INTRODUCTION

The Problem

India, as also other Third World countries, experiences severe human settlement problems which are attracting attention of national policy makers and international agencies alike. The issue of the rapid growth of metropolitan cities—with their own share of problems, in the midst of poverty and stagnation of the rural areas has numerous dimensions and each dimension presents a challenge by itself. Therefore, the policy responses also have different dimensions. An important one in this regard relates to the question of the spatial structure of human activities and population distribution. This is considered important because this dimension is believed to be at the root of many other problems.

There has been a general consensus that there is something wrong with the settlement system of the Third World. We have been hearing about prescriptions such as the 'growth pole hypothesis', 'the service centre strategy', 

'the small and medium size towns strategy', 'the IDSMT (integrated development of small and medium size towns)', 'the agropolitan development', 'the selective spatial closure' etc., to correct the structural malfunctioning of the system. These have been debated quite a lot in public and have become even cliches of political propaganda so that they have even lost their original meanings. It is not a bad thing that the issue has been politicised somewhat, but what is undesirable is that quite often the prescriptions themselves have come from very limited understanding of the role of/structure of settlement system in the development processes. Conversely, the processes which influence the structure of the settlement system are also poorly understood, especially in the context of the developing countries.

There have been many studies and theoretical explanations about the structure of settlements and changes in settlement structures at larger regional levels. Explanations for the statistical regularity (such as rank size rule) and spatial regularity (such as central place theory) of urban centres have been offered. But even at this level, it is said that there is no theory which sufficiently explains (Tinbergen, 1968) why different types of rank size relations or central places systems exist in different countries and development situations.

Inapplicability of generalised models in a variety of development situations is not the only problem in this area. One of the drawbacks of many studies is that they are 'snapshot' studies concerning short span of time. Thus they do not take adequate cognisance of the historical facts and processes. And for policy prescriptions, what we need is not only studies of structural analysis at one period but also those which look at the changing structures. Studies looking at the evolution of changes in the settlement structures would make a meaningful contribution towards policy making. Such studies have been too few in India.
Further, we have excellent studies at single settlement levels and also at national levels, but studies looking at changing structure of settlements at a fairly large regional level are too few. Single settlement studies do not show spatial processes and at the national level, space is too macro to know how the processes work at micro levels. Analysis at intermediate levels is important in this regard.

This thesis is an attempt to do such an analysis at a regional level. It does not purport to build a theory or test any theory but tries to analyse the structure of the settlement system—especially urban settlements system in a region in South India, over a period of time. The time perspective is added over the spatial perspective so that a better understanding of the processes behind the evolution of settlement structures at micro level could be obtained. The objective is to examine modestly the evolution of the settlement system in a region, in relation to the spatial pattern of economic and social change.

This empirical study is conducted in a region which had experienced many socio-economic changes in the last 80 years. It comprises three southern most districts of Karnataka, namely Bangalore, Mandya and Mysore. This area happens to contain one of the industrially advanced districts as well as one of the agriculturally advanced districts in South India. The area has a city of national importance with around 3 million population today and another of around half a million. These two cities set 150 kms. apart has strong interaction between them and dominate the state and regional urban scene. A string of medium sized towns have also developed along the path of interaction giving the character of an urban corridor.
Objectives and Scope of The Study

This study seeks to:

(1) analyse the trend in the changing structure of the settlement system emphasising growth and functional changes in the small and intermediate sized centres in the study area over the last 80 years with greater coverage and stress on the last 3 decades,

(2) relate these changes to the spatial pattern of agricultural growth and other developments in the rural areas, and

(3) to analyse the pattern of rural and inter-urban linkages, so as

(4) to clarify some of the policy areas and policy alternatives in settlement systems and the regional development.

Difficulties in obtaining certain time series data, non-reliability of certain available time series and the limited resources for data analysis have put some restrictions on the objectives, however. The specific objectives were narrowed down to the analysis of the spatial pattern of urban and rural growth and to the analysis of the evolving functional structure of the urban system only. The term spatial pattern of development was used only on a restricted sense to indicate the pattern of development measured by a set of variables which will cover the agricultural development, the productivity and the occupational and demographic change. The study attempts only to explain the urban growth and changes in the urban structure in relation to the regional and rural development pattern. In the process of analysis, the study would indicate some roles the towns have played in the development process, but that is not a major objective of the study and therefore will not be covered in detail.
It is not intended to do an analysis of policy changes in the past for fear of unmanageability within the available resources and for the fear of increasing the complexity. However, the study attempts to indicate policy and planning implications of the findings.

Methodology

The analysis is limited mainly to urban settlements as defined by the census and only a few aspects of rural settlements were studied. The changing structure of the system will be studied only with regard to two sets of multivariate data, one, describing the population growth and other demographic aspects of individual towns and rural areas and the other, relating to the functional structure of the individual urban areas. While the first set of data is analysed for five selected time periods - 1901, 1931, 1951, 1971 and 1981 - over the last 80 years, the second set is analysed only for the last 3 decades. Using these two sets of data, it is aimed to study the spatial pattern of growth and the functional structure. The linkage pattern within the system - the interurban and the rural urban - were studied only with respect to a few selected towns.

The evolution of the settlement system is then related to the socio-economic changes in the last 80 years, with the help of historical data on certain selected aspects. Emphasis has been laid on agricultural, industrial and infrastructural developments. The units of analysis in this case can only be the districts for difficulties in obtaining data at lower levels. Essentially, this part of the study uses a very broad brush.

The emerging structure of the urban centres in the last three decades can be related to the spatial structure of rural economy only by analysing a set of data/lower geographical unit. For this purpose, talukshave been used as a basis of
analysis. The emerging structure of rural economy and society has been analysed in a functionally disaggregated fashion. A multivariate approach was followed.

The method of analysis is statistical and cartographic. The growth patterns are analysed with the use of the trend surface mapping, regression and other techniques, while factor analytical methods are used to study the functional structure of urban areas and spatial pattern of rural economic structure. As all this required enormous computations and all data analysis were computerised.

The details of the uncommon methods and techniques of analysis and survey and their logic are described at appropriate places in the text. If a statistical or cartographic technique is repeated in the study, it is described at a place where it is used for the first time. The meaning and logic of the techniques could be appreciated better in the context rather than here.

Some Conceptual and Methodological Issues:

There are, however, some methodological and definitional issues which have to be clarified. First, the concept of settlement structure. This concept, as used in the study, requires some clarification. By settlement structure we are referring to the way in which elements of a system of settlements are spatially organised, their functional characteristics and the economic, social, physical linkages between them. It is used in a comprehensive sense. Like the concept of urban system, the term settlement structure of an individual settlement as well as a large system of settlements. On the other hand, the term settlement system may not refer to its structure; i.e. the functional structure as well as the way in which the components are related, the economic and other
linkages etc., because by common use settlement system may be confused only with rank size or city distribution systems or central place systems. The term settlement pattern also has a similar problem. It may not convey the idea of the functional structure. Considering all these, the term settlement structure was thought to be more appropriate. It is less used term at least. The term is used to denote the structure of the settlement system.

Second, the selection of the study area. Indeed, it would have been good if we selected an area which could be identified as an economic region. Such a region with some closure would cut across administrative boundaries and that would create problems of assembling and disaggregating data especially historical data. Even to identify a homogenous region would take much of the time and resources.

We cannot claim that the area selected is a full economic region. Some parts within the study area may have little to do with the region, and some other areas outside the study area may fall under the economic system of the study area. However, the cropping pattern and the present network of roads and communications and a quick look at some historical data suggested that these three districts have close affinity to each other. We would not be far wrong to call this an economic region. At least it is a close settlement region showing close links dominated by two cities (The sixth chapter would clarify this point further).

Third, the definition of the settlements. It was first thought that the study would analyse the settlements without considering them urban or rural. But census of India always classified them in that fashion and historical data for the non urban places are difficult to obtain. Further, there are over 5,000 settlements and therefore some selection has

1. It is impossible to find a fully closed region.
to be made. That is why it was decided to look at the important central places. The urban settlements defined by census gave the basis for such a selection.

The census was, however, not been very strict especially in applying their definitions until 1961. Since then they call a place an urban area if it satisfies all the three following criteria:

1. more than 5,000 population,
2. a density of more than 1,000 persons per square mile (400 persons per square km.) and
3. more than 75 percent of its working population is engaged in non-agricultural occupations.

Some places which do not qualify in one or more of these criteria may also be classified as urban area if there is a municipal government or similar local government in the area.

Because of the inconsistency in census definition until 1961, many towns did not remain urban in all the censuses. It was therefore decided to take the present day towns only and work back. Towns which were declassified in 1961 were not included in some of the detailed analysis, but were considered in general analysis. The details are discussed in appropriate places in the text.

There are also other limitations due to changes in censal definitions in occupational categories, workers etc. Therefore they are taken here as indications, more to study the relative positions of various settlements in the same year. These limitations are also explained in appropriate places.

Inaccuracy of data and location of data posed serious problems for the study.
The accuracy of the census could be questioned especially when it comes to assignments. For instance, certain towns might have been shown to have grown very fast in a decade but actually it might be a case of merging one or two settlements. Similarly, one physical entity such as the Bangalore city might be assigned to different local bodies and therefore may be shown as different towns. Such errors are adjusted as far as possible.

Data on land use, cropping pattern, industrial employment, infrastructure etc. posed more problems. Data on various levels seldom equate each other because the methods of collection vary. Area of administrative units according to professional survey may be different from the area according to village papers. Besides there will be reporting errors on land use as it is seldom checked. Similarly, the industrial and infrastructure data may have some omissions. But we have no chance but to use the available data. Some discretion had been used in adjusting these figures by comparing areas and sources, wherever possible.

Particular difficulty was experienced in the collection of disaggregated time series data. Much of the data series (landuse at taluk level, returns from industries, income statistics etc.) did not exist prior to the 1950s. Even when such data are available, neither the concerned departments, the statistical bureau nor the libraries (except the state Archives) considered it important to keep the old data properly. Consequence of this was that part of the series were lost and data were truncated. Thus for instance, landuse for all the taluks could not be assembled for a single year around 1951. For some areas the earliest available record was for 1952 while for some other area it was for 1956 for which data for the other areas could not be found.
Because of these difficulties, the data were taken only to indicate trends within some margins of errors. Data which showed possibilities of large errors were not used even if they were important.

Lastly, the temporal reference points. This study is an analysis of changes between 1901 and 1981. The turn of the century was historically important for the study area as the state was beginning to shoulder more developmental responsibilities. Though census of India started from 1881, most data were easily available only from 1901 onwards. Therefore, it was thought that the study will confine to the period since 1901. However, it is not possible to analyse data for all the years. Therefore, five time points were chosen to discern the trends. They were 1901, 1931, 1951, 1971 and 1981. All these dates have historical significance. The thirties, were beginning of industrialisation, and forties saw the end of the colonial rule in India and the princely states. The 1971 was the last complete census as much of '81 data are yet to come.

Data Sources

Most data came from Census of India publications or publications of concerned Government departments. In certain cases, data were obtained from data files. The land use, productivity and regional income data were obtained from the Bureau of Economics and Statistics. Interviews and discussions with department officials and elderly citizens were also of use.

Primary survey was conducted in 5 selected towns, but that was used only to check a few points which other data could not indicate or clarify. This survey was very brief and was confined to a few limited aspects, as will be shown in the sixth chapter while discussing the results of the survey.
Focus on the Study Area

The study area consists of three southern districts of Karnataka State\(^2\) (figure 1.1). Until 1939, the area was divided into only two districts, viz. Bangalore and Mysore. Mandya was created out of Mysore district in that year. Until the linguistic reorganisation of the states in 1957, Kollegal taluk of Mysore district was part of Madras State.\(^3\)

The three districts have a geographical area of 24,908 sq.kms. Mysore is the largest with 11,947 sq.kms, and Bangalore and Mandya are 8,003 and 4,958 sq.kms respectively (Census of India, 1973 a). The land forms part of the geographical tract called Southern Maidan (Plateau). The districts are situated between 915 to 975 meters above sea level. The land is fairly plain sloping gently towards the east. The western ghats (mountains) bounds the Mysore district. Rains are fairly good, the average annual rainfall varies from 1971 mm in Mysore district to 924 mm in the Bangalore district. Most part of the year is dry. But temperature does not rise above 33°C normally in the summer (March to May) and drops to 6 to 7°C in winter (September to January). Climate is one aspect that attracted the British to set their garrison in Bangalore and also certain industries. This had a profound impact on the later development of the area.

The area lies on the drainage basin of Cauvery, an important river of South India. The Mysore and Mandya districts are blessed with good perennial tributaries of Cauvery but Bangalore does not have any major river (see fig. 1.2).

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2. Until 1974, the state was known as Mysore State.
3. Madras state was later renamed as Tamilnadu. Before independence, in 1947, Kollegal taluk was part of Madras Presidency.
Karnataka State

The Study Area

Fig. 1.1 The Study Area: Location and Administrative Subdivisions
A number of big and small anicuts and channels exist along the main stream of Cauvery and its tributaries. These have been sources of irrigation, besides tanks, for over 100 years. Irrigation practices consist of lift and canal irrigation, most of Bangalore and Mysore districts being irrigated by the latter. Tanks also irrigate some areas. About one sixth of the net cropped areas of Mysore and Bangalore districts, one third of the net cropped areas of Mandya are irrigated according to recent figures.

Red loams and red sandy loams are the soils found here. The whole of Mandya, the southern part of Bangalore and a major part of Mysore districts are covered with red sandy soils. The north western part of Bangalore and a small portion in the eastern side of Mysore district have red loamy soils. In the north eastern part of Bangalore, laterite and lateritic gravels are found. Generally, northern Bangalore has poorer agro-climatic and soil conditions.

There is no major mineral deposit. The minerals which are found are clays, quartz, corundum, asbestos, chromite, salt, mica etc., But there is no significant mining activity, the largest one being the manganese mines near Mysore city producing approximately 15,000 tons annually. The south western part of the study area is covered by forests. A substantial part of Mysore district (27% of the area) is covered by forests which are rich in timber (teak), sandalwood and other forest produces. About 70 percent of the area of Kollegal taluk is forest. Small parts of Mandya (5%) and Bangalore (10%) district are covered largely by bush forests. The south and west are also part of the Sahyadri ranges of mountains and thus pose restrictions for communication beyond the boundary of the study area.

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4. Small dams for irrigation.
Apart from the Bangalore metropolitan area and the Mysore city, the economy is predominantly agricultural. About 70 to 80 percent of the population still depends on agriculture as cultivators or as labourers.

Until around the middle of the 18th century the area was ruled effectively by local chieftains even though they swore their allegiance to some kingdoms. The Wodeyars of Mysore, had commanded the overall respect of these chieftains in the 18th century. In 1760, Hyder Ali, the Commander-in-chief of the then king took over. He and his son Tippu Sultan ruled together for 38 years from 1761 to 1799. Their rule effectively unified the State of Mysore, the study area comprising the southern one third of the Kingdom. In 1799, the British defeated and killed the Sultan bringing the state old Mysore under the British rule. Then the state comprised of what presently are the nine districts of Karnataka state, namely Mysore, Mandya, Bangalore, Kolar, Tumkur, Hassan, Shimoga, Chitradurga and Chikkamagalore.

The British installed Krishna Raja Wodeyar-III of Mysore back in the throne who was to be loyal to them. They also appointed Purnaiah as Dewan to assist the King on day to day administration. The accounts show that the state was prosperous and many public works were undertaken which included repairing many irrigation tanks, a bridge across Cauvery river at Srirangapatna and a dam across Laxmanathirtha. Though the King administered from Mysore, Purnaiah gave importance to Bangalore.

Trouble broke out soon for the king, People of the north-eastern part of the state were never under the Wodeyar rule and they started revolting. By the end of the 1820s British warned the king and in 1831, they took back the power.

5. Until 1957, the state remained the same, when it was expanded. Reference of Mysore state, in a context before 1957 is to the area of the state existing then.
Maharaja was reduced to a title and administration of the state was handled by a British Resident Commissioner. Sir Mark Cubbon took the position in 1834 who was succeeded by L.S. Bowring in 1862 and then by Sir Richard Meade. The areas surrounding the kingdom were already ruled by the British directly. The British rule continued for fifty years and after about half a century of representations to the Viceroy of India and the British Crown, the Wodeyars got back the rule in 1881. Since the British take over, Bangalore became the effective capital of the state, though it was never proclaimed to be the official one.

Chamaraja Wodeyar was installed as Maharaja of Mysore with the reversal of the rule to the natives. The British also instituted a permanent Dewanship. The administration was in the hands of Dewans and Maharajas were to interfere only in certain policy matters. In this way locus of power moved slightly away from the Maharaja though it was the maharajas who appointed the Dewans. The socio-economic development of the area upto 1950s owe quite a lot to these Dewans and politics behind them.

A succession of Dewans administered the state under the new Maharaja from the turn of the century until 1940. Among them Sri M. Viswesvarayya (1912-1918) and Sir Mirza Ismail (1926-1941) had very distinguished careers. Under their leadership the state saw many fast changes. The state came to be known as a 'model state' in Indian Empire, then.

A representative assembly was also instituted by the turn of the century with one nominated representative from each taluk. It used to meet in Mysore city once a year during the Dasara festival, mostly to voice grievances to the King. Though this body had no legislative power to begin with, it acquired such powers by the second quarters of the
century. The representation also was made by election by the elites though universal adult franchise was not introduced until independence. A district economic conference was also an annual feature since early 20th century. Development matters were discussed by the government officials and nominated representatives at the conferences.

Soon after independence of India in 1947, the princely state was abolished along with the positions of Maharaja and the Dewan. In 1950, India became a federal country with two level cabinet system, one at the centre and another at the state level, according to a new constitution. The state had a legislative assembly (lower house) and a legislative council (upper house) of elected representatives to which the cabinet is responsible. Bangalore city became the official capital of the state. The important state functionaries were, however, located there even for over a century.

In 1956, new linguistic states were reorganised and Mysore state (renamed as Karnataka state in 1974) expanded to more than double the original size by adding Kannada speaking areas from the northern side.

The economic changes that the study area saw in this century was immense compared to the history of other areas in South India. Many development strategies were implemmented in this area well before and after independence. The region also has seen many physical, economic and social changes. That is the major reason why the area was selected for the study.
Organisation Of The Report

The study is reported in seven chapters including this one. The second chapter surveys the concepts, models and ideas in the field of settlement structures, central place theory and rural urban relations with particular reference to India. This is done with view to identify the current analytical trend, gaps in the knowledge and to form an analytical frame for this study.

The third chapter plunges into the analysis of the population growth in the rural areas and urban settlements for the last 80 years. It identifies trends in growth as well as population distribution and analyses how the urban system has been developing. The salient aspects of economic, social and political changes are analysed for the same period in the next chapter in an attempt to explain the population distribution and growth trends. A detailed analysis of the emerging structure of the rural space economy and functional character of towns for the last three decades forms the fifth chapter. Multivariate analysis at the taluk level for the rural areas and individual town level for the urban areas was done to relate the various aspects of the agrarian regional economy with the structure of the urban system. The sixth chapter explains the rural urban relations and inter-urban linkages with the help of certain selected aspects and primary surveys. The seventh and final chapter draws the conclusions of the study. It summarises the evolution of the settlement structure and generalises the findings in the framework developed in the second chapter and then makes an assessment of the policy implications of the findings. It is also attempted to present an outline of a desirable alternative strategy—namely, territorial settlement complexes.