CHAPTER -II

LITERATURE SURVEY

The analysis of suburbs in various ways has been the objective of both theoretical and empirical work in the post World War era. Our concern here is with the choice of an appropriate conceptual framework for the analysis of this study.

The extent, characteristics and problems of suburbs vary from one city to another. To analyse it, a number of classical studies have been used not only by geographers but also by sociologists and economists. The conceptual and analytical framework has been developed by these scholars. This section will be devoted for the survey of literature related to the various aspects of the pattern of suburbs. This survey will provide us a valuable insight into the different aspects of suburbs that may later be used to generate a model of residential pattern of suburbs which is relevant to the Indian situation.

1. Problem of delimitation and definition of suburbs

The suburb is not an easily defined geographical area that begins and ends at a certain distance from a city centre. It is rather a transitional area where dominant functional use of land is not clear. Therefore, rapidly growing urban centres, having a peripheral suburban region around them, was called "Rural-Urban fringe" by Von Thiinen (1826). The term fringe suggests a transitional area between the rural and urban zone having the characteristics of both the areas. The confusion in delimitation results from various case studies which are based on different aims and the context of research.

Hawlay (1956) on the basis of 'growth pole' as a conceptual framework of urban influence, delimited an area of 25 miles where growth of population was urban oriented. At the same time, he also delimited the primary commuting areas of daily interaction
with the city in terms of employment, shopping etc. upto fifteen miles from the city centre which may be called an area of urban influence. Berry, Fox, Garrison (1966) delimitied the suburban area by the distance used by daily commuters for work, immediate shopping and social trips upto twentyfive miles. Israad and Whitney (1949) have approximately estimated twenty miles radius as the commuting range of metropolis by road. Queen and Carpenter (1953) have studied area outside the Melbourne city. Similarly Duncan and Reiss (1956) have used the variable of suburban population in urbanised area, lying outside Chicago city. Martine (1957), Rohrer and Hirzel (1957), Golbesge (1930), Reinemann (1960), Dindrwes and Eshleman (1963), Pahl (1965), Goldsmith and Lee (1966) had arbitrarily taken an area of five miles radius from Melbourne C.B.D. and did not consider physical and cultural factors to demarcate suburbs. He had not given thought of the lines of transport along which the fringe belt is bound to fluctuate.

There is also much diversity of definition of suburbs. Kurtz and Flitcher (1958) had illustrated the problems to differentiate between 'fringe' and 'suburb'. Wissink (1961) in an extensive survey of the fringe areas of American cities identified 'fringe', 'suburbs', 'pseudo suburbs', 'satellites', 'pseudo satellites'. Schnore (1952) distinguished 'urban fringe' and 'external fringe'. Reinemann (1960) distinguished 'suburban fringe zone' and 'outlying adjacent zone'. Wissink (1962) had identified 'inner' and 'outer' fringe areas. Duncan and Reiss (1956) had postulated 'rural non-farm' and 'rural farm' sub-divisions of suburbs, while Myres and Beegle (1947) were able to distinguish between a 'true fringe', 'partial fringe' and 'adjacent rural township'. Whiteband (1967) had given the terms 'inner fringe belt' (I.F.B), 'middle fringe belt' (M.F.B) and 'outer fringe belt' (O.F.B). He suggested that, inner fringe belt was surrounding the inner city, while adjacent built up area was known as middle fringe belt and it was followed by outer fringe belt, which was consisting of countryside. Dosthwizen (1969) proposed various terminology,
for example, 'suburban area', 'rural suburb' and 'quasi-urban area' or 'quasi-urban township'. According to him, suburban areas are the residential areas situated outside but adjoining the municipal boundaries. These areas have no urban local administration but have distinct urban character and are closely linked to the city economically, socially and there was also a considerable amount of daily commuting between the suburban area and municipal town. The 'quasi-urban township' meant villages with clusters of population which were situated away from metropolitan areas.

Pryor solved the problem of various differentiations of an urban fringe by sub-dividing the suburbs quantitatively into 'urban fringe' and 'rural fringe'. He delimited the area on the basis of transition in landuse and social and demographic characteristics lying between continuously built up urban and rural areas.

Several authors in their studies have attempted to delimit suburbs based on various characteristics, namely social, demographic and landuse pattern. None of these above-mentioned characteristics are solely helpful to demarcate suburbs in a comprehensive manner. Due to the modern methods of communication and good road system, there is very little distinction between urban and rural areas, regarding life-style of residents, their occupation in developed Western countries. Therefore, in developed countries, landuse rather than social or employment factors, would provide a simpler and more reliable guide to demarcate suburbs.

2. Sampling technique for demarcating suburbs

Most of the studies of suburbs deal with a portion of suburban population which are selected by different sampling techniques that are suitable for the particular study. Andrews (1946) took 595 cases in Janesville, Wisconsin, but he did not state the source of data. Gist (1952) interviewed 460 families from 1800
residents of the fringe area in Columbia, Missouri, but did not indicate any sampling procedure. Faust (1942) selected three voting precincts outside Eugene, Oregon, on the basis of representative parishes in the suburb of Sydney. Firey (1946) interviewed about 100 persons in three widely separated fringe-neighbourhoods of Flint, Michigan. Sample was selected at random to represent all types of dwellings and only 84% of the results were handled statistically. Press and Hein (1962) studied a non-random sample of 107 out of 167 farm families in Alaiedon, Michigan. Pahl (1965) had selected three parishes in Hertfordshire, London, by a process of elimination. Other research workers have used more objective selection techniques. McKain and Burnight (1953) analysed census data for five townships which are peripheral to the Hartford metropolitan area, because these townships had all the four criteria selected by them for their study. Zimmer and Hawley (1958) studied local government as perceived by fringe residents. Their study was based on 413 interviews from 2% sample of households. Andrews and Eshleman (1963) interviewed 303 households heads in the fringe of Ohio, using a multi-stage sampling system based first on an area and second on population.

Therefore, to select sample size, both random sampling and stratified sampling methods were used. There are various factors which control the choice of a particular sample. It may be physical, economic, social and cultural factors of towns and suburbs. In random sampling, there is justification in comparing cases and statistical analysis based on it has a sound foundation. But in case of purposively selected samples, the result can be justified under particular conditions and under certain analytical procedures and comparisons are not always appropriate.

3. The characteristics of suburbs

The suburban growth in the postwar period has encouraged social scientists to pay attention to the study of landuse and functions
of suburbs. The suburb of an urban complex has a pattern and characteristics depending upon the physiography and transportation facilities of the area and also on the characteristics of urban complex itself.

Present idea about characteristics of the suburb originated from an article, published by Wehrwin (1942), which has now been regarded as one of the basic papers in this field of study. In his investigations of Indianapolis, he recognised the growth of railways as the main cause of decentralisation of urban population and of changing of landuse from farm to non-farm ones. Such changes were enhanced by the introduction of car and metalled roads which provided a fast system of mass transportation. Von Thünen (1826) in his major work, 'The Isolated State' postulated the structure of a simple agricultural zone but that had been modified by railways. Whenever railways, highways were present, a city's residential, commercial establishments and industrial plants developed in a linear fashion along with their routes.

Examining closely the urbanised part of suburbs, Wehrwin identified its important characteristics, mainly the nature of its residential growth. Due to the development of the transport system between city centre and suburbs, urban areas expanded quickly in American cities. Speculators and land developers rushed to suburbs to buy large areas of agricultural land which they left vacant initially and would sell gradually at a higher price. Therefore, in addition to the areas of built up land in the suburbs, there are speculated land which are kept vacant purposely.

The second characteristic feature of suburbs was indicated as the location of recreation land and institutions. Many of the public utility services which require space were located in suburbs though they were serving the needs of residents of cities, for example, radio station, sewerage disposal plants, airport, cemetry, slaughter house, wholesale oil storage, various heavy
and large scale industries, junkyards. Some of them are necessary but unwanted landuse in the city, while some other activities have some restriction of location within the city limit. So these landuse are located in the suburb in order to escape rules of land control. In countryside, rural authorities have relatively less control over these matters of landuse.

Wehrwin's pioneering study had been followed by many others, focusing upon the characteristics of suburbs. Balk in his work on Worcester, Massachusetts, have a detailed description of suburbs. Andrews (1942) had attempted to identify the general landuse characteristics. Dickinson (1956) identified suburbs and analysed its functions. According to him, suburbs were invaded by the urban land uses by the extension of housing with buildings along the main arterial roads and by location of new factories which are excluded for one reason or another from the compact urban area, golf courses, waterworks etc. Pryor (1966) characterised the rural-urban fringe by the incomplete availability of utility services, inadequate network of public transport and a relatively high ownership ratio of residential houses. The majority of the work places and the area of retail purchase of residents of suburbs were seen in the city itself. Kurtz and Smith had looked, in detail, at the social characteristics of suburbs which had rural background with urban residents.

Literature dealing with characteristics of suburbs are diverse. But main characteristics of suburbs as summarised from various research work, are rapid growth of residential and institutional landuse but suburbs have less development regarding infrastructural facilities.

4. Process related to the growth of suburbs

One of the initial studies in this topic is by Golledge, who, in 1960, published the results of his investigations of
Sydney's suburb. This study is also the first one which dealt with a fringe area lying out of Western Europe and North America. The work was conducted on two periods - one before landuse controls were introduced, the other following the introduction of fairly strict law regarding the maintenance of the green belt. According to him, urban suburbs have seven major characteristics: constantly changing landuse pattern, small farm, intensive crop production, mobile and low and moderately dense services and public utility, rapid residential expansion, common speculative sub-division of buildings. He examined each characteristic with respect to Sydney's suburb.

Sydney's green belt, like that of any other cities in America and Western Europe, had an intensive effect upon the fringe. Its purpose was to act as a buffer zone between the city and rural areas and to provide space for recreation and other pursuits, to reserve areas for the use of government and to create an area around city where desirable type of agriculture, recreation and amenities could be maintained.

The second study which throws light on processes of suburbs is by Pahl. His work largely focusses on social character of suburbs of London and difficulties of defining suburbs in social terms or demarcating the social identity of suburbs but he did not point out the urban influence in social changes of rural and semi-rural areas. He recognises four main processes, i.e. tendency towards social and spatial segregation, selective immigration, changing character of commuting and collapse of geographical and social hierarchies.

These two studies of Golledge and Pahl dealt with processes within urban suburbs but their standpoints were widely different. Golledge explained the growth of suburbs through physical processes while Pahl has a social approach as an explanation for suburban growth.
5. Problems of Suburbs

The mixture of urban and rural landuse and of urban-rural society in suburbs creates a complex atmosphere which generates various problems. David Thomas categorised the problems of suburbs in the following divisions:

(i) There are those problems which stem from the scattered residential and commercial development in unplanned suburbs;

(ii) Difficulties arise in suburbs from the inter-mixture of agricultural and non-agricultural landuses;

(iii) Problem generates from the high costs of services to scattered settlements. Costs are not high when compared with truly rural areas but they are quite high in comparison with nearby urban areas;

(iv) There are difficulties which follow from the inter-mixture of different social groups, some with urban based behaviour and others with rural based attitude of life.

6. Landvalue of the city and suburbs

The study of landvalue of an area is very much essential to understand the growth and development of that area. The value of a particular land is controlled by many factors, and it is very much influenced by the land use of that area. Not only land use but many other factors control landvalue of an area. Many economists have worked on landvalue of cities and their suburbs and some of them are discussed below to understand the different factors which control landvalue of an area and also the relation between landvalue and land uses.

One of the earliest work on landvalue was done by Hard (1908). According to him, the economic rent of cities is based on superiority of location. So the rent at the most accessible
point is high which will increase the land value of that point. This accessibility depends on nearness to the Central Business District of a city which has the maximum land value and this land value declines sharply within a short distance of the Central Business District.

Haig (1926) determined that, if there be no transport cost then all locations would have gotten the same land value. According to Ratcliff (1949), land use is determined by the rent-paying ability of various users in various locations. He drew some figures to derive city structure from broad category of land use by their ability to pay rent and distance from most accessible point. He concluded that retail users with high paying ability could afford the greatest accessible area. Then it is followed by offices. Then comes multiple family housing complex for example, apartments. Then follows single family housing and lastly agricultural land.

Alonso (1960) added two more variables 'quality of land and amount of disposable income' devoted to land and transport costs. If the amount of service is held constant and the relationship between quantity of land and distance considered, then the price of land decreases with the increasing distance from the city centre while quantity of consumption of land increases. But if transport cost with increasing distance increases then the amount of land to be purchased decreases.

Yeates (1968) in his study of land value in Chicago tested the influence of number of variables including distance from the Central Business District, distance from the nearest regional shopping centre and distance from nearest elevated subway system. All of these variables proved significant in a distance-decay manner, but supported the proposition that, location of a land is important in influencing its value, that is to say, the greater is the distance from the transportation system, the lower is the land value.

Srigham (1965) explained that, since land supply is fixed, land value in an urban area is determined by the demand for space.
This demand function, for any site is a function for sites accessibility, level of amenity, topography and certain qualitative phenomena that may considered, for example, image of the area and value of the land in non-urban use. According to Northam (1975) in the case of residential land values, accessibility to places of employment, distance from the central city are the most significant variables. Relative location with respect to other activities, influences land values. There are, of course, phusical influences on land values though it can be modified or overcome by reducing the effect of the constraints.

So the land value of a city is the highest in the C.B.D. which is most accessible. The land value decreases in an outward direction from this most accessible centre, outwardly in suburbs. Value of land is also controlled by the nature of its use. Residential land value of a suburban area varies with respect to its location to other activities, for example, transport routes, shopping centre, place of employment etc. All of these above mentioned studies are based on Western situation which is somewhat different from the Indian situation. In India, residential land value depends on accessibility, distance from the city and also on the caste or religion of residents, while in Western countries the racial factor is given importance in determining the quality and value of a neighbourhood. In short, the study of land value can indirectly indicate the socio-economic status of residents. The rich community will be located near the areas having more facilities and the land value of these areas is obviously high. The case is reverse for the areas with low land value.

7. Different aspects of Perception Studies

The above mentioned literature is based on the structural and morphological aspects of suburbs. But the present study will also discuss the spatial distribution of pattern as depicted in the behaviour of suburban residents. So to understand different
behavioral attitude of residents, it is necessary to study different aspects of perception.

Since 1960 onwards the environmental perception was recognised as an important concept. But in the writing of Sauer, Wright and Krik, the idea that the people behave in the environment not on the basis of objective knowledge but in terms of subjective interpretation, has appeared much earlier in the late 1940's and early 1950's.

This concept of 'man-environment-relationship' has been taken up in several research projects, theoretically and empirically at various levels. Mental image and the process of image building have been two main aspects of research. The majority of the study on mental image are concerned with human behaviour.

The perception of neighbourhood by the residents had been studied by Lee (1963). According to him, residents generally get attached to their own neighbourhood in ten years. According to H.J. Klein (1967), people have different opinion about central business district. He gave more importance to the image than the behaviour of population. Downs studied the perception of shopping centres in Bristol. He found that the residents have a better idea of downtown shopping centres than those of neighbourhood ones. Lynch's (1960) work based on psychological concepts is an earliest and pioneer work on image study. Mental images of the inhabitants of Boston, New Jersey and Los Angeles were traced, based on different responses like street interviews, verbal descriptions and sketch maps. The concept of 'residential desirability' was used by Gould and White in a study of school children in U.K., U.S.A., Ghana and Nigeria.

8. Empirical Work on Indian Situation

Articles and books which were published mainly based on the studies in North America, Western Europe and Australia do not
appear to be totally applicable in the Indian context. Indian cities are still core oriented, therefore it is not necessary that mainly rich people always migrate to suburbs. Suburbs of Indian cities, unlike Western countries, have grown without much infrastructural or residential facilities. So suburbs of Indian cities have to be studied in a different perspective.

In India, sometimes suburbs are studied as a part of the whole metropolitan area. Kar (1963) attempted to investigate the characteristics and norms of the metropolitan economy in and around Calcutta. Bagchi (1966) studies Howrah conurbation as an urban sprawl of Calcutta Metropolitan region. Singh (1967) has described suburbs as the rural land with urban phenomena. Chattopadhyaya (1967) studied the transport nodes of a part of Calcutta Metropolitan region which is a part of suburbs of Calcutta. Alam (1972) used some principal and reflective elements, for example, suburban transport service, commuting areas of workers of factories, retailing, water supply, percentage of non-agricultural workers, electricity consumption, growth rate and density of population etc. to study patterns of development of suburbs of Hyderabad. Jadav and Kulkarni (1967) studied the landuse planning and its problems of suburbs of Poona. Nangia (1976) studied various aspects of the settlement pattern of Delhi Metropolitan region. Bore Gowda and Mahadev (1977, 1981, 1982) studied the changing land use pattern, growth and development of co-operative housing societies, process and policies of landuse conversion in the suburb. Ramchandran and Srivastava (1974) suggested a model of 'Rural-Urban Fringe Sequence' while studying the suburbs of Delhi. They formulated the model showing the stages of change in the suburb. Sinha (1980) studied the impact of urban influences in the rural-urban fringe of Patna and the change in the cropping pattern in response to the demand from the urban market. Hussain (1980) emphasized on haphazard urbanisation by urban encroachment on rural lands of Muzaffarnagar. Karba (1980) identified a set of appropriate action programme for the improvement of Indian suburbs with
reference to Tajganj, a small neighbourhood of Agra. Kumar (1980) made a study of suburbs of Bhopal and suggested the relevant landuse planning. She presented a model which is different from Thunen's model by examining the trend of diffusion of agricultural innovation.

Phadke and Sita (1981) studied various aspects of Bombay Metropolitan Region. They delineated the suburbs by using 'Boundary Girdle Technique' and the 'Synthetic Index Technique'. They also studied economic characteristics of metropolitan region. Gopi (1981) suggested a model of the development process of suburbs of Hyderabad. Wadhva (1982) studied the land value and land of suburbs of Ahmedabad. Some attempts have been made by the Indian geographers to study the different aspects of the perception of the environment.

The problems chosen for the study of environmental perception have been quite diverse. Desaj (1980) has chosen the core city of Ahmedabad for the perception studies of urban environment. Her work, one of the earliest example of perception studies in Indian context, deals with the sensitivity and adaptability of the residents in different environmental problems and how residents evaluate their environmental quality. Kayastha (1980) has been engaged in studying the perception of flood hazards in Eastern Uttar Pradesh. Saha (1982) has studied the role of cognitive processes in perceiving the elements of a part of Calcutta city. The human adjustment to power crises in Calcutta has been studied by Nag (1980). Studies related to the perception of environment in urban areas is becoming popular in India.

From the above mentioned literature it has been found that a great deal of work has been done about different aspects of city and suburbs. In short, Pryor, Andrews, Ramchandran, Sinha and Gopi analysed the problems of delimitation of suburbs. Wehrwin, Pryor, Kar, Singh, Jadav and Kulkarni and many other authors have explained the characteristics and processes for the
growth of suburbs, while many other studies brought out the problems of suburbs. The perception and interaction pattern of urban residents has been studied by Desai. These studies have helped to understand the different aspects of suburbs.

9. Contribution of the present study

The main thrust of this study is to find out the characteristics of residential suburbs in terms of morphological, socio-economic and behaviour of suburban residents. The study will concentrate on the type of people that have settled in suburbs - their socio-economic status, life-style and behaviour, interaction pattern, problems they face and their perception. No study has concentrated on the behavioral aspects of residents of suburbs. So far studies have been on the structural changes in suburbs. This study will look into both the structural and behavioral pattern of residential suburbs.

To begin with, this study has analysed the process of growth of suburbs in a longitudinal manner with the help of step-wise migration, tracing fifteen hundred individual migrants, movement for four locations. Then the movement was analysed in terms of origin-destination matrix stage-wise flow chart and a generalised spatial model of migration.

Further, the contribution of this study lies in the analysis of the spatial structure and the spatial behaviour of suburban residents in terms of levels of modernity in three major factors, i.e. their socio-economic status, behaviour and life-style and housing structure. A Socio-Demographic model has been proposed to understand the composite picture between residents and residential units, in above mentioned dimensions with the help of sixty variables.

This 'Socio-Demographic' model, which has been represented by three major factors, i.e. socio-economic status of residents,
their behavior and life-style and lastly their housing characteristics, helps us to classify the suburbs on a micro-level to understand which groups of residents are living at which localities. In other words, the process of suburbanisation is seen in modern houses with residents of modern ideas, or in modern houses with residents of traditional thought or in traditional houses with residents of traditional thought. This model is the main contribution of the present study which helps us to understand the relation between residents and residence and the spatial organisation of suburban population.

Moreover, variations in terms of housing structure, landuse, land value, demographic composition and infrastructural facilities have been pointed out with the help of this study. Landuse planning in terms of distribution, growth, density and composition of population can be done on a micro-level from this model, so that the haphazard growth of suburbs can be controlled and regional variations can be minimised by proper suburban planning.