CHAPTER I

INTRODUCTION
This study deals with the settlement pattern of the Middle and Lower Ganga Valley from the beginning of the Palaeolithic to the end of the Neolithic-Chalcolithic period. Study of settlement pattern is concerned with the interrelationship between man and his environment. In archaeology it is mainly a study of spatial distribution of human activity in relation to landscape, soils, climate, water sources, flora and fauna.

Settlement pattern studies can be traced back to the later part of the last century by L.H. Morgan (1881). His book *House and House Life of the American Aborigines* mainly concerned with the question of how the remains of aboriginal residential architecture in North America reflected the social organisation of the prehistoric people who occupied them. In the 1930s J. Steward (1937, 1938) further promoted these studies in the field of Archaeology. G.R. Willey, who was inspired by Steward's work, defines settlement pattern as "the way in which man disposed himself over the landscape on which he lived. It refers to dwellings, to their arrangement and to the nature and disposition of other buildings, pertaining to community life. These settlements reflect the natural environment, the level of technology on which the builders operated and various institutions of social interaction and control which the culture maintained. Because settlement patterns are, to a large extent, directly shaped by widely held cultural needs, they offer a strategic starting point for the functional interpretation of archaeological cultures" (Willey (1953:1)). Before Willey,
archaeologists were mainly interested in cultural reconstruction but Willey’s settlement pattern studies in the Viru Valley (1953) and the volume of settlement patterns studies edited by him (Willey 1956) for the first time offered a systematic methodological framework for a conjunctive approach. Willey observed that the study of settlement patterns would force the archaeologists to imagine the site phenomena as representing depositional units or categories of prehistoric activity. He insisted that the settlement pattern study should not be treated as a closed and self-contained system or method but as a part of the total archaeological operation.

E.Z. Vogt (1956) formulated the scope of settlement pattern study as a description of:
1) the nature of individual domestic house type or types;
2) the spatial arrangement of these house types with respect to one another within the village or community unit;
3) the relationship of domestic house types to other spatial architectural features;
4) the overall village or community plan; and
5) the spatial relationships of villages and communities to one another over as large an area as feasible.

He found three types of most appropriate interrelated interpretations:
1) which explores the relationship of living arrangements to geographical features such as topography, soil, vegetation types or rainfall zones,
2) which focuses upon the social structural inferences that can be made about sociopolitical and ceremonial organization, and
3) which concentrates upon the study of change through time with a view to providing materials for generalizing about the cultural processes.

W.T. Sanders (1956) emphasized more on analysing the distribution of human settlements in the context of agricultural systems, local specialisation and inter-regional exchange. He distinguished between community settlement pattern and zonal settlement patterns. According to him community pattern comprises the individual units of population, types of communities, organisation of public buildings, streets and population distribution and form, density of community population and house types. The zonal settlement pattern is concerned with the distribution of community size, distances between communities, density of population and the symbiotic relationship between communities.

K.C. Chang (1958) distinguished between the two meanings of settlement pattern: 1) settlement pattern, and 2) community pattern. He defined settlement pattern as 'the manner in which human settlements are arranged over the landscape in relation to physiographic geographic environments' and community pattern as 'the manner in which the inhabitants arrange their various structures within the community and their communities within the aggregate'. According to him the term aggregate means 'a gathering of certain number of communities which are bound by close social, political, commercial or religious ties'.

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Later on K.C. Chang (1962:14) devised a typology of the time-space relationship of settlement components on the basis of ethnographical material from the circumpolar region. He categorized settlement patterns into two types:

1) Year-round settlement, within which the annual cycle of main subsistence activities of occupants can be completed. This type has been further subdivided into two:
   a) Permanent settlement: occupies a locale permanently; and
   b) Semipermanent settlement: abandons a locale after one year's or several years' occupancy because (among other factors) the ecological potential of the place is exhausted and occupants are unable to restore it.

2) Seasonal settlement-complex: a network of seasonal settlements occupied by a group of people in turn in different seasons of year, distributed within the confines of an annual subsistence region. He further subdivided this type into two:
   a) Sedentary seasonal settlements: annual subsistence region of a group of occupants remaining permanently unchanged.
      i) With permanent bases: locales of main seasonal settlements remain permanently unchanged.
      ii) With transient bases: locales of the various seasonal settlements (particularly main sites of occupation) keep changing after one year's or several years occupancy because (among other factors) the ecological potential of particular locales is exhausted and the occupants are unable to restore
it, though the whole annual subsistence region of the group remains unchanged.

b) Temporary seasonal settlements: a group of people has to change its habitation from one annual subsistence region to another after one year's or several years' occupancy because (among other factors) the ecological potential of the whole region is exhausted and occupants are unable to restore it.

H.D. Winters (1969) has developed the concept of 'settlement system' which is a refinement of Chang's 'annual subsistence region'. He distinguishes between settlement pattern and settlement system. According to him settlement pattern is 'the geographic and physiographic relationship of a contemporaneous group of sites within a single culture'. Settlement system on the other hand, 'refers to the functional relationship among the contemporaneous group of sites within a single culture'.

A very significant contribution to the field of settlement archaeology has made by Bruce G. Trigger (1967, 1968, 1978) who has suggested three levels of settlement pattern study:

i) Individual building or structure: The individual structures are affected by several factors like subsistence regime, availability of building materials, environment, skill and technology of builders, members of the family, differences in wealth and rank, other social institutions and special needs, political institutions, religious beliefs and specialization of production.

ii) Community layout: In the community layout buildings or structures are arranged within a single community.
Environment and subsistence technology, family and kinship organization, classes, religious and ethnic groups are the determinants of the settlement pattern of a community.

iii) Zonal Pattern: Density or distribution of population of a region is affected by the nature and availability of natural resources, trade, political organization, warfare, religious and symbolic factors, migration and population change.


The present work is based on Trigger's third level of settlement pattern i.e. zonal pattern.

Study Area

The study area consists of the Middle and Lower Ganga valley. The Middle Ganga plain (24°30'-27°50' N : 81°47'-87°50' E) has
an area of 144,409 sq km. and covers the plain area of eastern Uttar Pradesh and Bihar. The region lies between the Himalaya in the north and the Peninsula in the south. Physically, the plain can be broadly divided into two parts: a) the Ganga Plain north, and b) the Ganga Plain south. Except for minor variations, the former is approximately 30 to 100 m above the mean sea level while the latter is roughly marked by the 150 m contour.

The entire area is an alluvial plain. Geologically, the alluvium has been divided into two: a) Bhangar or older alluvium deposited during the Pleistocene and containing high percentage of lime and kankar and being alkaline and saline, and b) Khadar or newer alluvium of sandy composition which covers the annual flood plains. It has low percentage of humus, nitrogen and lime and high percentage of sand.

The Lower Ganga Plain (21° 25'-26° 50' N : 86° 30'-89° 58' E) has an area of 80,968 square kilometers, extending from the foot of the Darjeeling Himalaya in the north to the Bay of Bengal in the south and from the edge of Chotanagpur highlands in the west to the boundary between Bangladesh and Assam in the east. It includes the administrative divisions of the Kishanganj tahsil of Purnea district of Bihar and the whole of West Bengal except Purulia district and the mountainous part of Darjeeling district. The region has been divided into three physiographic zones:

a) North Bengal plain;

b) Delta proper, and

c) Rarh plain or the Western Margins of the Delta.
The geological formation of the region is divided into two:
1) older alluvium of the Pleistocene, containing clay and silt, sometimes associated with pebbles and gravels, and
2) newer alluvium which occurs mainly in the deltaic area, and is characterized by the old mud, new mud and marshes.

Previous Work

Research on pre- and protohistory of the Middle Ganga Plain and the adjoining southern hilly part of Uttar Pradesh (U.P.) can be traced back to the early part of 1860s. W. Theobald (1862:323-327) collected a few Neolithic celts from Banda district of U.P. In 1867-68 A.C.L. Carileyle discovered a large number of microliths made on agate, jasper and chert from caves and rock shelters in the Kaimur range in Mirzapur district of U.P. and adjoining Sidhi and Rewa districts of Madhya Pradesh (M.P.). Unfortunately, Carileyle's work was never adequately published and it is known to us only from secondary sources like J.A. Brown (1889:134-139), V.A. Smith (1906:185-195) and B. Allichin (1958:153-155). A few sporadic discoveries of Neolithic celts in Banda district were made in the later part of the 1870s and early part of the 1880s by J. Cockburn (1879:133-143) and H. Rivett-Carnac (1882:6-8, 1883:221-230, 1884:119-120). J. Cockburn (1883a:56-64, 1883b:125-126, 1888:57-65, 1894:21-37) discovered a few rock shelters with the depiction of rhinoceros in Mirzapur district. He also discovered Palaeolithic implements and fossilized tibia and femur of *Dor nomadicus* from the Singrauli basin and flint implements from the Kon Ravines in Mirzapur district.
In 1911-12 Sir John Marshall (1911-12:28-94) conducted an excavation at Bhita in Allahabad district of U.P. and obtained a Neolithic celt in the historical context. After this no discoveries were made for nearly four decades. The work started again in 1951 by V.D. Krishnaswami and K.V. Soundara Rajan (1951:40-51). They carried out an exploration in the Singrauli basin and located several Palaeolithic and Mesolithic sites. In 1958 B. Allchin (1958:153-155) rediscovered the Morhana Pahar rock shelter which A.C.L. Carllleyde had first discovered in 1867-68. In the 1960s R.K. Varma (1964, 1965:73-76) and G.R. Sharma (1965:76-79) systematically explored the Vindhyan region of Mirzapur district and brought to light a number of painted rock shelters. They also excavated the rock shelters of Morhana Pahar, Baghai Khor and Lekhahia and established a developmental sequence in the evolution of the microlithic industries from pre-pottery non-geometric microliths to geometric and diminutive microliths with pottery stages. P.C. Pant (1965:81) conducted extensive exploration in Varanasi, Mirzapur, Banda, Hamirpur and Jhansi districts of southern U.P. and brought to light 24 microlithic sites.

sites (Lower Palaeolithic-17, Middle Palaeolithic-23 and Upper Palaeolithic-6) and established the stratigraphy of these sites. In the Ganga valley he discovered 2 Epi-palaeolithic or early Mesolithic sites namely, Kurha and Bichchia. In the same year he published the results of his excavation at the Mesolithic site of Sarai-Nahar-Rai in Pratapgarh district (Sharma 1973b:129-146). Later, Sharma and his colleagues (Sharma et al. 1980) explored the districts of Allahabad, Pratapgarh, Sultanpur, Jaunpur and Varanasi and brought to light 198 sites of Epi-Palaeolithic (5), non-geometric Mesolithic (172) and geometric Mesolithic (21).

Eastward in the hilly region of Bihar early discovery of pebble tools on micaceous quartzite was made by G.T. Hughes (Ball 1865:127-128) on the Bokharo coal-field in Hazaribagh district. V. Ball (1870:170-175, 1878:125) made a few sporadic discoveries of prehistoric materials in Singhbhum and Hazaribagh districts. In 1875 Ball (1875:118-120) made a detailed survey in Pargana Dalhbum of Singhbhum district and brought to light a few Neolithic implements like shouldered celts, adzes and wedges. Regarding shouldered celts, he noted that they were similar to the Burmese Neolithic tools. In 1887 a Neolithic site was located by W.H.P. Driver (Wood-Mason 1888:387-396) near Ranchi town. He collected a few Neolithic and other artefacts of polished stone celts, scrapers, cores and flakes from the site. J. Wood-Mason revisited the same site and collected a large number of celts, cores and flakes (Wood-Mason 1888:387-396). In 1889 J. Wood-Mason (1889:254) discovered a Neolithic celt from Jashpur in Chotanagpur district. The collections of Driver and Wood-Mason
were cataloged by J.C. Brown (1917:122-130).


A.K. Ghosh (1970:1-68) made a survey in Singhbhum district and discovered a 'Flake Industry' from five localities, namely, Chandil-19, Sini-4, Ghatsila-9, Chaibasa-2 and Jamda (Gau)-6. In 1972 B. Sahai (1972:25-32) highlighted the Chalcolithic culture of the region on the basis of material remains. P.C. Pant et al. (1978:21-31) carried out excavation at the Acheulian site of Paisra, located in the Kharagpur hill range of Monghyr district. The lithic industry of Paisra is characterized by chopper-chopping tools, handaxes, cleavers, scrapers, cores and flakes. A few post-holes found in the excavation suggest the construction of a small temporary hut of an inverted 'V' shape. Investigation in 1985-87 by B.P. Singh in the alluvial plains at the foot-hills of Kaimur in Rohtas district have brought to light 15 sites, six of the Neolithic and nine of the Chalcolithic periods. He also excavated at Senuwar in Rohtas district and found cultural materials of Neolithic-Chalcolithic periods (Singh 1990:6-18, 1991:83-92).

The history of pre and protohistoric research in West Bengal can be traced back to as early as 1865 when V. Ball (1865:127-128) discovered a handaxe made on green quartzite in Kunkune village, 18 km south-west of Govindapur in Bankura district. Two years later he made a discovery of Neolithic celt from the same area (Ball 1867:143). In the beginning of the present century E.H.C. Walsh (1904:20-24) discovered a few neolithic implements from Kalimpong in Darjeeling district. The prehistoric discoveries of the region were systematically organised by H.C. Chakladar (1941:208-236, 1942:140-162, 1952:124-164). From 1938 to 1941
K.G. Goswami (1948) conducted excavation at the historical site of Bangarh in Dinajpur district where he obtained a Neolithic celt from a pre-Sunga level. A total of 12 Neolithic stone implements comprising celts and chisels were discovered by D. Sen (1948:252-253) in 1948 near Bamai village, 5 km south of Lalgarh in Jhargram subdivision of Midnapur district. B.B. Lal (1958:4-48) excavated at Mesolithic site at Birbhanpur in Burdwan district where he found microliths in a stratified context.

Syntheses of Neolithic finds of the region were prepared by V.D. Krishnaswami (1960:25-64), A.H. Dani (1960) and B.K. Thapar (1965:87-112) in the early 1960s. On typo-technological grounds of the Neolithic implements they considered Neolithic culture of this region different from that of south India. In 1961-62 P.C. Dasgupta (1964) conducted excavation at the Chalcolithic site of Pandu-Rajar-Dhibi in Burdwan district. In 1961 A.K. Ghosh (1961:369-375) published a short note on 'Prehistoric Studies in Eastern India'. He carried out explorations in Midnapur, Bankura and Purulia districts and discovered a number of Palaeolithic, Mesolithic and Neolithic sites (Ghosh 1962:338-339, 1966). He also carried out a study of the spatial distribution of archaeological sites, their stratigraphy and techno-typological traits (Ghosh 1966). In 1963 D. Sen et al. (1963:100-113) conducted exploration in the valleys of the Kasai, Kumari and Jam rivers and discovered a number of Palaeoliths from surface and river section. M. Bhattacharya (1983:103-108, 1987:47-52) conducted exploration in the Tarapheni valley in Midnapur district and adjoining areas of Purulia and Bankura districts,
and brought to light several Palaeolithic, Mesolithic and Neolithic sites. In 1984 A.K. Datta et al. (1984:21-29) explored north-western part of Midnapur district and discovered 28 Mesolithic sites. They also excavated the Mesolithic site of Chamargora in Midnapur district.

Aim of Study

The aim of this study is to present a synthesis of the data available for pre and protohistoric cultures of the region with special reference to their settlement pattern.

Limitations

Research in the area has been very uneven. Many of the discoveries have been made in a sporadic way. The only area systematically explored is a part of the Middle Ganga Plain comprising the districts of Allahabad, Ballia, Basti, Ghazipur, Gorakhpur, Jaunpur, Pratapgarh, Sultanpur and Varanasi in U.P. In 1962-63 A.K. Narain explored Ghazipur district and Chakia and Chandauli tahsils of Varanasi district, and brought to light 26 Chalcolithic sites, 23 in Varanasi (6 in Chakia and 17 in Chandauli) and three in Ghazipur (IAR 1962-63:33-34). In 1963-64 he explored Ballia and Ghazipur districts and reported 22 Chalcolithic sites: 15 in Ghazipur and seven in Ballia districts. In 1963-64 R.B. Singh conducted exploration in Bansi and Khalilabad tahsils of Basti district, Padrauna tahsil of Deoria district and Bansgaon and Farenda tahsils of Gorakhpur district, and discovered 33 sites pertaining to one microlithic
site (in Basti district) and 32 Chalcolithic sites: six in Basti, one in Deoria and remaining 25 in Gorakhpur districts (IAR 1963-64:45). The districts of Allahabad, Jaunpur, Pratapgarh, Sultanpur and Varanasi were explored by G.R. Sharma and his colleagues who brought to light 5 Epi-palaeolithic, 193 Mesolithic and 30 Chalcolithic sites (IAR 1977-78:56-57; 1978-79:23; Sharma et al. 1980).

In the Lower Ganga Plain, only the Farah plain comprising districts of Midnapur, Bankura, Burdwan and Birbhum has been systematically explored. V.D. Krishnaswami explored parts of Bankura district along the river Kansabati and its affluents Kumari and Jam and brought to light 38 sites pertaining to Lower Palaeolithic (4), Middle Palaeolithic (7), Mesolithic (26) and Neolithic (1) (IAR 1959-60:48-50). D. Sen and A.K. Ghosh explored parts of Bankura, Burdwan, Birbhum and Midnapur districts and located a number of prehistoric sites (IAR 1961-62:59; 1964-65:48). P.C. Dasgupta discovered a few Mesolithic sites on the high banks and terraces of the Bankajor, Dhankora and Gandheswari in the vicinity of Susunia hill in Bankura district (IAR 1965-66:58). Mrs. J. Birmingham and V. Sen also explored Bankura, Birbhum, Burdwan and Midnapur districts and brought to light several Mesolithic and Chalcolithic sites (IAR 1965-66:58). A total of 12 Chalcolithic sites were reported by V. Sen in Birbhum district in 1967-68 (IAR 1967-68:68). Department of Archaeology, University of Calcutta carried out an exploration in parts of the Tarapheni valley, a tributary of the Kasa river in Shilda region of Jhargram sub-division, and parts of the river valleys
of the Ajay-Kunoor-Khari, Bakreswar and Nayurakshi in Birbhum and
Burdwan districts and discovered 30 sites belonging to the
Mesolithic (11), Neolithic (2) and Chalcolithic (17) periods (IAR
1975-76:57-58). A.K. Datta and his colleagues (Datta et al.,
1984:21-29) undertook an exploration in Shilda region of Midnapur
district along the Tarapheni valley and discovered 28 Mesolithic
explored Bankura district and located one Lower Palaeolithic site
in the Silawati valley and 52 Mesolithic sites: 18 on the
Silawati, seven each on the Damodar, Kumari-Kansabati and
Gandheswari, three each on Sali, Ujani, Arkasa and Dwarkeswar and

Explorations in the Middle and Lower Ganga Valley have brought to
light 835 sites pertaining to the Palaeolithic (106), Mesolithic
(424), Neolithic (99) and Chalcolithic (206) periods. Of these,
31 sites (16 in the Middle Ganga Valley and 15 in the Lower Ganga
Valley) have been excavated. The details are given in Tables 1
and 2.
<table>
<thead>
<tr>
<th>Site</th>
<th>Culture</th>
<th>Excavator &amp; Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarai-Nahar-Rai</td>
<td>ML</td>
<td>G.R. Sharma, Allahabad University.</td>
</tr>
<tr>
<td>Chirand</td>
<td>NL &amp; CL</td>
<td>B.P. Sinha, B.S. Verma and L.A. Narain, Directorate of Archaeology &amp; Museums, Govt. of Bihar.</td>
</tr>
<tr>
<td>Chechar-Kutubpur</td>
<td>NL &amp; CL</td>
<td>R.S. Bisht, Mid-eastern Circle of the Survey.</td>
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<td>Taradih</td>
<td>NL &amp; CL</td>
<td>S.R. Roy and A.K. Prasad, Directorate of Archaeology and Museums, Govt. of Bihar.</td>
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<td>Sonuwar</td>
<td>NL &amp; CL</td>
<td>B.P. Singh, Banaras Hindu University.</td>
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<tr>
<td>Khairadigh</td>
<td>CL</td>
<td>K.K. Sinha and B.P. Singh, Banaras Hindu University.</td>
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<tr>
<td>Kakoria</td>
<td>CL</td>
<td>G.R. Sharma, V.S. Dubey and V.D. Misra, Allahabad University.</td>
</tr>
<tr>
<td>Nanjhi</td>
<td>CL</td>
<td>T.N. Roy, Banaras Hindu University.</td>
</tr>
<tr>
<td>Oriup</td>
<td>CL</td>
<td>B.P. Sinha and R.C.P. Singh, Patna University.</td>
</tr>
</tbody>
</table>

Abbreviation: ML- Mesolithic; NL- Neolithic; CL- Chalcolithic
## Table 2  
### List of Excavated Sites in the Lower Ganga Valley

<table>
<thead>
<tr>
<th>Site</th>
<th>Culture</th>
<th>Excavator &amp; Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birbhanpur</td>
<td>ML</td>
<td>B.B. Lal, Archaeological Survey of India.</td>
</tr>
<tr>
<td>Bahiri</td>
<td>CL</td>
<td>D.K. Chakrabarti and S.J. Hasan, Delhi University.</td>
</tr>
<tr>
<td>Harapur</td>
<td>CL</td>
<td>R.C. Kar, Eastern Circle of the Survey.</td>
</tr>
<tr>
<td>Hatikara</td>
<td>CL</td>
<td>N.C. Ghosh and S. Nag, Visva-Bharati University.</td>
</tr>
<tr>
<td>Barabelun</td>
<td>CL</td>
<td>P.C. Dasgupta, Directorate of Archaeology, Govt. of West Bengal.</td>
</tr>
<tr>
<td>Pandu-Rajar-Dhibi</td>
<td>CL</td>
<td>P.C. Dasgupta, Directorate of Archaeology, Govt. of West Bengal.</td>
</tr>
<tr>
<td>Mangalkot</td>
<td>CL</td>
<td>A. Ray, Calcutta University.</td>
</tr>
<tr>
<td>Dihar</td>
<td>CL</td>
<td>A.C. Pal, Calcutta University.</td>
</tr>
<tr>
<td>Tulsipur</td>
<td>CL</td>
<td>Mrs. J. Birmingham of the Sydney University, Australia, and S.K. Mukherjee, Eastern Circle of the Survey.</td>
</tr>
</tbody>
</table>

*Abbreviation: ML - Mesolithic; NL - Neolithic; CL - Chalcolithic*
Majority of these excavations, however, are of a small scale and vertical in nature. Because of this the total picture of a culture is not revealed from any of the sites. Full reports of only five excavations, namely Mahadaha, Birbhanpur (Mesolithic), Narhan, Sonpur, and Pandu-Rajar-Dhibi (Chalcolithic) have been published. For the remaining sites information is available only as short notes in the *Indian Archaeology: A Review* and from a few articles published in journals. Another factor affecting the present study is that information for location of sites (taluka/tahsil, geocordinates and nearest prominent locality), their size, water sources (river, nala and lake) and spacing between the sites is not fully given in the reports. Because of this reason many sites could be plotted on the map only approximately.

Methodology

The data used in preparing this study have been collected from published sources like the *Indian Archaeology: A Review* and excavation reports. They were collected according to a proforma designed to suit data entry into dBase III plus programme in the computer. The data structure is based on the model developed by V.N. Misra and his associates for the prehistoric site gazetteer. The data have been analysed in relation to environmental parameters, cultural material of the sites, relationship between the material culture of the sites, and chronology. An attempt has been made to reconstruct a picture of the evolution of human settlement pattern in the Middle and Lower Ganga valley.