres. Nineteen cities and towns have manufacturing activities ranging between 41-60 percent level while 12 & 6 urban centres have workers in the manufacturing activities between 61-80% & 81% above respectively. About one fifth (i.e. 20 Towns & cities around Calcutta) have manufacturing activities less than 20 percent . It is thus clear that fourfifths of the towns and cities around Calcutta have high rates of manufacturing activities. This is perhaps the single most important indicator to determine the metropolitan character

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29. For the first time Prof. Asok Mitra in his work entitled "Internal Migration and urbanisation in India" used the concept of Ternary Diagram for the purpose of classifying the towns functionally in the Indian census of 1961 vide Mitra Asok : Internal Migration and Urbanization in India Office of the Registration level India, New Delhi , 1967, pp 35-81.

of the region, when the towns are plotted on the map on the basis of this particular character get (i.e. towns and cities having manufacturing activities 20 per cent and more only) not only we get the limit of the metropolitan region with Calcutta as its core but also get the extent of metropolitan character within this limit.

Extent of manufacturing activities in the town and cities around Calcutta. Less than 20% workers in Manufacturing:

North Dum Dum , BAIDYABATI, HABRA, BARUIPUR, RAJPUR, Barrackpore Cantt, Dum Dum, New Barrackpore, Jaynagar Mozilpur, Canning, Singur, Nabagram Colony, Jadavpur, Santoshpur, Krishnapur, Amta, Curadah, Dakshin Jharpardah, Dum Dum Aerodrome, Diamond Harbour.

Between 20 - 40 percent workers in the manufacturing.

Haripal, Arjanpur, Sultanpur, Kerulia, Furba Puttinar, Chakdah, Banitaba, Masila, Nibra, Kalra, Makhla, Bankra, Jaganathgarh, Banskroni, Bademser, Rajpur, Calcutta, Ghinsurah, South Suburban, Panihati, South Dum Dum, Padara, Andal, Barrackpore, Kancharpara, Asoknagar Kanayangarh, Denlapara, Bhadreswar, Krishnanagar, Uttarpara Kotneng, Uiberia, Nangi, Garfa, Kasba, Barasat, Nabapally, Madhyagram, Domejpur.

Between 41 - 60 percent workers in manufacturing:

Howrah, Serampore, Garden Reach , Baranagar, Kamarhati, Panchur, Budge Budge, Chandannagar, North Barrekepore, Bally, Khardah, Uttar Rajpur, Patulia, Krishnagar, Burakhali, Jhorhat, Dhuliya, Jagadishpur, Naryanpur.

Between 61- 80 percent workers in Manufacturings

Champdani, Bansberia, Rishra, Naihati, Ichapur, Defence Colony,
Sankrail Savenga, Fort Gloster, Bawria, Mahihari, Madrilfingipara.

Above 81% workers in manufacturing.

Titagarh, Chengail, Birlapur, Masikpur, Banapur,
Batanagar.

C H A P T E R V I I I

DISCUSSION ON THE BASIS OF FINDINGS
AND CONCLUDING REMARKS

The overall discussion clearly reveals that the main interactions between Calcutta and other places both rural and urban take place along the transport networks viz. Railway lines, National and State High Ways, and Navigable rivers. This is evident by the fact that the main concentration of urban centres is on both the sides of the river Hooghly as well as along the main transport lines in the North, West, East and South directions. Although the analysis of concentric zones gives the impression that interaction vis-a-vis urban development is felt in all direction however, with varying intensity, the actual fact is that such developments are experienced within the corridors i.e. an area formed along the main transport lines. In fact all the urban centres (with exception of a few) are located in these corridors. Moreover, the rural area within the corridors have characteristic inclining more towards the urban characteristics than the rural areas. The urban characteristics of the urban centres within the corridors are more recent -uated than the characteristics seen in other urban centres outside the limit of the corridors. Although it is no denying that all the corridors do not possess the same characteristics nevertheless the features of those corridors are more comparable among themselves than the features evinced outside the corridors. This clearly proves that the development of

urban places follows a definite pattern. Though it is evident that the rural areas which form the immediate neighbouring regions of Calcutta city have the urban potential than rural places situated beyond certain limit, however, it is to be noted that all the rural areas found within the corridors have urban potentials all along the corridors. This is because of the fact that not only that those places receive the influence of Calcutta region but come under the influences of other neighbouring large urban centres as well.

Of late Calcutta's growth has been in the south and South Eastern outskirts of the city in the main. City's influence has been extended beyond the immediate suburbia to the distant hinterland in that direction. However, it is interesting to note that South Eastern Sector is the least urbanised of all the sectors under consideration. This sector has the least concentration of urban centres. Moreover, these urban centres are not large enough to cater the needs of the immediate hinterland of their own. The important towns in this sector to name a few the Jaynagar Mazilpur, Diamond Harbour, Canning etc. etc. are all non manufacturing in function (i.e. manufacturing activities are limited to workers which work out to less than 20%). In fact these towns are mainly dependent on Calcutta City and are inhabiting the commuters in the main. Because of the accommodation difficulties within the Calcutta City as well as heavy concentration of people in places surrounding Calcutta

more and more people are taking shelter in these places. Whereas the other sectors in respect of the urban development have already reached more or less their maximum limits hence provide least scope for further development. Moreover, the urban places in these sectors because of the predominant industrial nature have already sheltered more people than their areas could really afford. Hence those places appear to be saturated with population and have therefore failed to register further growth in respect of urban population over the decade. Of the sectors Northwestern, South Western North Eastern & South Eastern, again the last two mentioned sectors, after the partition of the country in 1947, received the main bulk of the exodus from across the international boundaries. Being uprooted from their home and land, and the traditional moorings, these people depended mainly on Calcutta for their livelihood as well as subsistence since agriculture lands were not sufficiently available to them in the immediate hinterland of Calcutta city whereas due to pressure on land within the city proper and non availability of accommodations, the educated section of these migrants who are dependent on Calcutta city being engaged in the tertiary sector of economic activities viz Service, trade & commerce, construction etc. etc. moved in place around Calcutta. They settled mainly in the South Eastern Sector as well as in the Eastern part of the North Eastern Sector (i.e. Calcutta Barasat Habra region) because of the proximity of these regions

as well as availability, enough room for their shelter. This is clearly borne out from the growth of population in urban places during 1961-71 different sectors. The growth rate of urban population in South Eastern Sector is registered as 92.77% followed by the growth rate in North Eastern sector i.e. 37.06 percent. It is further interesting to note that the growth of urban population in South Eastern sector is contributed mainly by the males in the population while other places this has been caused by the females in the population. It has been observed that in the development of all urban places at the outset the growth is contributed mainly by the males population and as those places became more or more established the population therein tries to strike a balance between the two sexes. In other words in the later phase of the history of urban places the growth is contributed more by female, than males. On the basis of this (i.e. growth contributed by male population in the main) indicator, it appears that of late the urban places of South Eastern Sector is developing. Further, it is to be seen that the sector is again characterised by the highest percentage of literates in the population (i.e. 60.32 percent). North Eastern Sector with 58.64 percent comes next while the other two sectors have also identical incidences of literates in the population. The functional characteristics of these sectors are also different. South Eastern Sector is the only sector which is non industrial in nature. However, it is the sector which has registered the highest participation of females (688 females per/males ¹⁰⁰⁰ in the working population).

When all the sectors are viewed in respect of concentration of population (i.e. density per sq. km.) in different urban places, it is seen that the South Eastern Sector is least concentrated in respect of population (i.e. 3516 persons per sq.km. whereas, apart from Calcutta city which has a population density over thirty thousand persons per sq. Km. the North Western Sector is the most density populated Sector (i.e. 11,113 person per sq. Km.). The sectors North Eastern and South Western have more or less similar distribution in this respect. This means also that the sector south East has still enough scope for absorbing urban populations. In other words this sector ~~present~~ present further opportunity for urban development. It is also evident that the areas comprised by Calcutta city and North Western & North Eastern Sectors present most urbanised pictures in respect of population density. In fact the North Eastern and South Western represent an intermediate or transitional phase in respect of population density.

Similar trend is also evident from the distribution of workers in different sectors of Economic activities while all these sectors (geographical) viz. North West, North East and South West have workers below 5% in the Primary Sector of Economic activities (i.e. Agricultural occupations), the South Eastern has about 11 percent workers in this category. Further in respect of workers in Tertiary Sector of Economic activities (I.e. Service, Trade and Commerce) the South Eastern Sector is the only unit which has 67-46 per cent workers. This is comparable with the percentage

of workers in this category in Calcutta city. The sectors south Western, North Eastern and North Western have more workers in the Secondary sector of economic activities (viz. Manufacturing , construction, Transport), than workers in other sectors of economic activities . The above analysis therefore, indicates that, except south Eastern Sector all other sectors have industrial function's as their predominant features.

When the analysis is made of urban and rural places around Calcutta in different distance zones, it is seen that the development of urban places around Calcutta is dependent on the distance factor. More urban centres have developed nearer the city than else where. Similarly, the urban potentialities of the rural areas are also dependent on distance factor. Nearer the city greater are the urban potentials of the rural places. The development of urban centres which have been existing since long has dependent on the availability of the transport region. That is why the main concentration of urban centres is found mainly along the North Eastern & North Western corridors and also to a some extent along the South Western corridor. Most of these urban centres come into existence as satellite towns in order to cater the needs of Calcutta city as production centres whereas the immediate neighbouring rural areas although did not have such functions but transformed into urban places by the sheer influence of Calcutta city. However, when the above factors are ignored and the whole region is considered to bear equal influence of Calcutta, it is observed that even then there is a clear trend and it is quite marked between rural and urban places in different concentric zones of varying distances from Calcutta. The urban characteristics are further accentuated in

further accentrated in both rural and urban places found within the corridors.

The discussion reveals further that both in rural and urban places, population density gets thinned with increasing distance from the city core, or in other words decreasing influence of Calcutta. This trend is however very much marked in rural places than in the urban centres. In urban places upto a distance of 21 miles from the city core, the density of population maintains more or less similar distribution. Beyond this distance zone the population concentration becomes low. Whereas in rural areas the density of population goes on decreasing with increasing distance quite progressively. It thus appears at least in respect of this feature, the city of Calcutta has greater influence on the rural areas than in the urban areas of the area under observation.

In respect of sex ratios (i.e. females per 1000 male in different types of population), it is quite low in urban places of different concentric zones in the entire region, the lowest sex ratio (apart from that of the city core) is seen in the zone which is lying between 18-21 miles distance from Calcutta city. The sex ratio in this zone is 678. This is so because of the fact that it has the largest concentration of industrial towns than any other zones. The sex ratio in general however, shows an increasing trend with the increase in distance from Calcutta. This trend is more marked by evident in the rural areas than in the urban areas.

The first two rural zones have quite low sex ratios. It may be conjectured (in the absence of specific data) that those zones inhabit migrants selective in respect of male sex in large numbers. This it is evident that the influence of Calcutta city taking sex ratio as an indicator is felt maximum upto the distance of nine miles from its core. Hereafter the influence declines as the sex ratios go on increasing with the increasing distance from the city.

Similarly in respect of literates in the total population and proportion of females among thousand male literates, it is observed again that the distance zone upto fifteen miles in urban places and nine miles in rural places from the city core, experience the influence of Calcutta city quite appreciably.

The proportion of workers in different sectors of economic activities viz. Primary, Secondary and Tertiary which has been a very good indicator for differentiating between rural and urban in respect of different avocations reveals that the distance zone upto 21 miles from the city core bears a low proportion of primary to secondary and Tertiary activities. This proportion however, increase beyond this distance zone. This means therefore, beyond this distance zone the urban centres show less urban characteristics in respect of economic activities. When the same ratio (i.e. Proportion of Primary to Secondary & Tertiary taken together) is examined in rural places at different distance gradients, it gives three different stages in this respect upto 9 miles the ratio is below 1; between 9-21 miles the ratio is just

above one while beyond this distance zone the ratio is very much above. 1. This means that rural areas upto nine miles distance from Calcutta are urbanised in respect of economic activities while it is semi urbanised between the distance limit of 9-21 miles and rural beyond this limit in respect of economic activities. The above analysis thus indicates that the rural areas upto 9 miles get maximum influence of Calcutta while the rural areas beyond this distance zone gets the influence of Calcutta at lower doses but receives the influence of other urban centres as well.

So it is evident from the individual discussions of the selected demographic variables that the city's influence is felt mostly upto a distance zone of fifteen miles from the core and beyond this distance zone the influence of the core region is felt in varying intensity. However, in respect of the rural areas it may be ^{seen} that the maximum influence of Calcutta city is evident upto 9 miles from it. The rural areas within this distance zone present more urban characteristics than those found in rural areas beyond this limit. These findings get further support from the results of amenities scores worked out from the availability of different types of amenities in the rural areas at different distance zones. These scores when re-related with the size of population in different concentric zones at varying distances from the core region, the results reveal that the rural areas around Calcutta city within a distance zone of nine miles have quite high potentialities for getting urbanised.

In fine the influence of Calcutta city on its vast hinterland can be divided into three categories viz.

(1) The vast area which has been formed since nineteenth century. The area of which is not limited within the boundaries of the State but extends beyond the borders of the state. This is not our concerned at the moment.

(2) The area which is developed around city's coal fields, jute belts and metallurgical bases in Damador vally and Chotanagpur area. It resulted in the development of very important industrial towns such as Asansol , Chittaranjan, Durgapur, Raniganj, Dhanbad, Bokaro, Kultali, ' Haldia Complex.

(3) The areas which constitute the immediate neighbouring regions of Calcutta city. It may be identified with the Calcutta Metropolitan District which is in fact comprised of Calcutta's angloweration and some other scattered urban places. This in turn corresponds very closely with the area that has been taken up for examination in this project work.

It is in this third categories of the region that the city has the maximum city hinterland relationship. Within this zone of maximum influence again, it is experienced that the city has the maximum influence upto a distance zone of twenty one miles from the city core. However, it is to be noted that the influence is felt in places which have been connected with the transport lines or fall within the transport net work of the region. Hence,

the present pattern of urban development around Calcutta city is not very systematic but heavily concentrated along both the banks of river Hooghly. In fact the main Railway lines as well as the National & State Highways run almost parallel and close to this river on both sides. Of late, it is however, noted that some urban development is taking place in South Eastern direction, although geographically as well as from the point of transport net work the area is least conducive for such developments.

The study has revealed the fact that the area immediately around Calcutta has greater potential for urban developments and that such potentialities can be thought at best to be extended upto a distance of 21 miles from the core all around Calcutta city. Hence it would be advantageous to encourage development of urban centres more within this zone in a planned way. Moreover, the preference may be given for such developments in the South East direction since this part of the area opens up possibilities for further development. This can be done with the help of proper planning by improving transport net works of that area and providing other infra structure facilities keeping in view the functional needs of the Calcutta city

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