CHAPTER VII

SUMMARY AND CONCLUSIONS

In the last four chapters, which formed the core of the present thesis, there has been a careful analysis and interpretation of data on the fringes, so as to yield the delineation of inner city, urban and rural fringes and the characterization of urbanization in them through the analysis of changes in demography and land uses. In the end, the process of counter urbanization - that is, the return to the suburbs and the fringes over the years by the people of the city of Mysore - as a corollary of the industrial activities along certain corridors and the consequent movement of some sizeable population in response to increasing congestion in the city, pressure on its amenities and infrastructures and the general willingness to 'commute' on the part of the middle class to the city from the sylvan/green locations around the city which they have, in recent years, taken to in large numbers, braving certain social and economic hardships because they still, to a large extent, depend on the vital services of the city such as education and health. Earlier, of course, there has been a reasonable description of the problem.
of analysis and the methodology adopted to analyse it in the light of existing 'state-of-the-art' literature which helps with the shaping of the problem and the procedures. In this final chapter, however, the purpose is to summarise quickly the results of the study and present the findings from it in a nutshell so as to draw implications for urbanization and counter urbanization in the three delineated fringes. The chapter therefore has four sections: the first is a summary of the study; the second is a brief recounting of the findings of the study, the third is of the implications of the findings and the last is that of suggestions for further research.

**SUMMARY**

Mysore city and its environs have been undergoing a transformation both in their demography and land uses. This transformation has been triggered by the industrial development along some specific sectors of the city and its environs and the general willingness on the part of the city population to invest in land and develop housing in the fringes. In fact, the pattern of investment has been such that prime agricultural lands have been converted to urban land uses, mostly industrial and residential and less recreational. Recreation has been an activity which has shown preference for 'landscaping' and green areas and sylvan surroundings. Some private developers and/or real estate agents have gone into the development of teak farms before selling the plots for higher prices. Thus developers have also improved the value of the land, in an attractive way.
The present research has accomplished two basic analyses: one, the delineation of the fringes and differentiating them as 'inner city' (quite simply, the most closest to the city limits), urban fringe and rural fringe. This division has however been made on the basis of population influxes, first into the city, from the rural backwaters including inter-state migration, and then largely 'return/counter migration' of the city population to the rural peripheries, going deep into the rural backwaters but remaining within advantaged locations in terms of access to city services and amenities, even if that entailed some commuting, travel cost and travel time, as long as the counter migrants enjoyed both the urban living and rural attractions: ease of living in naturally enervating locations.

Three aspects have thus been the essential strands of research reported here, namely, (a) the delineation of fringe through a careful consideration and analysis of data pertaining to three years - 1971, 1981 and 1991 - so as to differentiate inner city, urban and rural fringes. Although the boundaries that exist between them are thin, they have been so identified and demarcated primarily on (b) the basis of demographical, and (c) land use and village/household amenities in these areas. While the delineation has been discussed in Chapter III, the demographical transformation has been dealt with in Chapter IV and the transformation in land uses and structural elements, amenities, has been examined in detail in Chapter V.
The entire thesis is put into seven chapters, inclusive of the present chapter, which summarises the findings and draws their implications.

**FINDINGS**

1. **Fringe Delineation**

In 1971, there was a rural-urban fringe but the inner city fringe as delineated in the study has not existed except as a settlement with a score of 80 per cent. There was a clearcut existence of both urban and rural fringes. The urban fringe enveloped the city but along the transport corridors there was little concentration either of population or of land uses and amenities. The city exercised its influence over a small number of villages lying in the immediate vicinity. The rural-urban fringe boundary lay at 5 km from the centre of the city. There were 33 villages in the urban fringe and 146 villages in the rural fringe. The villages in the rural fringe encircled the urban fringe villages, with about 4 or 5 actually trespassing into the urban fringe boundary.

It was in 1981, actually in the late 1970s, the fringe development was beginning to take shape with a zone of higher interaction and influence of the city. This zone of interaction and influence extended along the transport routes leading to Bangalore, Nanjangud, Hunsur and T. Narasipur, stretching to a distance of 23 km towards the south, 20 km towards the east and about 10 km towards both the north and the northeast.
It was during this period industries along these corridors began to sprout, more especially along the route to Brindavan and Krishnaraja Sagar dam. It was again during these years, the inner city fringe began to shape distinctly and in 1981 had 16 settlements. Its existence was found within a distance of 10 km from the city centre. The alignment of the settlements in the fringes was very impressive in contrast to 1971. It was again in the years of the late 1970s and the 1980s that the city became a melting pot owing primarily to industrialization of the fringes and the consequent urbanization, especially 'counter urbanization'. While the 1970s were characterised largely by the influx of the population into the city, the 1980s were characterised particularly by the population moving out of the city locations and settling down in the fringe zones.

The process of transformation, demographical, morphological and structural, has been most eloquent in the 1990s. The inner city fringe has shown a high order of influence. The urban fringe has stretched deeply into the south, southeast, north and northeastern directions, covering a total geographical area of 4,758 sq. km. The inner city fringe has its extent confined to nearly 96 sq. km only. The process of transformation has not been uniform in all sectors and the expansion of the city along the Bangalore and Hunsur sectors has been most prolific. Urban fringe has however shown movement along the Nanjangud sector.

Now for a list of general findings from the delineation:
1. It has been understood that physical barrier has a positive correlation with the pattern of urbanization.

2. It has been understood that the city bus and local services are regulated by the three rivers whereby the daily commuter population is restricted to the limits of the city and its fringes.

3. Non-agricultural workers ratio is a significant variable in determining the boundary among the other variables of fringe delineation.

4. The process of urban expansion has occurred at three different stages and periods. During the 1960s, the urban expansion was limited to the main city, in the 1970s the city expanded almost in a circular fashion and during the 1980s, it further expanded towards the north, northwest and the west.

5. In contrast to the city expansion, the fringe expansion has set its path differently over space and time. In 1971, the fringe boundary extended up to Srirangapatna in the north, Hulikere in the northwest, Belavadi in the west, Nanjangud in the south, Lalithadripura in the southeast, Yeragana halli in the east.

   In 1981, the fringe expansion took place deep towards the east up to a distance of 20 km along the T. Narasipur main road. Towards the north, the fringe expansion has been controlled by the river Cauvery. Along the Husur main road, it extended up to Elawala in the west. Udburu has formed the boundary in the southwest along the H.D. Kote road.
An important thing to notice in 1991 is that of the large scale fringe expansion which has occurred towards the south, southwest and moderaterly towards the northeast.

6. The settlements accounting for more than 60 per cent of the non-agricultural workers are concentrated around the peripheral areas of the city, indicating a true city impact.

7. The migration of people from the city and the surrounding villages to the peripheral settlements in the west and northwest has resulted in a spectacular growth of population in these settlements.

8. It has been noticed that the sex ratio is low in the west and the northwest peripheral settlements, fulfilling one of the characteristic features of the fringe.

9. It has been seen that there is a significant correlation between literacy rate and irrigation. High literate settlements are concentrated in the northern tracts of the Bangalore sector and in the industrial region of the Hunsur sector in the northwest and west.

10. The test conducted using the Boundary-Girdle method to confirm the delineated fringe coincided substantially with the score method.

11. It has been identified that the shift of people and size mobility from rural to rural fringe, rural fringe to urban fringe and from urban fringe to inner city fringe have occurred in a decadel phase.
2. **Urbanization of the Fringes: Demographical Changes**

12. It has been made clear from the analysis that the population growth rates, density, literacy rates and non-agricultural workers ratios show negative correlation with distance, that is, as the distance increases, there is a decline in the distribution of these variables, until 18 km, showing the influence of the city until this distance.

13. Among the sectors (that is, the Bangalore, Nanjangud, T. Narasipur and Hunsur), the Bangalore sector has stood first in five variables (namely, population growth rate, density, literacy, sex ratio and non-agricultural workers ratio) excepting the sex ratio. This is followed by the Hunsur sector, securing second position in three variables and first position in sex ratio, excepting population density. The T. Narasipur sector gets the third position in four variables, excepting population density where it has stood at the second rank. The Nanjangud sector ranks fourth in three variables and second and third in sex ratio and population density, respectively.

14. It has been identified through the analysis in the study that the process of urbanization has been more severe during the 1990s than in the previous decades.

15. It has been observed that all variables have shown stability up to 18 km, but beyond this limit they have lost their stability as well as the positive trend.

16. It has been identified that the fringe zones have maintained their ranking according to their nomenclature and location substantiating the demarcation.
17. It has been seen that the point made in 2 above has a direct correlation with the ranking by the sectors in non-agricultural ratio of 1991.

18. It has been identified through field work that the northwestern part of the inner city fringe has experienced demographical as well as occupational transformations in response to and soon after the establishment of the industrial area in this sector.

19. It has been found that Nadanahalli, a dry inner city fringe village, has experienced transformation in demography in 1981 and land uses in 1991, only after the expansion of the city in this direction.

20. It has been observed that the demographical and occupational structures have gained stability after 1991, in the urban and rural fringe settlements.

21. It has generally been found that the city expansion is more towards the northwest but the influence of the city is towards the south.

22. It has been increasingly felt that the city’s structural development requires careful planning and that regulation of the presently haphazard expansion of the fringe must be attempted as early as possible.
That land use changes have occurred, in space and time, in accordance with the expansion of the city has been clearly seen in the study.

That the analysis of land uses by the 4-km distance zones has shown increases in cultural wastes with the increasing distance and up to 18 km.

That a distance decay has been seen through the distance zone analysis of the area not available for cultivation, with distances away from the fringes, which is indicative of the structural transformations that have occurred in the fringes.

That a distance decay has been seen further in the net area sown, culturable waste and area not available for cultivation along the Bangalore sector confirming pronounced structural transformations along this sector more than in any other.

It has been found that among the sectors, the Bangalore ranked first with the largest area not being available for cultivation followed by those of the Hunsur, Nanjangud and T. Narasipur. This ranking also has coincided with that of the non-agricultural workers ratios with the exception of the Nanjangud sector.

That it has been conclusively seen that the village and household amenities have been transformed from 1971 through 1991 and the most important of these being the frequency of the bus services and
the relative locations of the settlements from the main roads. Inner city fringe has seen more, perceptible changes than either urban fringe or rural fringe.

29. From the field work, it is clear that most households in the fringes now use flush toilets and separate bathrooms. Bathrooms and toilets are in fact the first ever construction most fringe developers complete in housing.

30. Use of cosmetics has been highly accepted by the farming families in the peripheries.

IMPLICATIONS OF RURAL-URBAN FRINGE RESEARCH

The hypotheses and the suppositions from them, as shown in Chapter I, can be, and indeed have been, justified by the results reported in the three core chapters, namely, Chapters III, IV and V. The three hypotheses and some of the supports drawn from the study are shown here.

Hypothesis 1: The changing rural-urban fringes 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.

This hypothesis stands confirmed as follows:
The 332 villages in the surroundings of the Mysore city have been considered in the delineation of rural-urban fringe, using seven important variables, namely, distance (as a factor of interaction), non-agricultural workers ratio, transport, population growth rate, population density, literacy rates and sex ratio. These criteria are necessarily those which are the indicators of interaction and transformation. These criteria for each of the 332 villages have been scored (maximum 42, minimum of 12) and the aggregates for each of the three years of analysis (1971, 1981 and 1991) have been considered in the separation of inner city, urban and rural fringes. In all the years, no settlement has shown an aggregate score of 42, meaning that they are all yet under the process of acquiring city characteristics but 'not quite there' as yet.

In 1971, there was no inner city fringe. There was however a clearcut urban fringe, enveloping the city. The rural-urban fringe has set itself a boundary at an average distance of 5 km from the city centre. Thirty three villages qualified as being in the urban fringe, with 5 of them with urban characters discernible. There were 146 villages possessing more rural character than urban. In these villages of the rural-urban fringe, there was a great influx of people and material. In 1981, the inner city fringe, the constituent villages/urban enclaves being more vigorously urban than their counterparts in the urban fringe, took a clear shape. The zone of higher interaction and influence of the city was along the transport routes to Bangalore, Nanjangud, Hunsur and T. Narasipur, with distance limits of 23
km in the south, 20 km in the east, 10 km in the north and northeast. There were 16 settlements in the inner city fringe, within a radius of 10 km from the city centre, 59 settlements in the urban fringe and 149 settlements in the rural fringe. In 1991, the process of transformation of rural settlements into urban and semi-urban areas, over time and space, has been clearly visible. There were 25 settlements in the inner city fringe, 93 settlements in the urban fringe and 141 villages in the rural fringe. The fringe in all these years expanded in the same direction as in 1971. The urban fringe stretched deeply towards the southern, southeastern, northeastern and northern directions covering a total geographical area of 47,582 ha. The rural fringe on the other hand stretched over 61,449.77 ha and in the directions of the north and northeast. Thus, the entire hypothesis has been proved in the study, along with the three suppositions as well.

**Hypothesis 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.

Reverse/Counter urbanization has occurred in the city of Mysore, for three very important reasons: (a) increasing land values in the city with a corresponding wish in the private developers / individuals to 'own, construct and prosper', (b) industrial activities in the peripheral areas of the city during the 1980s and 1990s under the general urban and
socio-economic development of region in response to developmental impetuses, and (c) residential mobility of the industrial and professional employees and the ability of the 'return migrants’ to take advantage of access to urban facilities and amenities while being the 'healthier, more spacious and tranquil' locales through personal vehicles (two- and four-wheelers). In fact, the city and its suburban development is currently being regulated by the access to personal transport. In some cases, transport forms part of the 'perks’ of the executive employees of the industries and private business organizations. In the study, there are ample support for all the three reasons, especially reported in Chapters VI, V and VI, and in regard to demographical, land use and other structural changes. The growth in the population of the inner city, urban and rural fringes as against the city and the rural areas beyond the fringe is the principal support for residential mobility.

Hypothesis 3. The counter urbanization has been the most predominant in Un-irrigated tracts as well as 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.

This hypothesis also stands proved in the fact several of the developments in the rural-urban fringe tended to gravitate towards typically
rural and lush areas, especially in terms of drive-in restaurants, tourist cottages, teak farms and farm houses. Individual land ownership and development of farm houses is more intense in one particular direction, along the Mysore-Bangalore axis, primarily to take advantage of the incoming travellers/tourists population. Real estate agents have also been active in developing farm house colonies beyond the 15 km radius from the city centre. In the northwest and northern parts of the rural-urban fringe small, residential farm house colonies of 60 to 100 units have been developed within 10 km of radius from the city centre.

Anagalli village is a good example of such development, which is actually in Srirangapatna taluk of Mandya district and is therefore literally beyond the Mysore Urban Development Authority’s jurisdiction, where such developments are common at the moment. Data available show that 12 per cent of the supply of vegetables and fruits come from the surrounding rural areas. But these commodities also come from far off places, as far away as 60 to 80 km from the city.

The delineation and analysis of rural-urban fringe dynamics in the study has shown two kinds of developments, namely, suburbanization or counter urbanization and directional bias in such developments. The study has proved that the residential and industrial impulses, more than anything else, have shown eloquence in terms rural-urban fringe dynamics.
The thesis has indeed propounded a new paradigm in urban geographical research. This new paradigm explains the antecedents and consequences of locational decision making, filtered through social and market norms, in the three major areas of change and development: industrial and residential land uses, with demographical changes over time and space. There have been however some difficulties in this research, especially as 'inferring behaviour from spatial patterns is a tenuous exercise; so is the reverse procedure' (Bourne, 1976: 531; Senthamarai, 1989: 190). The study has nevertheless provided insights into the urban traits of the residential and industrial processes in the rural-urban fringes of the city of Mysore.

The one limitation in the study has been that the study depends on the individual/(residential and industrial) developer information for the urban development process. This is certainly a limitation that could jeopardize perspectives. The measure of change processes is therefore not without disadvantages. The study has thrown ample light on the counter urbanization or suburbanization process in which 'residential suburbanization and suburbanization of the services and facilities and village/household amenities' emerge as possible explanatory variables. In the future, infrastructural growth with network articulation could be the major change process, with distance and costs as explanatory variables involving city and planning authorities in the immediate years. Nucleations with residential renewal involving residential developers as change process
and access, environmental amenities and site size may become explanatory variables.

SUGGESTIONS FOR FURTHER RESEARCH

So far, the process of rural-urban fringe dynamics have remained within developments that could be regulated with the existing administrative, urban planning and development authorities. But future research should consider the general features of the counter urbanization under conditions of rapid population growth and dispersals when normal urbanization may break down, leading to 'problematic urban processes in the rural-urban fringes'. Crowding, low quality housing, environmental problems caused by industries, especially because of the inadequate effluent or waste disposal facilities. Such developments could be documented even for the period under analysis (1971-91) with a view to extending perspectives into the future. Alternatively, such studies may be conducted for other urban agglomerations and cities in the state of Karnataka, and so without prejudice, for the Indian urban system as well.

For the purpose of future analysis, however, this process may be defined in a general way: In a dynamic setting, urban areas grow over time, often without any awareness of population trends. Different regions with characteristically different urban systems may develop in response to very different supply and demand functions. It can be shown, under fairly simple
assumptions, standard urban models predict that higher income households and industrial units locate themselves at great distances from the city centre, causing a ‘melting pot’ situation. This needs to be verified with respect to ‘all explanatory variables’ there are and can be measured with the available means of research.