CHAPTER - 1

1.0.0.0 INTRODUCTION

In order to understand the conceptual and empiric background of the present study entitled Evolution of Rural Settlements in south 24-Parganas, one has to comprehend and appreciate the objectives and the methodological framework of the study in some depth.

1.1.0.0 OBJECTIVES

The objectives of the present study are to examine the temporal process of colonisation and human occupancy as well as the spatial variations in the distribution, form and pattern of rural settlements in a more or less homogeneous physico-cultural tract, in the south section of the district of 24-Parganas, commonly known as Sunderban, with a view to understanding the social processes involved in harnessing the local resources out of wilderness.

1.1.1.0 SOME CLARIFICATIONS

It may be relevant at the outset to examine to what extent south 24-Parganas and Sunderban are synonymous. The fact is that the recent administrative change splitting the erstwhile undivided 24-Parganas into North and South 24-Parganas districts has very little to do with the notion commonly associated with the area known as 'south 24-Parganas', which has always been considered by the people of West Bengal as a distinctive area, dissimilar from other parts of the state. The distinctiveness again stems from the fact that it contains within itself the unique mangrove forests of Sunderban which once extended over the entire southern half of the district of 24-Parganas. Even after agricultural fields and human settlements have replaced much of the forests, south 24-Parganas has remained almost coterminous with Sunderban.
in the naive space perception of most of the people in West Bengal.

The reasons for selecting south 24-Parganas for a study with such objectives as stated above are quite a few. Firstly, the area has a very singular combination of certain extraordinary phenomena which include the world's most extensive network of embankments raised around immature salt-marshes, the most dreaded mangrove-clad habitat of tigers and at the same time the only example of a densely settled tropical delta harnessed for the purpose of sedentary subsistence agriculture, a concentration of marginalised people in a marginalised space in close proximity to one of the largest metropolises of the world and finally an extremely intriguing history of human settlement.

The process of colonisation of this tract has something unique in it since within a span of less than two hundred years the area has seen a transformation from a land-surplus to a labour-surplus situation. The process started in the late years of the nineteenth century and after having a chequered progress in the first hundred years or so, continued to engulf an extensive area reaching deep south even upto the delta face in some places. Even during the recent phase of land-scarcity, the reclamation and colonisation process has been active in a limited scale to accommodate the displaced population from the erstwhile East Pakistan or the present Bangladesh. Of particular importance in the study of the temporal process of colonisation is the speed at which the cycle from land-surplus to land-scarcity has advanced in this tract compared to that in the older settled tracts in the plains of West Bengal and even the tracts which were reclaimed from the jungle-clad lebensraum of the western plateau margins of West Bengal before and after colonial annexation.
It is true that south 24-Parganas or Sunderban for that matter presents a picture of physical homogeneity and social unity at a broad level of generalisation. Yet, neither has the process of colonisation affected all parts of Sunderban evenly nor has it been settled by the same set of people having identical origin, cultural background, socio-technological experience, motivations and place preferences. Naturally there are considerable differences in social modes of intervention upon the local resource base depending on the differences mentioned above and also on natural inequalities of terrain. Such differences can only be observed at a micro-level creating adequate scope for identifying a number of sub-units within the broad physico-cultural unity called Sunderban.

The sub-regions within Sunderban are nothing but the static impressions of variations in the social processes of colonisation on space. The natural processes operative in this region are obviously determined by the interplay of marine and riverine depositional forces, the typical littoral climate with depressions, cyclonic storms and sticky salt-laden warm sea winds and the invariable association between saline soils and mangrove trees - all interacting with one another to produce sets and sub-sets of natural ecological conditions, evolving from their juvenile state gradually towards maturity. The social processes on the otherhand refer to the differential manner in which different communities settling in this area have perceived their habitats, even if natural conditions were identical, and have translated their habitat perception into specific modes of intervention upon the natural resource base by intercepting the natural processes at a premature stage and in the process creating definite space occupance units or settlements having definite forms and functions. Our objective is to see whether the examination of these forms and functions can lead us to the historical process of colonisation of the tract.
1.2.0.0 STUDY AREA

The study area is located at the southern part of the Ganga delta in West Bengal. The area covers about 9629.9 sq km of which about 4266.6 sq km falls under reserved mangrove forests while the rest is settled and contains a population of over 3 million spread over fifteen police stations that occupy the southern half of the undivided district of 24-Parganas.

1.2.1.0 LOCATIONAL CHARACTERISTICS

Much of the physical and social personality of the region is intimately connected with the locational characteristics, viewed from different angles.

Geodetically the area is situated between 21°32′ and 22°40′ north latitudes and between 88°05′ and 89°00′ east longitudes (Map No. 1). The region is bounded by the river Hooghly on the west, Bay of Bengal on the south and the Ichhamati-Kalindi-Raimangal axis of rivers on the east. The northern boundary is not physically determined and is a compromise between the Dampier and Hodges line, the administrative boundaries of the northern police stations of Sunderban and the northern boundary of the recently conceived Sunderban Planning Region whose limits again nearly coincide with the Dampier and Hodges line.

The Dampier and Hodges line was drawn on the basis of the survey made by Mr. William Dampier and Mr. Alexander Hodges, respectively, the then Commissioner and Surveyor of Sunderban Commission, during 1829-32 (Pargiter, 1934) to demarcate the Sunderban forests from the lands held through legal tenures by local zamindars.
The fifteen police stations that we have chosen as our study area are those constituting the Sunderban Planning Region. These police stations are within the jurisdictions of three sub-divisions namely Diamond Harbour, Sadar and Basirhat. Five police stations, namely, Sagar, Kakdwip, Namkhana, Patharpratima and Mathurapur situated in the western part of the study area belong to Diamond Harbour sub-division. The centrally located four police stations of Joynagar, Canning, Basanti and Kultali are under the Sadar sub-division and the remaining six, namely, Haroa, Minakhan, Hasnabad, Sandeshkhali, Hingalganj and Gosaba located at the north-eastern part belong to Basirhat sub-division.

1.3.0.0 DEMOGRAPHIC CHARACTERISTICS

The population is spread over some 1054 inhabited mouzas, two municipal towns (Taki and Joynagar) and a non-municipal town (Canning). The average population density according to the 1991 Census is around 300 persons per square kilometer. But this is far from a realistic figure since the uninhabited forests cover almost a half of the total geographical area. The region has experienced a sizable population growth that is characterised by wide temporal and spatial variations.

Scheduled castes and tribes constitute about 44 per cent of the population of Sunderban while their share in West Bengal is little over a fourth of the total population of the state. A little less than a half of the total non-scheduled population is composed predominantly of Muslims and some Christians. Therefore, upper caste Hindus cannot be more than a third of the total population of the tract.

1.4.0.0 COMMUNICATION

The region has a restricted accessibility as may be seen from
the total length of railways and roads in its inhabited parts. Four branches of Eastern Railway connect Calcutta (Sealdah) with Diamond Harbour, Lakshmikantapur, Canning and Hasnabad - all located only near the periphery of the region. Only a negligible length of railway lines not exceeding 140 Km. exists within the boundaries of Sunderban. The length of metalled roads is increasing. But by far the largest portion of the network of roads is still unmetalled.

Water transport remains to be the most important means of communication. Sunderban, as we knew, is a combination of many islands separated from one another and criss-crossed by innumerable tidal creeks and channels. There is thus a heavy dependence on steam-launches, small motorised boats locally called 'bhatbhati' and country boats.

1.5.0.0 SPECIFICITIES OF THE REGION

We have already mentioned that the uniqueness of south 24-Parganas lies in the evolution of an extensive sedentary subsistence farming system on virgin lands reclaimed out of deltaic mangrove swamps. Similar natural environmental circumstances in the deltas of the Irrawaddy and Mekong in south-east Asia, of the Mississippi in North America or of the Niger in West Africa have failed to create a similar farming system of a comparable scale. Apart from this specific feature of the settled section of Sunderban and the ones mentioned already in connection with the region's locational, demographic and communicational characteristics, there are a number of other distinctive features which deserve a special note.

Perhaps the chief identification mark of Sunderban is its dense network of peripheral embankments and cross-dykes the total length of which exceeds 2800 Km. These embankments have acted as protective dykes against incursions of saline
tidal water and have also provided habitational sites on their leeward side by protecting the hutments from the ravages of cyclones and storms. Apart from their role as protective agents they have served as the most important routes of land communication and have also provided the landing points for water transport. Embankments therefore are the mainstay of life in Sunderban.

It is these embankments and cross-dykes which have controlled the form and pattern of layout of most settlements in Sunderban, which inspite of variation in detail are predominantly linear not only in individual form but also in terms of the regional pattern.

The linearity in form and pattern of settlements is itself an expression of the unreliable and unpredictable environment which the settlers have to combat in course of making Sunderban their permanent habitat. They had to cling as close as possible to whatever they could create and control with their own labour since everything that was available free from nature was fraught with unforeseen danger. Nothing including land and water could be taken for granted. Rivers might shift and new lands might be added to one's possession as much as carefully reclaimed land with hard toil of many years might be snatched away by just a reverse swing of the same stream.

Strange river behaviour is an added factor aggravating the problem of inaccessibility and isolation of most of the interior parts of south 24-Parganas. Not only do the courses shift from time to time, every individual river, creek or cross-channel has its own characteristic, volume of flow, depth, intensity and time of neap and tide making it extremely difficult for boatmen to steer their crafts from one channel to another.
The inherent problematic behaviour of deltaic rivers and channels assumes a different dimension under the influences of a very strong seasonality of climate and hydrology. Seasonality is one of the severest hindrances against all possible social and economic development of the region. It is for this seasonality that the salinity of the soil becomes growth-critical, sweet water becomes scarce and a second crop after rice is difficult to grow in the pre- and post-monsoon periods. Monoculture and labour-surplus thus become related phenomena.

If monoculture has come to stay as an important factor governing economic backwardness of the region, then the roots of the problem lie in the hasty and avaricious premature reclamation of swamps which were yet to be built up properly by natural processes when the reclamation started. The risks and diseconomies of the reclamation process were squarely shifted on to marginalised people allured with the prospect of easy returns from virgin lands. Such a history has produced an interesting result in that this area has become a meeting ground of low caste and tribal people from the remotest parts of both western and eastern Bengal.

Sunderban's main physiographic problem lies in the existence of saucer-shaped islands reemed with embankments bordering rivers which flow at a much higher level than the interior of the islands. Occasional floodings through the breaches across these embankments may prove disastrous to agriculture. Yet there are vast untapped resources in the form of estuarine life, notably fish and prawn, which if properly utilised could perhaps provide some leeway for occupational diversification and income augmentation. The only symptoms of such diversifications are to be found in the limited number of urban and semi-urban centres of population and trade located along the landward boundary of the region.
1.6.0.0 DATA BASE

The data base required to fit in with the objectives of the present study encompasses a wide range of primary and secondary sources of information relating to both physical and socio-cultural components of enquiry and is essentially multi-disciplinary in character. It may be convenient to introduce the data base under the different heads of physical and socio-cultural information.

1.6.1.0 PHYSICAL DATA

Of the wide range of sources containing information on the physical phenomena, maps quite obviously provide the most useful ones. Books, journals, official reports etc. also form important and necessary sources of data.

Topographical sheets published by the Survey of India provide the data necessary for understanding the natural landscape of the area. Information contained in such sheets at two different time points, the first surveyed during 1921-22 and printed on a scale of one inch to a mile and the second surveyed during 1967-72 printed with the representative fraction of 1:50,000 have been used for purposes of exploratory investigation and comparison.

A few historical maps prepared mainly during the period from mid-eighteenth to nineteenth century have also been carefully observed to obtain information on the earlier terrain conditions of the study area.

Cadastral mouza maps published by the Directorate of Land Records also forward some interesting data about the drainage conditions at a micro-level and changes thereof. The examination of such maps form a very key instrument in analysing not only physical features but also the
changes in the cultural landscape.

Maps relating to the distribution of soils in the region and by the Departments of Agriculture and Fisheries, Government of West Bengal, also contain useful information about the physical environmental conditions of the study area. With these, one can add a few base maps available with the Sunderban Development Board.

Recent satellite imageries taken during 1985-86 have been consulted for case studies. Photographs taken by the author on field trips can also be used to describe the present conditions of the terrain and as supporting evidences of various formulations.

Official sources of information on physical phenomena are available from both Central and State Government publications. Geological Survey of India, Indian Meteorological Department, Directorate of Land Records, Department of Forestry and Fisheries, Sunderban Development Board, etc., are some of the institutions from which such reports are available.

The pioneering studies of Radhakamal Mukherjee (*Changing face of Bengal*), Kanan Gopal Bagchi (*The Ganges Delta*), D. Strickland (*Deltaic Formation*) are some of the notable books containing invaluable information on the region's physical character. The District Gazetteers, both of the early twentieth century and the current edition, W.W. Hunter's report (*A Statistical Account of Bengal*) etc. also contain extensive literature on the region's physical shaping.

1.6.2.0 CULTURAL DATA

The sources of demographic and other socio-cultural data
are also varied. Starting from visual sources such as maps, these include Primary Census Abstracts and Secondary literature from various disciplines. In addition to these, field surveys and oral evidences should also be considered as relevant and useful.

Apart from socio-cultural information drawn from toposheets and cadastral maps, thematic maps produced by the National Atlas and Thematic Mapping Organisation, Sunderban Development Board, Block Development Offices, and administrative maps published by the Census provide effective clues to the process by which the population arranged itself spatially over time. These maps provide information on cultural artefacts developed along with the spread of settlement and infrastructure and several other relevant facets of the cultural landscape.

Quantitative data relating to age, sex, ethnicity, population density, growth rate, size of settlement and occupational structure are available from Census reports (1872 to 1991). Information related to the reclamation and colonisation of this region come from different survey and settlement reports at different periods and from archival documents. Of infinite value are the reports of F.E. Pargiter (1934) and F.D. Ascoli (1921) dealing with the history of colonisation of the tract and related acts and regulations.

On economic conditions the important sources are District Gazetteers, Statistical Handbooks, Diagonistic Survey Reports, Techno-economic Survey Reports, Reports of Sunderban Development Board and Ministry of Agriculture, Reports of the Fact Finding Committee published by the United Bank of India and a few others.

Archaeological evidences provide ample clues to the early history of settlement in a broad region of which Sunderban
forms a part. Various objects ranging from icons, potteries, coins, beads etc. of the ruins of masonry works of different periods help reconstruct a broad history of settlement starting from a very ancient age.

1.6.3.0 LIMITATIONS OF DATA BASE

Inspite of the wide range of data marshalled for the purpose of the study, certain limitations could not be overcome. First of all there are wide gaps in the palaeobotanical and archaeological evidences preventing a researcher from building up any consistent hypothesis about the ancient settlement history of this region. Coming to the modern phase of colonisation the period between 1765 and 1920 is fairly well covered but from then on to 1951 the information is relatively scarce. This period is important for the simple fact that there were a great deal of activities in Sunderban including the early attempts at development of co-operative farming, civil disobedience and salt movement, migration from East Bengal particularly Jessore, Faridpur and Khulna and from Medinipur in West Bengal and finally the influx of a very large displaced population from East Bengal following the communal riots at the eve of independence. The census data from 1951 onwards gives a fair coverage even at the mouza level. But the problem here is with the non-comparability of occupational categories at different census periods and the administrative re-organisation of police stations including creations of new police stations by taking chunks out of the former ones. Such problems make comparisons difficult in every state and in many cases the problems are partially solved by drawing inferential conclusions. Another important limitation is posed by the difficulty in obtaining restricted but useful maps and imageries, as much of the area lies close to either the international boundary between India and Bangladesh or
strategic centres like Haldia and Sandhead.

1.7.0.0 CONCEPTUAL BACKGROUND

The objectives of the present study have not been derived exclusively from purely empiric knowledge pertaining to south 24-Parganas but also have in the background some theoretical issues related to the principles of settlement geography and the conceptual basis of linking settlements with their ecological settings.

1.7.1.0 SETTLEMENT AND SETTLEMENT GEOGRAPHY

The establishment of settlement geography as a definite sub-discipline in geography has been associated with various conceptual, methodological and empiric exercises. The climax of all such exercises is to be seen in the present status of urban geography, but rural settlement geography is probably yet to find a proper embodiment of its principles. The first attempts to study the interrelations between origin, functions and layout of settlements were made in Germany since the mid-nineteenth century (Dahlman, 1840; Hanssen, 1880) whereafter in the early part of the twentieth century settlement geography took an important turn and gained substantial ground subsequently in Europe through the works of the French and English schools of geographers among whom Ratzel, Vidal de la Blache, Brunhes, Max Sorre, Flaure, Wriggley, Hartshorne, Aurousseau etc. deserve mention.

There are considerable differences in the approaches to settlement geography starting with the definitions of 'settlement' itself. To cite a few, a settlement has been defined as a man-made human shelter by Ritter, Carl; as 'characteristic grouping of population into occupance units' together with the facilities in the form of houses and
streets (Trewartha and Hammond, 1942); as the 'topographic expression of the two fundamental elements, houses and highways' (Brunhes, 1952); as the 'residence and functional residence' of the society (Kohn, 1954); as the place where one or more persons dwell regularly to establish a permanent residence (Stone, 1965) including buildings, fence, fields etc. (Jordon, 1966) or as comprehensively as 'an occupance unit representing thus an organised colony of human beings, including the buildings in which they live or work or store or use them otherwise and the tracks or streets over which their movements take place (Singh, 1975).

From Ritter's 'shelter' to Brunhes' 'houses and highways' the definition widens only to create a confusion about the distinction between 'settlement' and 'cultural landscape'. The confusion can perhaps be removed if the term 'occupance unit' as used by Trewartha and Hammond is taken in its true sense. It is the concept of this occupance unit that recognises settlements as discrete phenomena as opposed to the idea of a continuum in cultural landscape.

The conceptual contribution of Trewartha and Hammond in introducing the idea of an occupance unit is therefore significant as much as the notions of permanency and functionality added by Stone (1965) and Kohn (1954) respectively to the definition of settlement. These elements attach to the notion of settlements a sense of internal organisation among the members of the group occupying a particular territory over a considerable period of time and with a definite purpose - the purpose of establishing themselves firmly on the given space by making the most rational utilisation of the local resources. This is the reason why the environmentalist approach treats a settlement as the ecological niche containing all the reflections of the mode of intervention by the group concerned upon the perceived realities of the local resource base.
This leads us to the field of settlement geography and its different interpretations. According to the earlier work of Schluter (1899) location, size, growth, areal arrangement and relationship with surroundings constitute the field of settlement Geography. He later (1906) added that the overall settlement network was more significant than villages and towns in isolation. Brunhes (1952) reiterated this stand by emphasizing the need for studying the arrangement of houses on space along with the causal relationships. Arrangement or spatial organisation continued to be the central interest in settlement geography from the time of Ratzel (1893) to Schaefer (1953) in America and Demangeon (1956) in Europe. One of the major approaches in such studies involved grouping of spatial facts to arrive at settlement morphology which Demangeon described as the sum of site, origin, size and function.

The emphasis on the functionality of a settlement expressed through its morphology, a notion which was contained in Kohn's (1954) definition of settlement, came to be established as the dominant approach in settlement studies since the middle part of the twentieth century. This trend is very aptly summarised in Singh's (1975) definition of settlement geography as 'the analytical description not only to define few categories or classification and pattern but also for the understanding of historical sequence and functional relationships'. However, this approach can not be considered as a contribution of the late twentieth century geographers because already in the nineteenth century Dahlmann (1840) and Hanssen (1880) through their identification of settlement forms opened up the scope for analysing the functional history of settlements and assured settlement geography its rightful recognition as a valid system of enquiry into social behaviour and decision-making (Eidt, 1976).
1.7.2.0 TERMINOLOGIES

For different geographical, historical and cultural reasons, settlements develop in different ways. Hudson (1977) observed that primarily all villages are in some measure nucleated, some have their buildings much closer spaced than others. On the basis of this, villages can be identified as of two basic forms, compact and loose-knit based on the degree of cohesion in the spatial distribution of buildings. While explaining these forms, he described different types, e.g. street villages, T-shaped villages, cruciform villages, doubles villages, etc. This analysis puts much more emphasis upon the shape and the direction in which villages develop than that of the interspacing of building within the settlement as mentioned by him earlier. Hudson has also used the term pattern to describe the spatial relations between one dwelling and other whether they are close together as in villages and towns or are farther apart as in a hamlet or a single dwelling settlement. According to him the major patterns is rural areas are either nucleated or dispersed. This raises the problem of contradictions in the writings of the same author. In some cases the terms form and pattern have been used almost interchangeably while in other cases they have different meanings.

While discussing dispersion and nucleation of settlements, Desmond McCourt (1976) described settlement type as the spatial relation of individual dwellings to entire settlements. According to the intensity of spacing between dwellings, nucleations and dispersions are examined. Primarily settlements are classified as of compact or agglomerated and dispersed or scattered types. Aurousseau (1920) coined the term 'arrangement', almost synonymous with McCourt's 'type', to express the grouping of dwellings in their typical form exhibiting a definite relationship within the group.
The same problem arises when Emrys Jones (1969) analysed forms and patterns of settlements. To him the pattern of settlement is the relationship of one dwelling to another. The fundamental division which is usually accepted in rural settlements, dispersed or nucleated, is one of pattern. There are very many patterns, degrees of dispersion and different forms of nucleation. While explaining nucleated and dispersed patterns he cited examples like the Bedouin encampments of Arabia consisting of two roughly concentric circles of tents around a well and the Mboi huts of southern Africa, arranged in a circle outside which is a brushwood fence and inside which is a further penned area for cattle, sheep and goats. The term 'pattern' thus may also be used to describe the shape or geometric form of settlement. Jones used the term 'form' while analysing rural settlements of Germany and replaced the term 'pattern' to describe Haufendorf or irregularly clustered villages on the edges of their stripped arable fields, meadow pastures and woodlands. Terms like dense, sparse, agglomerated, whether they describe patterns, types or forms actually explain nothing but the interspaces of different components of settlements or in other words their internal structures.

1.7.3.0 SOME RELEVANT CONCEPTS

In dealing with settlement geography either theoretically or in the context of south 24-Parganas, certain concepts pertaining to geography in general and to the social and environmental issues in geography in particular do appear as relevant and worth reviewing.

1.7.3.1 SOCIAL SPACE

The two most fundamental issues which geography deals with are spatially bound environments and spatially bound societies. The key word space appears with numerous
dimensions and interpretations. The first that space is a container of objects has been traditionally accepted by geographers. But the second concept of space as an attribute of things (Buttlimer, 1975) reflects human behaviour and culture. The space which has a meaning for us is one that we create by our activities. The significance of space, with its subjective dimensions as opposed to a more objective point of reference system, is an outcome of the way people think about and use space. This 'space' can very appropriately be called as the social space.

Max Sorre (1963) envisions 'social space' as a mosaic of areas, each homogeneous in terms of the space perception of its inhabitants. Each group tends to have its own specific social space which reflects the complementary relationships between groups. Objective social space is defined as the spatial framework in which groups live, groups whose social structure and organization have been conditioned by ecological and cultural factors. Subjective social space on the other hand is the space as perceived by members of particular human groups. In many cases objective and subjective social spaces fail to coincide - subjective space reflecting values, aspirations and cultural traditions that consciously or unconsciously distort the objective dimensions of the environment. Sorre suggests that every life style tends to inscribe itself in a typical habitat form. In the case of a rural habitat, for example, he shows how work rhythms, agricultural regimes, social structures and economic activities are related to house types and village patterns.

For Chombart de Lauwe (1960) urban social space connotes a hierarchy of spaces, within which groups live, move and interact. First there is the 'familial space' where the domestic level of social interaction takes place, then the 'neighbourhood space' or the network that encompasses daily and local movement; 'economic space' which embraces certain
employment centres; and finally the 'urban sector' or 'urban-regional' social space. Perhaps the easiest way to understand social space is to define it as a physical space becoming multi-dimensional by way of absorbing into itself the complex attributes of the society living in it and intervening in its intrinsic resource base through appraisive perception (Biswas, 1994).

1.7.3.2 CONCEPT OF HABITAT AND NICHE

The habitat of man is the place where he lives or the place where one would go to establish his permanent home. The term habitat is widely used in ecology and elsewhere. An ecological niche on the other hand is a more inclusive term that encompasses not only the physical space occupied by a community but also its functional role in the community and its position in environment (Odum, 1971). The ecological niche does not depend only on the place where people live but also what it does and how the community behaves, responds to and modifies its physical and cultural environment. By analogy, it may be said that the habitat is the organism's address and the niche is its profession (Odum 1971). Thus, to know an individual or a community, the knowledge about its habitat is just the beginning, while to determine its status, a comprehensive understanding about the interactions with the environment or about the activities of the group concerned is essential. This is expressed distinctly through the ecological niche and not through the mere habitat. Within a broader habitat, different ecological niches can be established by different groups of people.

It may be worth repeating that a human settlement is the ecological niche of a community occupying a notionally bound subjective space carrying all the impressions of the activities of the community related to its quest for survival on the basis of the resources available at its disposal. A
settlement is thus a microcosm reflecting the profession of a community. In fact, there is a very consistent argument dealing with the ecological basis of all settlements whether they be primitive hamlets, or modern metropolises.

1.7.3.3 ECOLOGICAL BASIS OF HUMAN AGGLOMERATIONS

Ecosystems have generally been classified as mature and successional systems. In a mature ecosystem the total production of energy equals the total consumption made possible by a maximum possible specietal diversity whereas in a successional or immature ecosystem there is a surplus energy due to the presence of fewer species. The more mature an ecosystem the greater is the consumer population; and the greater is variety in the consumer population, the wider is the foundation of the energy pyramid and stabler the ecosystem. The successional systems on the contrary are less complex but more sensitive to changing environmental conditions. Nature thus achieves stability by investing in diversity and complexity. There must be some mechanism within a mature system to regulate the populations of organisms.

In order to maximise the supply of energy for his exclusive consumption and to multiply his number, man cannot allow the ecosystem to mature. He intercepts the process of transformation of the ecosystem from the immature stage of surplus energy to the state of maturity by selective protection of the species which come to his own immediate use and selective extirpation of those he does not require. He either chooses to colonise in a tract - a space bound ecosystem which is young or reduces the specietal diversity of a mature ecosystem to carve out a niche for himself.
The establishment of semi-permanent settlements followed on the change from hunting-gathering to pastoralism and agriculture. Community began in the hunting-gathering stage and developed further in pastoral times. But it was only during the initial period of sedentary agriculture that more permanent communities and settlements were formed. Even the neolithic village in spite of all its simplicity exhibited essential features of the modern settlement. The primary influence that roused the motive for permanent residence was the availability of good agricultural lands that could provide a surplus of food. The increased population to consume the surplus with the consequence that some of the land capable of supplying food had to be shifted to residential use. When the carrying capacity of land that was available for agriculture could not satisfy the needs of the community any longer, it had to bring more land under agriculture. Settlements which were located close to one another gradually coalesced and the supporting productive region thus moved farther and farther away from the centre making transport a necessity. Thus from the logic of development of a sedentary farming system based on the surplus energy of an immature ecosystem, grew up the basis for agglomeration of human settlements and the tendency towards spatial expansion of the productive base and then towards a reliance on imported energy from fossil fuels to subsidise the base of the energy pyramid of the local ecosystem.

1.8.0.0 METHODOLOGICAL PROBLEMS

From the review of the definitional and terminological problems and the relevant conceptual issues it is still very doubtful whether settlement geography can offer any systematic embodiment of analytical principles, in explaining the laws of human behaviour and decision-making concerning habitation. It is true that settlement geographers with an
environmentalist viewpoint have justifiably argued that a human settlement contains all the reflections of the mode or modes of environmental perception of a community occupying a particular habitat and can, therefore, be regarded as a microcosm of the pattern of natural resource utilization by the group concerned. A 'settlement' therefore can be conceived as an 'echological niche' of a particular group of people within a broader habitat. It is from this none too explicit assumption that settlement geographers have often been drawn towards the examination of forms, patterns and types (Jones and Eyles, 1977) of human settlements hoping that the spatial arrangements in these would ultimately provide clues to the actual pattern of interaction between man and environment in specific terms. Unfortunately neither have forms, patterns or types been defined without ambiguity, nor have been there too many examples of how the identification of specific forms, types or patterns help us to construct the process by which modes of resource use lead to definite habitational layouts. The methodology of investigation and analysis followed in the present study is not in total agreement with generally accepted approach by Indian scholars saving a few like the Benares group of geographers (Singh et al, 1975). However the present approach has some similarities with those adopted by researchers in Germany and the United States (Dahlmann, 1840; Hanseen, 1880; Jordon, 1977; Jones, 1969; Jones & Eyles, 1977).

1.8.1.0 CONCEPT FRAME OF PRESENT STUDY

The present study attempts to explain the objectives from a broad perspective. In the initial stage a general understanding about the area is presented on the basis of information derived as feed-back from the existing literature about the region. The hypotheses coming out of this review help us probe deeper into the constituents of the study area, namely, police stations and mouzas and to specific cases of individual settlements, tracts and islands. The observation
and examination of intra-regional micro-variations and the micro-level case studies in turn, have been threaded together to fit in with the objectives and the broad perspective with which the study begins.

Of particular methodological significance, is the enormous service the cadastral mouza maps can render in the analysis of settlement forms. Neither is it our intention to underplay the role of field work nor do we propose to say that the inferences derived from these maps are infallible. But we have a double purpose behind selecting such a methodological approach. Firstly, it is extremely difficult for individual researchers to provide a full-scale coverage of all settlements along with the linkages between their forms, functions and historical process of development for a considerably large region as south 24-Parganas on the basis of field survey. The inferences drawn from mapped data are likely to provide us with all possible variants of settlement forms and to minimize the necessity of field work by appropriate and purposive sampling. Secondly, methods and tools in geography are supposed to be different from those in other social sciences like history and sociology. The specificity of the geographical method, which can also be considered its strength, lies in its capacity to handle and analyse spatial data independent of chronicles and interviews. It is on this strength that a geographer proceeds to unearth societal norms and behaviour. If he draws supporting evidences from the field of history and sociology or from any other sets of information relating to social or economic structure, it should be considered as a welcome addition to the power of his method but not as its essentials. In our opinion, geographic enquiry into any problem is essentially an observational method whose efficacy lies in the depth and extent of subjective knowledge derived from systematic learning of the principles of geography.
In order to achieve the stated objectives we have taken recourse to the following methodological steps:

(i) to develop an acquaintance with the geo-economic, configuration of south 24-Parganas in general;

(ii) to review the conceptual issues connected with settlement from an ecological as well as socio-cultural angle;

(iii) to examine the historical process of colonisation in the study area during its early phase of development;

(iv) to examine the cultural configuration of the area through the application of different measures to analyse various demographic aspects like density of population, sex ratio, ethnicity, occupational structure, village size, services and utilities and the aggregate aspects;

(v) to identify the variations in settlement characteristics with the analysis of their shapes, forms and patterns;

(vi) to purposively select sample areas for field survey and to investigate into the particular problems for which the cases are selected; and

(vii) to understand the different processes responsible for the growth of such a settlement system.