1. INTRODUCTION

1.1. STUDY AREA: LOCATION AND ADMINISTRATIVE SET-UP

West Bengal extends from 21°38'N to 27°10'N latitude and from 85°50'E to 89°50'E longitude. It is bounded by Sikkim and Bhutan in the north, Assam and Bangladesh in the east, Nepal, Bihar and Orissa in the West and the Bay of Bengal in the south.

The present state of West Bengal is a part of the former province of Bengal in pre-Independent India. In 1947, when India gained independence, the province of Bengal was partitioned, the bigger eastern part being separated from the rest of India to form East Pakistan (now Bangladesh). The smaller western part was named West Bengal. The state grew further in extent either through the accession of princely states and foreign occupied areas or through state reorganisations. In 1950, the princely state of Koch Bihar and in 1954, the former French settlement of Chandannagar were merged with West Bengal. In 1956, on the recommendations of the State Reorganisation Committee, the Puruliya subdivision of Manbhum district and a portion of the Kishanganj subdivision of Purnea district (both formerly included in Bihar) were incorporated within the state.

The state in its present form is divided into 17 districts and covers a total area of 88752 sq.km. It might be noted here that two of these districts, North Twentyfour Parganas and South Twentyfour Parganas were formerly considered a single district and the 1981 census provides data for 16 districts since Twentyfour Parganas was considered a single unit at the time of census operations. The present work has followed the 1981 census and recognised 16 districts and the administrative map of West Bengal is given accordingly (Figure 1.1). In 1981 the state showed a total population of about 54.58 million with 14.45 million urban population distributed in 291 urban centres. The location of urban centres recognised in the 1981 census is given in figure 1.2.
WEST BENGAL
LOCATION AND
ADMINISTRATIVE DIVISIONS
1981

Figure 1.1
1.2. URBANISATION IN WEST BENGAL: A PREVIEW

Despite a long history of urbanisation medieval period, West Bengal entered the twentieth century with comparatively low degree of urbanisation. In 1901 only 12.2% of its population were declared urban compared to 22.23 percent in Gujarat and 16.59 percent in Maharashtra. The Imperial Gazetteer of India clearly state that "Bengal is distinctly an agricultural country and many, even of the so called towns are merely overgrown villages", thus indicating that the level of urban development was extremely low until that time.

However, the pace of urbanisation in West Bengal gained momentum during the present century so that its urban population grew to 14.4 million in 1981 showing a nearly sevenfold increase over the 1901 population of 2.07 million. During the same period percentage of urban population to total population for the state more than doubled from the 1901 figure to 26.47% in 1981. However, a comparison with the urban situation for the country as a whole as well as other highly urbanised states makes it obvious at once that while West Bengal is still included among the more urbanised states of the country, it is slowly being outranked by other states.

As far as the percentage of urban population to total population is concerned, West Bengal always shows a figure higher than the national average (Figure 1.3) and this is especially noticeable during 1941-61 when there was considerable difference between percentage of urban population in West Bengal and that for the country as a whole. However, the gap has been narrowing down in the last two decades as the all India percentage is rising faster than that for West Bengal. Among the different states of the country West Bengal ranked third or fourth with respect to this criterion during 1941-71 but in 1981 her percentage has come down to sixth after Maharashtra (35.03 percent), Tamil Nadu (32.95 percent), Gujarat (31.10 percent), Karnataka (28.89 percent) and Punjab (27.68 percent).

If urban growth is considered in terms of decadal variation of urban population, it is seen that West Bengal recorded greater growth than the country as a whole during the decades 1901-11, 1931-41 and 1951-61. In the remaining decades, growth has been far below the national average. In 1971-81, the percentage decadal variation of urban
population in West Bengal was 31.73 compared to the all India growth of 46.39 percent. However, a study of decadal growth in the highly urbanised states of the country reveals that similar low to moderate decadal variation in recent times is the rule (Figure 1.4). Karnataka is the only exception and shows decadal growth higher than the all India figure. A study of figure 1.4 also shows that among these states, West Bengal shows one of the lowest decadal growth figures in 1981. Tamil Nadu with 27.89 percent is the only other state which recorded a lower percentage variation.

The process of urbanisation in West Bengal has been strongly influenced by its colonial history for nearly two centuries and the present urban landscape has evolved mainly as a product of the British rule. Prior to British occupation, the level of urbanisation in Bengal was quite high by the standards of that time. Most of the towns were usually centres of royal administration, army camps, trading centres or places of pilgrimage. Some of these towns such as Tamralipta, Saptagram and Dhaka were ports. Development of the handloom textile trade led to the growth of urban centres like Murshidabad (also a capital), Malda, Hooghly and Cossimbazar. But the British takeover of Bengal, resulted in a decay of the traditional handloom textile industry which suffered heavily from competition of cheaper factory made goods. The consequent economic decline as well as political factors led to either a stagnation or a decay of hitherto flourishing urban centres and the result was rapid de-urbanisation of the region. Urban centres which continued to grow during this period were primarily towns located on the banks of the River Hugli, which flourished as trade centres of the British, the French, the Dutch, the Portuguese and the Danes. During the later half of the 19th century establishment of the jute industry provided a new basis for urban growth in the region and towns based on jute mills began to grow on either banks of the river Hugli in the neighbourhood of Calcutta. Other towns which grew encouraged by British policies included railway towns like Asansol, coal mining towns like Raniganj and tea plantation towns like Jalpaiguri. Many of the older established towns were also developed by the British as centres of administration but these were not comparable in importance to towns located on either banks of the River Hugli.
Figure 13: Percentage of urban population to total population in India and selected states.
However, the most remarkable feature of urbanisation in Bengal during the colonial period is the emergence of Calcutta from a cluster of three villages to one of the largest metropolises of the world. The main basis of growth of this port city, which was also the capital of British India until 1911, was export trade and it was connected by an elaborate system of roads and railways with its hinterland which included besides Bengal the greater part of northern and eastern India. This facilitated not only the movement of export commodities but also the migration of population from different parts of the country. The zamindari system of land tenure which resulted in an enormous concentration of purchasing power in the city as well as periodic famines which resulted in large-scale migration from rural areas in search of food and employment were also responsible for Calcutta's growth. In the post-independence period Calcutta continued to grow partly as a result of large scale transfer of population across the international borders after partition and partly because of its continued attractions as the primate city of the region.

The overwhelming dominance of Calcutta has resulted in a polarised urban system in the State, with one primate city which accounts for the largest share of urban population on the one hand and a stagnation of small towns on the other. The lion's share of urban population in West Bengal is concentrated in one particular area - namely the Hugli Industrial Region with Calcutta as its focus. Even as recently as in 1981 Calcutta city alone accounted for 23 percent of the total urban population of the state while the Calcutta Urban Agglomeration which covers Calcutta and parts of the adjoining districts of Haora, Hugli and Twentyfour Parganas accounted for 63.64 percentage of the urban population and contained 107 out of a total of 291 urban centres of the State.

The undoubted primacy of Calcutta is also reflected in the fact that the population of Haora city, the second largest city of the state is less than one-fourth of that of Calcutta. Further evidence of polarisation is provided by the lopsided distribution of urban population among the different size classes of urban centres. More than half of West Bengal's urban population is concentrated in cities with over
100,000 population, which account for less than 10% of the number of urban centres in the state. On the other hand less than one-seventh of the urban population live in small towns which numerically account for about two-thirds of the total urban centres in the state. In contrast to the large towns and cities, many of these small towns (population less than 20,000) are merely overgrown village with some local administrative functions serving as market centres for surrounding rural areas.

Regional imbalance is also a characteristic of urbanisation in West Bengal with highly urbanised districts like Calcutta, Haora and Twenty-four Parganas providing a sharp contrast with the backward, primarily rural districts like Puruliya, Bankura, Birbhum, Koch Bihar and others. Each of the former group of districts contain more than 10% per cent of the urban population of the state and more than 35 per cent of the population is said to be urban while in the latter group each of the districts contain less than 2% of the urban population of the state and less than 10% of the population is urban.

Thus the essential features of urbanisation in West Bengal may be summarised by a single statement: urbanisation in West Bengal is not only lopsided but also regionally imbalanced.

1.3. PREVIOUS INVESTIGATIONS

Urbanisation has been a favourite field of research among Indian scholars and numerous investigations have been undertaken to analyse the patterns and trends of urbanisation at the national level. Bose's (1970) exhaustive bibliography on Indian urbanisation lists as many as 1529 entries out of which about a fifth belong to the field of urban geography. Mookerjee (1969) studied the pattern of urbanisation in India in terms of distribution of population in various size categories of towns. Dutta (1969) delineated urban zones of India on the basis of the criteria of density of population and accessibility to urban places with a population of 50,000 and over. The nature of Indian urbanisation was analysed and linked with its colonial history by Munshi (1975). Density gradients were used by Brush (1968) to analyse the spatial patterns of population distribution in Indian cities. Krishnan and Gupta
(1975) regionalised India on the basis of the population potential of cities. Bala (1986) analysed the trends of Indian urbanisation through history and made an attempt to regionalise India on the basis of the levels of and trends in urbanisation among other things. Ramachandran (1989) made a micro-level study of urbanisation in India which focussed attention on the process of urbanisation and the nature of interdependence among urban centres and between urban centres and their hinterlands.

In addition to these and many other studies at the national level, frequent investigations were conducted at meso and micro levels. State level studies are quite numerous and West Bengal with its peculiarly distinctive patterns of urbanisation has received a great deal of attention. Datta (1956) studied urban growth in Bengal during pre-Independence period through an analysis of census data for 1872-1941. Mukherjee (1957) studied different aspects of urbanisation in West Bengal including growth of urban population, distribution of population among the different size classes and classification of urban centres on the basis of their functions. Guha (1957) studied selected urban areas of West Bengal in terms of town morphology and landuse in a historical perspective. Kar (1962, 1963 and 1966) in his studies of urbanisation in West Bengal made a detailed analysis of different aspects like patterns of urban growth in lower West Bengal during 1901-61, nature of economic activities and functional classification of towns in the Calcutta conurbation. Lahiri (1970) provides a broad view of the characteristics of urbanisation in the state in the general volume on West Bengal edited by Chatterjee and others. The disparities of urban growth in West Bengal have been analysed in relation to district level distributions of different economic variables by Munshi (1972).

Among non-geographical studies, a recent publication on urban West Bengal edited by Dasgupta (1988) makes a comprehensive analysis of the various facets of the process of urbanisation in West Bengal and makes valuable contribution to the field of urban studies. It is interesting to note that while the volume contains articles from a wide spectrum of disciplines - from economics, sociology and anthropology to urban planning and demography - contributions from the field of urban geography are conspicuously absent.
Calcutta and its problems has often been the central theme in studies of urban West Bengal and list of publications in this respect is endless. However, a few may be mentioned. One of the earliest studies on the morphology of Calcutta was done by Guha in 1953. The problems of Calcutta has been a recurring theme in studies of urban West Bengal by Munshi (1975). Berry and Rees (1974) studied the city from an ecological perspective. An exhaustive treatment of the urban and economic crisis faced by Calcutta and developmental strategy to tackle the crisis is found in recent volume on Calcutta edited by Jean Racine (1986).

Besides Calcutta, studies of other individual towns and cities are numerous, as for example the series of articles on Haora city by Chatterjee (1958, 1963, 1964 and 1965). Investigations have also been undertaken to analyse urbanisation in the different districts, (Jana, 1975; Biswas, 1978).

1.4. OBJECTIVES

It is thus obvious that inspite of numerous studies of different aspects of urbanisation in West Bengal, studies regarding the state as a whole are comparatively few. Most of the work accomplished so far has been restricted either to urbanisation at the national level where West Bengal is viewed as a part of the whole or to urbanisation at the state level in a specific census year, or to one particular aspect of urbanisation or to urbanisation in some individual part of the state. Most of the older studies considering the state as a whole were of a descriptive nature with little emphasis on quantitative techniques of analysis. In addition, recent trend of urban research in the State has been to focus attention either on a single aspect of urbanisation or to one particular part of urban West Bengal which is again most frequently Calcutta. Thus it seems that an up-to-date account of the urban scene in West Bengal using a quantitative approach, is not only meaningful but also highly desirable from a geographical point of view. The present work is an attempt to study urbanisation in West Bengal in the spatial as well as temporal dimensions. The State has been mostly
regarded as a whole and Calcutta has received attention only to the extent necessary to bring out the unbalanced nature of urban growth in the study area.

The main objectives of this study are:

1) to regionalise West Bengal on the basis of levels of urbanisation;
11) to relate variations in urban growth in the recent decades to urbanising processes like migration, industrialisation and commercialisation;
111) to study the spatial diffusion of urban centres, temporal changes in the pattern of spacing of urban centres and size-spacing relationship of urban centres;
iv) to analyse regional variations of the rapid but unbalanced urban growth in the state during the present century;
v) to examine in spatio-temporal perspective the relationship between size and growth rate of urban centres;
v1) to study urban hierarchy in the state from the viewpoints of rank-size rule and primacy;
vii) to study urban functions primarily in terms of functional classifications, size-function relationship of urban centres and functional zoning of individual urban centres;
v11) to analyse selected aspects of urban demography;
1x) to bring out the importance of Calcutta at the national level by a delineation of the metropolitan region of the city; and finally, to employ the results of analysis of the above aspects of urbanisation to find out whether the earlier statement "urbanisation in West Bengal is not only lopsided but also regionally imbalanced" is a true picture of the urban scene in West Bengal at the present time.

1.5. STUDY PERIOD

One of the principal aims of the present analysis has been to introduce the temporal dimension in the study of urban scene of the
state. However, the study period of the work has varied according to the particular aspect of urbanisation under consideration. Changes with time throughout 1901-81 have been studied where temporal variations were found to be necessary for analysis, as for example in levels of urbanisation (Chapter 2), urban diffusion (Chapter 4) urban growth (Chapter 5) and urban hierarchy (Chapter 6). Certain aspects like urban demography (Chapter 8) and urban processes (Chapter 3) have been studied for the most recent decades (1961-81) since it was felt that the current situation needed to be analysed in greater detail. The study of urban functions has been done on the basis of census data of 1971. The intention of the researcher had been to focus on the most current situation, but a detailed breakdown of working population into different industrial categories for all the urban centres has not been provided in the 1981 census. The case studies on functional zoning of urban centres, population density gradients and delineation of the urban sphere of influence has been done on the basis of the most recent data available.

1.6. DATA SOURCES

1.6.1. Census reports

The study is primarily based on published data obtained from various census reports published during 1901-81. Such data has been analysed to explain the salient feature of urbanisation in the state. Census data has been used for district as well as individual urban centres.

1.6.1.1. Census definition of urban areas

Since a major part of the work has been based on census data, the census definition of an urban area has been followed throughout the study and at this point some reference must be made to the census definition of a town. According to the 1981 census an area is declared urban if it constitutes a (i) municipal corporation (ii) municipal area (iii) town committee (iv) notified area committee (v) cantonment board and (vi) selected places with (a) density of not less than 400 persons
per sq.km., (b) a minimum population of 5000; and (c) at least 75 percent of the male working population engaged in non-agricultural (and allied) activities.

A problem in any study of urbanisation in India arises out of the changes in the definition of a town from time to time. In 1901 census, areas recognised as towns were (i) municipal corporation or municipal areas (ii) civil lines not included in municipal limits, (iii) cantonments and (iv) every other continuous collection of houses permanently inhabited by not less than 5000 persons which the provincial superintendent may decide to treat as a town for census purposes. In 1911 census, the same definition continued. However a few places, chiefly in the princely states which did not satisfy the requirements were treated as towns for special purposes. Until 1951 there were no further changes in the census definition of a town. However, after Independence former princely states were merged with different states and their erstwhile capitals were not treated as towns, if they did not satisfy the required tests. The 1961 census adopted a more rigorous definition and it has been maintained with some minor deviations in 1971 and 1981. It may be noted that in 1961 and 1971 censuses, non-agricultural workers included male workers engaged in livestock, forestry, fishing, plantation and so on but in 1981 census these male workers have been excluded from the non-agricultural workers for this purpose.

In West Bengal anomalies arising out of changes in definition of towns are minimal compared to other parts of the country and the problem is not so acute. Therefore, data for individual urban centres for different decades have usually been maintained as given in the respective censuses. Some exceptions have been made to this general trend, as for example while dealing with decadal variation of population of urban centres, Cossipur-Chitpur and Maniktala (treated as separate towns in 1901-21) have been treated as part of Calcutta city and Buxa cantonment in Jalpaiguri district (treated as a town in 1901-21 censuses and declassified as rural in 1931) was excluded from the analysis.
Census definitions of certain other terms used in the context of urban areas also need to be mentioned, since such terminology has sometimes been used in the following pages. The 1961 census introduced the concept of a 'town group' which was defined as a cluster of towns adjoining each other closely so as to form a single inhabited urban locality. In 1971 and 1981 censuses, however, the concept of a town group was replaced by that of 'urban agglomeration'. The 1981 census defines an urban agglomeration as a continuous urban spread constituting a town and its adjoining urban outgrowths, or two or more physically contiguous towns together with continuous well recognised urban outgrowths, if any, of such towns. The concept of an outgrowth was introduced by the 1981 census which states "in several areas around a core city or statutory town or non-municipal town have come up fairly large well recognised railway colonies, university campuses, port areas, military camps etc. It may not be altogether realistic to treat such areas lying outside the limits of a town as rural units; at the same time each individual area by itself may not satisfy the criterion of minimum population size for being qualified to be treated as an independent town. Such areas deserve to be reckoned along with the towns to which they are contiguous as an integrated urban area". In 1981, there were 79 villages in West Bengal, each of which were contiguous to a statutory or non-municipal town and which did not satisfy the criterion of minimum population size, but satisfied the other two criteria and were thus treated urban outgrowths.

The term urban agglomeration has been often used in the following chapters but urban agglomerations have not been used as units of study. It may be noted that in the analysis of decadal growth of population of urban centres, the population of urban outgrowths have been added to that of the adjoining statutory town, since excluding this population would not give a correct idea of the magnitude of urban growth during 1981.

Frequent references have also been made in this work to the size classes of urban centres. The Indian census recognises six size classes of urban centres according to population size. These size classes are Class I: population 100,000 and above; Class II: population 50,000 to
99,999; Class III: population 20,000 to 49,999; Class IV: 10,000 to 19,999; Class V: population 5,000 to 9,999 and Class VI: population less than 5,000.

1.6.2. Other sources

Data for case studies on urban centres have been obtained from the respective municipal corporations or municipalities. Landuse data for Asansol was obtained from the Asansol Durgapur Development Authority and for Chandannagar from the Chandannagar Municipal Corporation as well as the Calcutta Metropolitan Development Authority and supplemented by actual field observations.

1.7. RESEARCH METHODOLOGY

As mentioned earlier, the present work puts emphasis on a quantitative approach to the study of urbanisation in West Bengal and is primarily based on statistical techniques of analysis and mapping of relevant data. Attempts have also been made to use the more recent or non-traditional research methods. As a result of the quantitative approach some of the purely qualitative aspects of urbanisation may be neglected but such an approach seems to be justified when we consider the fact that the conclusions drawn will have a more rational basis and be free from any kind of bias.

In Chapter 2 which attempts to regionalise West Bengal on the basis of levels of urbanisation, certain parameters have been selected to study the degree of urbanisation in the districts. The level of urbanisation in each district has been denoted by a composite index of urbanisation which is a summation of scores of that district on each variable, the scores having been assigned to statistically devised classes using mean and standard deviation values for each variable.

The techniques of correlation and regression analysis involving the computation of Pearson's product-moment correlation coefficients and residuals have been employed in Chapter 3 which attempts to investigate the influence of processes like migration, industrialisation and commercialisation on urbanisation in the state.
Chapter 4 which attempts to analyse the spatial diffusion of urban centres in West Bengal during 1901-81 includes the following methods of analysis: (i) computation of the mean point of urban population of West Bengal by the grid-coordinate method for each decade during 1901; (ii) spacing of urban centres has been analysed by means of the technique of nearest neighbour analysis (after Clark and Evans); and (iii) size-spacing relationship of urban centres have been studied by correlating mean distance of urban centres in each of the six size categories with average population size of urban centres in the respective size classes.

In Chapter 5 which studies urban growth in West Bengal during 1901-81, urban population growth during the different decades have been analysed through a study of the percentage variations of urban population. The trend of growth of urban population and number of urban centres has been shown by means of exponential curves of the form $y_t = ab^t$. The 'b' values obtained from the fitting of these curves have also been used to show the unified rate of growth of both these components of urban growth.

Chapter 6 studies urban hierarchy in the state from the viewpoint of rank size rule and primacy. During each decade deviations from the rank size rule have been shown by two exponential lines - one based on the actual population of the premier city and the other based on the computed equation $P_t = a(1)^b$ which gives the expected population of the premier city. The lognormal relationship of urban centres has also been shown by plotting the cumulative percentage of urban centres of different sizes on logarithmic probability paper. Finally, the primacy index in the context of the rank-size rule has also been computed for Class I cities of West Bengal, 1981.

In Chapter 7, the classification schemes used to classify urban centres of West Bengal on the basis of their functions include (i) classification by triangular graph, (ii) functional classification after Howard J. Nelson and (iii) principal component analysis. The functional indices used to relate population size of urban centres with their functions include refined diversification index computed on the basis of
the percentage of working population in the different industrial categories (recognised by the census of India) and relative entropy values (computed from a broad three fold classification of the working population into primary, secondary and tertiary classes). Once the functional indices were obtained, correlation coefficients have been computed to relate the indices with population size of urban centres. Functional zoning of urban centres (case studies on Asansol and Chandannagar) have been shown by means of maps of urban landuse prepared on the basis of landuse data provided by relevant organisations as well as actual field observations.

In Chapter 8, which studies different aspects of urban demography, the age structure of urban population has been analysed by computing the age structure index after Coulson. Techniques of correlation analysis have also been used to study the influence of different factors on variations in urban sex ratio and to relate literacy levels to the level of urbanisation in the districts. The spatial distribution of population in selected urban centres has been analysed by the use of population density gradients (after Clark).

The urban sphere of influence of Calcutta has been delineated by the application of gravity model in Chapter 9.

Lastly, it must be noted here that the study has been conducted at two levels - district and urban centre. District level analysis has been conducted mainly for preliminary investigations giving a general idea of the urban situation over different parts of the state. For a more detailed analysis individual urban centres have been studied. However, unavailability of some data at urban centre level has imposed certain restrictions in the use of urban centres as the unit of study and has compelled the work to be conducted, only at district level for certain aspects of analysis.

1.8. CONCLUSION

To sum up, the above discussion presents

i) a preliminary view of the salient features of urbanisation in West Bengal;
ii) a general idea of the investigations undertaken previously in this field;

iii) the case in favour of an up-to-date account of urbanisation in West Bengal with a quantitative approach;

iv) a clear idea of the objectives of the recent work; and

v) a broad framework of the research methodology employed in the succeeding chapters.

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