CHAPTER I
INTRODUCTION

Rapidly and continuously growing cities in the developing world are converting the suburbs and the rural backwaters into compact urban zones, creating all the time a dynamic transitional zone of mixed milieus known as the rural-urban fringe. This zone which lies between the urban and rural areas of the world have been, on account of its unique location, continued socio-economic dynamics and shifting, has been of great interest among the geographers throughout the world (for example: B. Gowda, 1981; Mahadev, 1975; B. Gowda and Mahadev, 1978; Golledge, 1960; Gopi, 1967, 1978; Lal, 1987; Morrill, 1965; Senthamarai 1989). For years, the geographers have spent time and energy in devising means of delineating the rural-urban fringe and analysing the change over from 'rural-urban fringe' to 'urban' process (for example: Gopi, 1978; Senthamarai, 1989), dealing with the subtle changes that occur in the rural-urban fringes. However, the research papers in India on the rural-urban fringe has been sporadic and no one in particular has taken the study of
fringes as a 'life time' interest. Increasing attention has been paid by the geographers in recent times for three basic reasons:

1. There has been, and is, a large scale conversion of fertile agricultural lands of the rural hinterland of the urban areas into urban land uses, primarily residential and sometimes industrial;

2. The conversion to, and eventual annexation of (such converted areas), urban areas has resulted in a continuous process of human adjustments to changing environments; and

3. There has been an active and larger intermix of newly emerging physical, social and cultural dimensions of the settlements in the rural-urban fringes of the metropolises and intermediate cities.

The fringe by its very nature is a zone of fluctuating and expanding boundaries, in all directions conducive to urban invasion. The expansion of the fringe is often along the transport and communication arteries, either the roads or the railways (for example: Bangalore, Madras and Hyderabad). As this zone is not stable, it expands at varying rates posing difficulties to the planning agencies, especially the Metropolitan Development Authorities in the regulation or zoning of land uses. Regulated residential or industrial development is difficult to achieve in this 'melting pot' of the rural-urban fringe. But the process of urbanization / suburbanization goes on.
THE PROBLEM OF ANALYSIS

Mysore city is a fast growing, 40th city in the country. It exhibits most of the tendencies described above. The city has been experiencing a heavy influx of population in recent years, primarily due to the establishment of a few large scale industries. Mysore city, as a centre of higher learning and salubrious climate throughout the year, has attracted people from all walks of life to settle down. It has until now been a very congenial and not-very-crowded city. It has also been a planned city with a lot of green cover, made up of parks and woods around water bodies, so far. These factors have promoted the city development on desirable lines. But with the industrial scene changing fast, there are tendencies in its urban growth which are undesirable and it is moreover the second fastest growing city in the state of Karnataka, next only to Bangalore metropolis. Bangalore, renowned as the 'electronic city' and 'garden city' of India is also the capital of Karnataka.

As the city of Mysore is finding the going difficult to accommodate the excessively growing population, through both natural increase and migration. The urban activities in the last two decades have been shifting towards the peripheries and the rural hinterland owing to the 'space consuming activities'. Even the areas un-incorporated into the city have been brought under some urban activities, mostly industrial, along the transport corridors in the northwest. Land here is available at low,
affordable prices and the newer suburban areas have better transport facilities, due to industrial development. This process has now changed the urban social and economic fabric, with most people of the city occupying, and also gravitating towards, the transitional rural-urban fringe.

The development in this zone is haphazard, if any. There has been a misinterpretation of urban land use regulations, people taking advantage of the loopholes and lacunae in the zoning regulations. A negligence to duty has been shown by the Corporation officials, the Mysore Urban Development Authority (MUDA), the planners and the administrators alike in this regard. There is no 'public opinion' against the moves and as such the neglect of the zone has resulted in the irregular conversion of land from agriculture to non-agricultural uses. This conversion is also non-optimal in the sense of a lack of provision of public amenities. A few half-hearted attempts have been made by the urban planning authority to regulate development in the transitional zone, which if any have only led to further unplanned and unguided expansion of urban activities.

A major shortcoming in the process of planned development, or rather its absence in the city, has been that of the lack of 'correct identification and demarcation' of the rural-urban fringe. Therefore, the identification, demarcation and understanding of the urban process in the fringe areas is the foremost of the objectives of the present study. Developing a simple and reliable method, or a combination of methods,
assumes greater significance in this regard. Yet another dimension of the problem that deserves to be looked into is the fact that the present day rural-urban fringe will be part of the city in not too distant a future and therefore warrants planned and well regulated expansion and development. It is this problem that the present study addresses most, besides identifying and demarcating the rural-urban fringe over time and space and understanding the planning process as exists or does not.

**The Objectives**

This study explains how the rural-urban fringe development has occurred in the Mysore Urban Area (MUA) which includes the city and the fringes, which are differentiated in this study as 'inner city, urban and rural fringes' (they are defined in the methodology outline below), and what are the factors involved in the promotion of rural-urban interactions. It is also concerned with the overall process of transformation of the fringe agrarian society into a non-agrarian society and its implications for city planning and development. The ultimate purpose of the study is however to suggest better city planning practices in the future expansion of the city of Mysore and MUDA area, considering the social milieus and the development processes. The objectives of the study therefore are:

1. To identify criteria and demarcate the rural-urban fringes of the city of Mysore for the last three decades: 1971, 1981 and 1991;
To assess the demographic and transformation processes that have occurred through the years so as to appreciate the impact of changing population densities, sex ratios, literacy rates, occupational structures and transport services at the village level in the fringes (inner city, urban and rural) identified and demarcated;

To evaluate the process of structural and land use transformation and the pattern of development in the fringe villages, towards suggesting for the development of the MysoreUrbanArea.

THE HYPOTHESES

Some hypotheses suggest themselves in the context of analysis here. The three hypotheses which provide for some suppositions that could be tested in the study are:

1. The changing rural-urban fringes of the city of Mysore have shown differential rates of change in interaction and transformation and there has been a directional focus in the formation primarily as a result of urban invasion and land use conversions.

There are at least three suppositions here, namely,
(a) demographic and economic changes over space and time have occurred with different rates of expansion and development;

(b) socio-economic interaction and transformation have therefore occurred with differential impacts; and

(c) the two above have been in response to as well as a result of urban invasion and land use conversions.

2. In the process of rural-urban fringe making, there has occurred a process of 'reverse' urbanization, resulting in the city population which originally came from the rural and small urban centres returned to fringes as suburbanization proceeded in space and time.

The suppositions here are:

(a) If a process of population concentration and a corresponding socio-economic dynamics has occurred in the city, there has been a corollary counter activity, which may be, for want of a better term, termed 'counter urbanization': a reversal of the population flows and economic activities; and

(b) For this process to occur, a return and a short run (short distance) migration has occurred in response to changing land use scenarios in the rural-urban fringe.
3. The counter urbanization has been most predominant in the un-irrigated tracts as well along the corridors of industrial development. Access to city and public services and amenities has been the dominant factor ushering in change all through the three decades. Agricultural land uses within 8 km of the city have been predominantly of vegetable and flower gardens, catering to the needs of the fringe as well as the city.

The Study Area and Fringe Definitions

To set the agenda for the research, the first effort has been set forth as the identification of the area wherein, taking into consideration the physiography, administration, transport services and development processes, the rural-urban fringes for the three years (1971, 1981 and 1991) may be delineated. The area so identified includes 332 villages in the vicinity of Mysore city, with a total population of 552,509 (with 104,087 households) occupying an area of 1,329 sq. km. Administratively, the villages fall under the jurisdiction of 6 taluks (Mysore, Hunsur, H.D.Kote, Nanjangud and T. Narasipur of Mysore district and Sriranga-patna of Mandya district). From the city centre, the area extends up to 15 km in the north, 22 km in the northeast, 32 km in the east, 32 km in west and northwest. In the northwest, the area is separated from the rural beyond by the Lakshmanathirtha river, in the north by the Cauvery and in the east and southeast by the Kabini river. A base map has been prepared for mapping delineated rural-urban fringes as well as the segments differentiated as inner city, urban and rural fringes.
Inner city fringe is in effect the area lying immediately to the city area, showing greater land use dynamics. Urban fringe is that area which lies close to the inner city fringe where urban characteristics, by any standard, are predominant. Rural fringe is the outer zone of the rural-urban fringe where rural characteristics are dominant but interaction with urban areas is intense. There is however a very thin line separating the urban and rural fringes just as there is a thin line between the inner city and urban fringes.

THE METHODOLOGY

At the second stage, a methodology has been devised to study the demographical and occupational structures, land use variables, public utility and functional variables. For this purpose, secondary data have been collected from the secondary and documentary sources such as the Census, District Statistical Abstracts, Planning and Development Reports, Manuals of different government and quasi-government departments, time tables of state suburban road transport corporations. Data on land uses and their patterns have been collected from the taluk offices and from the records of the village officials. Data on land values have been collected from the Offices of the Sub-Registrars, real estate agents, House Building Cooperative Societies and Mysore Urban Development Authority.
Computerised databases have been created for the 332 villages in the study area, using Censuses of 1971, 1981 and 1991 and the variables so computerised have been non-agricultural workers and their ratios, population growth rates and densities, sex ratios and literacy rates. The data have been subjected to simple statistical analyses to compute summary statistics, notably averages. Additional data on the state and national, rural and urban contexts relevant to the analysis in the study have also been collected and computerised. The averages have been used in the classification of settlements. And on the basis of classification of settlements, weightages have been assigned to variables (6 for high, 4 for medium and 2 for low values of the cells in the data matrix of the variables) towards developing 'scores' for variables helping in the delineation of the fringes. In fact, the scores have been aggregated for the 7 criteria used (distance from the city, transport frequency, ratio of non-agricultural workers, population growth rate, population density, literacy rate and sex ratio) in the fringe delineation, with maximum being 42 (that is, 6 x 7) and the minimum being 14 (that is, 2 x 7) for each of the variables.

In the case of distance criterion, the weightages have been assigned based on the location of settlements from the city centre. That is, those villages falling within a radius of 10 km have been assigned a value of 6, those within 10-15 km a value of 4 and those beyond 15 km a value of 2. Similar weightages have been assigned also on the basis of frequencies of moffusil bus services during the three decades 1971, 1981 and 1991. Thus,
the aggregate scores obtained by the settlements have been arranged in a
descending order. The settlements which scored an aggregate more than 80
per cent of the total score as 'inner city fr. ', more than 60 per cent but
less than 80 per cent as 'urban fringe' and less than 60 per cent and more
than 40 per cent as 'rural fringe'. Once the fringes have been delineated,
they have been evaluated using the Boundary-Girdle Method developed by
Otto Mauull (1915) who used it for the limitation of regional boundaries of
the I Balkans. Two criteria of validation that the method provides are: (a)
its simplicity and (b) the approximation it allows for in the relationships
among the criteria of fringe delineation.

Elaborations of the aggregate scores are provided in the chapters
where they are being used for delineation and analysis. Criteria have also
been discussed in detail in the chapters that follow. In order to investigate
the trend and pattern of urbanization, empirical data have been collected at
the household level. For this purpose, however, three villages have been
selected with one each from the three classes of fringes (inner city, urban
and rural). In their selection, distance and locational attributes
(physiography and type of location) have been considered as the major
criteria. One of the villages chosen for data collection is in the dry, interior
tract, the second is from the irrigated, interior tract and the third is from
the unirrigated but along the main road. In each of the villages, 20 per cent
of the households have been interviewed, using a schedule prepared and
pilot tested in the area. Stratified random sampling has been adopted taking
into account occupation, size of land holding, place of origin and caste. The secondary data collected have been synthesized at various levels to draw concrete ideas about the patterns in which the fringe has been extending urban areas. Four different types of analyses have been adopted to make the study comprehensive. They are:

1. Village level analysis.
2. Distance gradient analysis.
3. Sectoral analysis.
4. Fringe area analysis.

For the village level analysis, 9 villages have been chosen with 3 villages to each of the fringe zones. The sample of field survey has also been chosen from each of the fringe zones, namely, inner city fringe, urban fringe and rural fringe. A total of 652 households have been interviewed using the schedule of questions (Appendix 1.1) and they have been chosen randomly and interviewed free associationally. The distribution of samples by the fringe zones are as follows: inner city fringe 280, urban fringe 204 and rural fringe 168.

**The Organization of the Thesis**

The present thesis is a blend of seven chapters. They have been commissioned especially for the purpose at hand: providing for a comprehensive view of the rural-urban fringe of the city of Mysore, its social, economic and cultural characteristics and the processes of
transformation: urbanization and counter-urbanization. The present chapter, **Introduction**, which introduces the problem of analysis, the procedures adopted in the problem analysis and a review of literature to provide for a conceptual and empirical background for the study. The review is both of national and international literature, focussing on the relevant materials concerning the present research.

The second chapter, **Mysore City and Environs: A Geographical Background**, is a chapter which has the purpose of introducing the study area chosen. A historical account of the city is presented first, to place the city development in the planning context there was. However, the treatment of historical materials is brief and the emphasis has been on the recent times, more especially since 1971. Demographical and geographical settings of the city and its environs are dealt with in some required details so as to provide perspectives on the city development and its expansion in space and time.

The third chapter, **Delineation of the Rural-Urban Fringe**, deals primarily with how the rural-urban fringes of the city of Mysore have been delineated, over the decades 1971, 1981 and 1991. The chapter provides a detailed description of the administrative units, the basic units being the 332 villages in the study area: Mysore and its environs. The methodology of delineation of the rural-urban fringes has been elaborately discussed prior to discussing the changing nature of the fringes over time. It is important
to mention that the fringe has indeed been shown as three distinct zones: the inner city fringe which is exclusively urban but is in the immediate vicinity of the city; the urban fringe which has predominantly urban character and the rural fringe which has predominantly rural character. An examination of the validity of the fringe delineation has been accomplished through testing with Boundary-Girdle method, made popular with the Balkan regionalisation.

The fourth chapter, Urbanization: Demographical Transformation, examines the process of demographic transformation which is the foremost of the process of urbanization. Population distribution, its characteristics, the density, growth rates, literacy, sex ratio and non-agricultural workers are all dealt with, with a pointed focus on the process of urbanisation. The demographical characteristics discussed here make clear the nature and extent of urbanization that has occurred in the city of Mysore and in its fringes. For the purpose of explicit analysis of urban fringe characteristics, nine village samples are taken, 3 each from the inner city fringe, urban fringe and rural fringe delineated and described in the previous chapter.

The fifth chapter, Urbanization: Land Uses and Structural Transformation, is an investigation into how land uses and the structural transformation that result from them are helpful in the understanding of the process of urbanization as it has occurred in the city of Mysore. Urbanization is in effect defined as the expansion of typical land uses over
space: residential and industrial being the two dynamic land uses which have the power to attract population (through migration) both into the city and in the suburbs. For the elaboration of the structural transformation, village and household amenities in the fringes are described as found in the nine sample villages chosen. The sixth chapter, Counter Urbanization, is a detailed description of the reversal of population movements in the recent years from the city of Mysore into the inner city, urban and rural fringes. In reality, this is the movement of people, in ever increasing numbers, leave the comforts of the city for the spaciousness and the scenic landscapes of the fringes. But in some sectors of the city and its environs, the reversal of population movement is in response to the development of industrial land uses, to be able to be close to the workplace, taking advantage of the low land values of properties and real estates and the access to city facilities and amenities. The dynamics of the fringes is most seen in the counter urbanization as an expression of the urban invasion outwards from the city core and peripheries.

The final chapter, Summary and Conclusions, first summarises the thesis and provides in a nutshell the findings and conclusions of the study so as to draw implications (a) for the planning and development of suburbs and fringes, (b) of the urbanization and counter urbanization in the future for the socio-economic development of the city and environs and (c) the urban environment in both the city and its fringes. Suggestions are made in the chapter towards possible and desirable controls over the urbanization
and counter urbanization for further and future research on the related topics. There is an appendage of the References Cited in the thesis and appendices which support the findings and conclusions by providing data/analytical supports.

**A REVIEW OF LITERATURE**

The interest in fringe as an area of research in urban geography unravels three major categories of contribution which can be attributed as:

1. Identifying of fringe,
2. Identifying characteristic features and their significance, and
3. Delimiting fringe and the study of socio-economic transformation.

The term fringe has been subjected to a lot of discussion. The geographical literature appearing from the 1940s onwards is full of delineating and characterising features of the fringe. But as early as 1915 Galpin used fringe as synonymous to urban, where the adjoining rural land is in the process of conversion to urban. Smith (1937) introduced the term 'urban fringe' to describe the built up land just outside the corporate limit of the city. Smith focussed on the demographic characteristics of the area and thus gave a generalised rather than a conceptualised idea of the fringe.

Salter (1940) defined the fringe as a mix of land uses of both farming and non-farming type. The classic attempt of Wehrwein (1942) on the
subject is of excellent topical interest. His portrayal and review of the entire gamut of the problems in their proper perspectives is worth noting. Starting from the 'isolated state' and its central city through Christaller's idea of urbanization, he has evaluated the different factors of urban invasion and peripheral discrimination which were mainly due to the railroad as the first decentralising agent and the metalled road and automobiles as the source of rapid growth. He called the fringe in USA as "Institutional Deserts" because it became the location of all sorts of undesirable, unpleasant and noxious activities. He described the fringes as an area of transition lying in between urban and agricultural land uses. Thus, according to Wehrwein, fringe can be better identified and understood in terms of changing land uses than in any other way.

Andrews 1942 tried to distinguish between the urban fringe and the rural-urban fringe. The rural fringe as he puts it refers to the actively expanding sector of the compactly built economic city, while the 'rural-urban fringe' signifies the areas adjacent to the periphery of the urban fringe. He defined "the adjacent peripheral zone of the urban fringe as the intermingling zone of characteristically agricultural and characteristically urban land use structure obtained in the area". The decade of the 1940's bore special significance for such studies during which, many writers made their contributions. Klöw (1942) studied the problems of the sub-urban areas. Alpake (1942) defined the urban fringe as the zone where cultural developments take place outside the boundaries of central cities and
it is extending into the area of predominantly agricultural activities. Harris (1943), in his article "suburbs" called it the "climax area" the expansion of which is a function of physical dominants of the periphery and the cultural features of the urban centres including their size and functions. He offered a six fold classification of the suburbs, namely:

1) Industrial fringe;
2) Industrial;
3) Complex with industrial uses more important;
4) Complex with residential uses more important;
5) Dormitory; and
6) Mining and Industrial uses.

Balk (1945) introduced a new terminology as he found the fringe an area of "urbanisation". Fiery (1946) laid stress on accessibility as a prime factor in the development of the fringe. According to him, "The urban fringe is a marginal land use area not because of its geographical location, its soil type or its topography, but rather because of its particular degree of accessibility (relative to that of other land uses) to some central transport point, Rodehaver (1947) defines the fringe as the area of transition between urban land uses and the area devoted to agriculture. He defines in his study that "the fringe settlement is a two directional movement" farmers living near industrial settlement have moved in towards the city to avail themselves of employment and educational opportunities at the same time, the city people have moved to, nearby rural areas to establish new
residences. As a result, the emergent part time farmer and transmuted tiller of the soil are losing their traditional attachment to the land and transplanted urbanites show a tendency to form a separate social class having strong attachment to their former city environment. The study views the rural-urban fringe as a definitive stratum in the social structure. However, no such clear distinctions exist in fact. Rodehaver has referred to it as an area of changing relationships that demands its own place in any scheme of classification, its own definition and its own historical reference. In his study of Madison fringe of Wisconsin state, Rodehaver wanted to ascertain ecological, social, cultural and demographic characteristics of the area. The criteria he adopted for defining the fringe were:

(a) The proportion of non-farm families to the total number of families in a given area, and

(b) density of non-farm population per square mile and assessed value of land and buildings per acre.

By using these criteria, he determined the urban intensity index and the area of "maximum choice" and "minimum choice", thus a degree of Madison was observed by him. It was partly to personal preference and partly to a lack of facilities outside the city. In any event, he observed that the index points to closer working relationship between Madison and surrounding areas in future. Mayer and Beagre (1947) discussed "true fringe" "partial fringe" and adjacent rural township in detail, while
distinguishing the townships occurring in the fringe of the metropolitan region of Detroit, they used the proportionate size of the NV-RNF, (non village, rural non-farm) population with that of the total population of the township. The townships with 50 per cent or more NV-RNF population and occurring in an exceptionally continuous area, outside the city were classed as true fringe, whereas the townships between 25 to 50 per cent values and usually occurring further from the city were called "partial fringe" area.

Contrary to Rodehaver's idea of 'fringe settlement' as a two directional movement, R.Devey (1948) opined that the movement of population into the rural-urban fringe was a movement of urban people. He further says that "in the fringe area, there is mingling of people, some of whom work in and are oriented towards agriculture while at the same time the remainder pursue urban occupation and an urban way of life". F. Aschman (1949), F.W. Blizzard and W.F. Anderson (1952) in their studies emphasized on land uses in the study of the rural urban fringe. The latter depicted the fringe area of Williamsport, Pennsylvania automobile reconnaissance and inspection method were adopted as tools in the delineation of the fringe. They visualised that the inner boundary of the fringe normally coincide with the city corporate limit where the intensity of city service declain. The other fringe boundary was delineated approximately through those places where an urban pattern of living yielded to a pattern of widely scattered non farm type houses and plots among
farms or to pure farm and forest land uses. In the fringe study of Columbia, Gist (1952) has made a selection of only open country families, such families had a member or more working in the city and their residences located at one and half mile radius from its corporate limit. Gist visualised certain difficulties in the selection of typical samples by means of accepted sampling techniques. However, he interviewed most of the urban families living in their area.

Martin (1953) has studied the fringe of Eugene Springfield of Oregon. He has discarded the census data concentrated on the specific locality and gathered primary data from the residents of the area. He has delineated the urban fringe on the basis of the probability sampling in which the situation of the single family residences outside the corporate limit and natural attributes were given due consideration. He delimited the fringe on the basis of the points "where the pattern of land use characteristics of the fringe changed to the dispersed pattern of open country farming". But Martin has not specified as to what extent the density of the single family dwellings would be indicative of the index of fringe characteristics.

McKain and Burnight (1953) have attached much significance to the sociological aspects of the rural-urban fringe and discussed the "extended fringe" and the "limit of the fringe," respectively. But both the writers have looked upon the same from the rural point of view. As such, they have studied the area of Melbourne fringe which is outside the urbanised
area of Melbourne Metropolitan Area of 1966 Census but is well within the Melbourne Statistical Division. Duncan and Reiss (1956) have studied the fringe of Chicago wherein they have tried to distinguish among urban fringe, rural non farm and rural farm areas. Their urban fringe connotes the non-suburban population of urbanised areas and outside the central cities. The urbanised area according to them, have three components: (a) Central city, (b) suburbs, and (c) urban fringe. The urban fringe is usually coexists along with the corporate boundary of the city on its one sides.

Zinimer and Hawley (1956), Rohrer and Hirzel (1957) and Kurtz and Eicher (1958) are other authors who have also studied and delineated the fringe. The latter attempted to differentiate between fringe and suburb’s. Golledge (1960) used the phrase "Geographical no-man’s land" for this transitional contact zone, lying in between rural and urban land uses. In his study of Sydney, he has noted 7 characteristics of the fringe, namely, (a) smallness of the farm, (b) Fluid pattern of the land use, (c) intensive cultivation, (d) mobile population with sparse to moderate density, (e) rapid residential extension, (f) lack of service centres and (g) abundant provision for speculative buildings, all changing and resulting in a peculiar dynamism. The fringe as a potent determinant of the Morphology of urban settlement was visualised by Conzen (1960). Urban morphology as he put it, is a product of the continuous influence of the former fringe, encompassed successively by the advancing urbanity. He defines and visualises the fringe as being composed of two sections "The proximal of inner margin where
development is closer and more continuous and distant on outer margin, where growth is more sporadic and development more dispersed in character".

Like Golledge, Russwurm (1960) refers to the fringe as "frontiers of discontinuity between the city and the country". His approach to the London (Ontario) survey was quite precise. He has classified each, two hundred acre plots according to their residential owners and tenants engaged in non-farm activities. Later, he delineated the rural-urban fringe upto the plots where in 50 per cent or more families were engaged in non-farm occupations.

Reinemann (1960) has tried to delineate the fringe, based on the pattern of distribution of manufacturing in Chicago area. Boochert (1961) has noted the temporarily growing density of the countries of communication and the increasing volume of transport are significant spatial aspects of the fringe. He has opined that "the line at which the fringe is invading the countryside is marked by a basic change in the road pattern". Wissink (1962) has made an exhaustive survey of the fringe areas of American cities and visualised "fringe", "suburbs", "pseudo suburbs", "satellites and pseudo satellites", in the process of the survey. As regards land use he has termed it "an area of great differentiation". Young (1962) has also studied some geographical characteristics of the urban fringe.
In London (Ontario, Canada) a pilot survey was conducted by Hind-Smith (1962) and he delineated the fringe by means of the following four indices: 1) Land subdivided, but not yet developed or recorded by the planning board, 2) farm lands "for sale" for urban purposes as indicated by realtors, 3) land in non-farm ownership, either idle or tenant farmed, and 4) farm land assessed at higher than normal farm lands as shown by local assessors. Orlando, Florida and Mukherjee (1963) have laid stress on the under developed parcelised lands surrounding the city as major characteristics of the fringe. The intensity of urban land uses on the subdivided adjoining lands and extent to which these lands are built up have been taken as the prime criteria for the delimitation of the urban fringe.

Andrews and Eshlamann (1963) have discussed the characteristics of the migrants and non-migrants in the vicinity of Ohio and delineated its rural-urban fringe. In his study of a sub-urban village in Sudan, Barclay (1964) has noted, as to how ownership boundaries effect urban growth and land use changes. A majority of the scholars who have studied fringes in the 1960's have concentrated particularly on the socio economic problems of the fringe and its residents. They were more concerned about some particular features of the fringe. Morill (1965) for instance considered more specifically about the mode of its sprawl, while Harvey and Clark (1965) have taken note of the nature and economics of its expansion in general. Pahl (1965) has focussed attention on the contemporary processes of social character of the fringe around London. He has summarised the
salient characteristics under Four heads. The main processes under way include a tendency towards:

1) Social and spatial segregation;
2) Selective immigration;
3) Changing commuting character; and
4) Collapse of goegraphical and social hierarchies.

He has further contended that, the creation and evaluation of the fringe has been was more a process of social transformation. It brings class consciousness through which is woven the dynamism of urban life style. His departure from the Hackney’s physical and static feature of land use characteristics is a major theme and is worth emulating. Goldsmith and Lee (1966) studied the socio-economic conditions around the metropolitan regions. While Johnson (1966) has studied the population characteristics of the urban fringe. Leon (1966) has suggested the use of the percentage distribution of the three census categories. The rural limit is set where 54 per cent of the population is in the rural farm category and conversely the urban limit is set, where 51 per cent or more of the population falls in the urban category. In India U. Singh (1966) has made a significant contribution by adopting different techniques to delineate the fringe of five important towns of Uttar Pradesh. The urban fringe a 'Kaval' towns have been delimited by overlaying several maps depicting desirable geographical factors, that is,
1) Changes in land use,
2) Changes in built up area,
3) Occupational structure,
4) House types,
5) Distribution of industrial and non-agricultural activities including lime and brick Kilns,
6) Limit of essential services,
7) Distribution of educational institutions, and
8) Types and patterns of streets.

He has also recognised two types of fringes that is the 'primary fringe' and the 'secondary fringe'. He has placed the primary fringe generally along the municipal limits and the secondary fringe along the regulated areas of the towns and cities. Gopi (1967) has been the first to make an exclusive fringe study examining the phenomenon of the transformation of the fringe of Hyderabad in the light of structural changes in its economy. Phadke and Sita (1981) have analysed the spatial patterns of urban impact in the Bombay Metropolitan Region, based on an analysis of data for 925 settlements. Four indicators of impact have been chosen by them: population density, sex ratio, growth rate of population and percentage of non-agricultural work force. The authors have used methods similar to those used in the present study and with telling effect.

It is Bradnock (1974) who employed for the first time comprehensive tools to define urban field in the context of modified metropolitan
dominance using regression and trend analysis. His main finding is that the population density and certain economic factors vary in a regular manner with increasing distance. His study has examined the regularities in the South Indian cities, taking Madras and Bangalore as cases. To improve upon the results, he has also suggested the use of multivariate statistics. Bal (1975) has made a study of fringe using direct observation based analysis, interviews with the villagers of the rural-urban fringes and field mapping. Pryor (1968) has discussed various aspects of the rural-urban fringe. In his paper, defining the rural-urban fringe, he has enlisted, rather exhaustively the various connotative characteristics and factors of the fringe. The rural-urban fringe, according to him is a zone of transition in land use and social and demographic characteristics lying between: a) Continuously built up urban and sub-urban areas of the central city, and b) the rural hinterland. It is characterised by the almost complete absence of non-farm dwellings, occupations and uses of urban and rural social orientation and incomplete range and penetration of urban utility services; un-coordinated zoning or planning regulation; areal extension beyond although continuous with the political boundary of the central city and an actual and potential increase in population density. Oosthizen (1969) has proposed an alternative terminology of "sub urban area", rural suburbs and quasi-urban area or quasi-urban township. The term 'Quasi-urban township' or 'rural township' means those population clusters like villages or sparsely populated residential areas, without any recognised form or urban authority, situated away from the metropolitan area and indefinite by place name.
The turn of the 1970s has some very definite and concrete definitions and objective methodology on the rural-urban fringe. Indian geographers also have written articles and supplemented dissertations on the urban fringe. Connell (1970), Rao (1970) and Connell (1974) have noted a particular type of situation as existing in the less developed and developing countries. These studies here shown that the villages adjoining the major cities are affected in two ways. The proximal villages provide for the permanent migrant or the temporary commuting labour force to cater to the needs of the city and on the other hand the ideas and innovations flowing from the city are imprinted on the residents of these central zones rather unmistakably.

Rikkinen (1972) has analysed as to how the ownership boundaries affect the urban sprawl and expansion and changes in land uses. Schnore and Kleys (1972) have measured and compared the speed of suburbanization over the last decades with that of earlier ones in the U.S.A. Alam and Khan (1972), in their most outstanding works, have made a detailed study of all the relevant points of urban influences. They have studied the core and peri-urban zones of metropolitan Hyderabad and its region and states that the primary and secondary fringes are synonymous with peri-urban zones. Carter (1972) has attempted a good review of the literature on the rural urban fringe, the residents of which he thinks "live in the country, but not socially and economically of it". According to him, the notion of the fringe is that "where urbanisation impinges on rurality, the processes indeed
should be in operation". Carter has argued that there is no point in the (settlement) continuums for large agglomerations to small clusters or scattered dwellings where urbanity disappears and rurality begins". He very emphatically rejects the rural-urban dichotomy which he considers as pragmatic and anachronistic. He visualises fringe as a distinctive area of characteristic land-use associations. The notion signifies the social characteristics of the population of the fringe as being an intermediate type between those of the town and those of the country as well.

Hodson (1973) and Martin (1973) have laid stress on the statistical persual of the demographic characteristics of the fringe. The former has studied the sub-urban areas of the 9 metropolitan centres of the Middle East U.S.A. In his study of the areal distribution of population in cities and suburbs, attention has been focussed on the later, and on the entire metropolitan area for measuring the density gradient in which he has found a tendency for population distribution over space to vary between city and suburbs.

Thomas (1974) has made an attempt to focus on the problem to study the voluminous scholarly literature on fringe lacking clarity of facts and life and landscapes under investigation. Srivastava and Ramachandran (1974), in there article, "The rural urban fringe" have dealt with its various aspects and noted that the study of fringe remains a neglected area in urban research. Nangia (1972) has delineated the fringe around Delhi in her
doctoral research entitled "Pattern of Rural Settlements in Delhi - a Geographical Analysis". In the delimitation of the rural urban-fringe, she identifies a three-tier network of the metropolitian region on the basis of a number of determinants. She presupposes that the fringe is rural compared to the typical urban character of the city and urban landscape compared to the typical rural landscape. She has demarcated the rural-urban fringe of Delhi on the basis of 19 structural and functional characteristics. The fringe extends to a distance of 11 to 28 km with 178 villages.

Singh (1973) has worked for doctoral degree on the topic "Jaipur and its rural urban fringe: A study in settlement geography". His line of approach is almost the same as that of the Hiralal (1987) with the only difference that his inner fringe has synchronized with the municipal boundary. The inner fringe includes vast agricultural lands dotted with rural settlements beyond the main built up area of the town. According to him the urban way of life and activities are being gradually and slowly introduced in the form of changing use of land, establishment of industrial estates, new approach roads, railway stations, colonies, extension of civic amenities and others.

The demarcation is based on the density in built up areas, differences in house types, types and pattern of streets, occupational structure of the inhabitants, provision of civic and essential services and density of population and housing. He has delimited the outer fringe upto
3-5 km radius, a belt which has been supplying not only milk and vegetables for the consumption of the city proper but also the raw materials for the oil and perfume industry.

Munton (1974) has given a detailed descriptive account of farming on the urban fringe of London. He has analysed the land rent and land value models to understand the land use pattern. Three aspects of the urban fringe have been observed in his study, namely 1) The considerable differences between the land prices for agriculture and urban uses, increases in absolute terms, 2) the rise in demand for land calls for control in the operation of land markets, and 3) there is a continuing change in the social structure of those engaged in agriculture on the urban fringe.

Hiralal (1972) in his different articles has also portrayed the different characteristics of the fringe. He has studied the rural-urban fringe of Bareilly. Analysing the gradients of urban influence on the rural settlement with reference to Bareilly (1972), he has examined the various influences with the distance from the centre of the city. These urban influences include density of houses, population, proportion of built up area and the nature of settlements which together are expressed as dwindling gradients in relation to the distance from the city. In one of his other articles (1973) he has discussed the conceptual frame of the fringe. He has opined that the definition of the term lacks standardization. The incoherent land use patterns occurring due to out growth process of the city may be considered
as the representative of the fringe. In his other article entitled "Urban fringe: Concepts and delimitation, Lal (1980) has discussed concepts, methodology, determinants to delimit the urban fringe with special reference to the Bareilly city. For the delimitation of the rural-urban fringe, he has adopted 3 measures:

1) Spatial determinants,
2) Occupational determinants, and
3) Demographic determinants.

Hyma and Dattatri (1976) have examined the present pattern of Madras metropolitan expansion and related problems of planning and development. They have traced the population growth, and have suggested that land use and growth of urban centres are reciprocal to expanding metropolitan city. Gowda and Mahadev (1977) have examined the changing nature of agricultural production that exist on the rural-urban fringe of fast growing metropolitan centres in general and Bangalore in particular. The main focus has been on the transfer of land from agriculture to urban uses, employment opportunities available for the fringe people and the distinguishing characteristics of agriculture in Bangalore rural-urban fringe.

Sinha (1980) has presented a new technique for the demarcation of various zones in the rural-urban fringe of any city with an intensive study of the surrounding areas of Patna forming the case. He claims to have surveyed a total of 2100 families in 83 sample villages, besides 226 families
for $V$ values and 550 families for $T$ values, which stands for village and towns, respectively. The rural-urban fringe of Patna has been delimited on the basis of 13 qualified parameters, that is,

a) Isochrones,
b) Urban influences
c) Public utility services,
d) Land value,
e) Non-agricultural activities,
f) Number of families per house,
g) Sex ratio,
h) Daily commuters,
i) Population density,
j) Literacy,
k) Primary activities,
l) Agricultural activities, and
m) Built up area.

He has calculated the index value and using pearson correlation of variables to delimit the area, statistically. After delineation, he has studied 9 sample villages of the fringe in detail with special emphasis on their changing land uses. Mishra (1980) has studied the conceptual aspects of the rural urban-fringe and its importance in planning with reference to Muzafferpur. He has described in detail the problems of delineation. Senthamarai (1989) in her study "urban to urban fringe of Madras" has attempted to delinate urban fringe from urban. She has demarcated the fringes for the years 1961, 1971 and 1981 for the Madras Metropolis and
considered however the fringes in two portions, namely, the urban fringe and rural fringe. She has used the multivariate common factor analysis in the delineation and has successfully justified the use of the method and the results derived from it. Taking a sample of 815 households from among the ten select 'fringe locations' in various years, she has been able to demonstrate the process of change from 'urban fringe to urban' in terms of residential characteristics. Her study belongs essentially to the genre of 'Residential Differentiation' which has been a forte of the urban sociologists. She has also brought out the fact how the urban sociologists have been similar in their approaches, especially multivariate, to those of the geographers.

Having looked at the various literature on the fringes, the author has found that the most significant contribution in terms of what constitute the urban traits is that of Kirk (1975) who gives a list of these traits considering the domain of action. The traits are also significant in the present study and hence is given below:

1. Commercial-industrial service activities dominant,
2. Capital intensive systems,
3. Frequent cash transactions,
4. Competition more intense,
5. Retail establishments more specialised,
6. Secondary groups dominant,
7. Social mobility less restricted,
8. Daily routines dominant,
9. Residence and workplace separate,
10. Considerable amount of time spent in travel,
11. Stress situations more frequent and regular,
12. Politically radical and active,
13. High literacy requirements,
14. Adult earnings for rural life,
15. Inorganic, geometric environments,
16. Noisesome,
17. Landscape changes many and often abrupt, and
18. Focussed leisure activities.

These traits are important in the fringes, both behaviourally and structurally. Space and time are indicated through traits 8-10. Not all of them are however significant to Indian urban scene, especially those of 12, 14, and 17. All others apply to Indian city/town with varying degrees.