CHAPTERS
The present thesis aims to understand the location and distribution of archaeological sites in the middle reaches of the Dwarakeswar river valley within district Bankura. The main emphasis is to understand the emergence of archaeological sites through the passage of time, in relation to the dynamic riverine landscape of the Dwarakeswar river. In order to understand the archaeological record of the area, the terrain has been looked upon as one of the chief determining factors in governing the location of sites. For ascertaining the chronology of the sites, pottery has been considered as the main chronological marker. No earlier attempt has been made to define this region according to the natural features and see the distribution of the archaeological record herein. Hence, the present study seeks to understand the context and formation of the archaeological sites in the river valley. Such an understanding is found to be intimately linked with the concept of settlement: pattern that has additionally helped in generating a more meaningful picture of the past landscape.

The Dwarakeswar river valley has been an area of concentration of archaeological sites since the prehistoric times. Earlier studies mostly focused on the medieval temples or isolated sculptures on the basis of which 'sites' were identified in the river valley. In such studies, the nature and context of the explored sites are not defined (IAR references cited). Moreover, the sites have never been studied in a holistic manner taking the entire archaeological record into consideration. The area having scant literary data needs to be understood through the available archaeological record. Pottery, which forms one of the major traits of the historical and medieval sites, has never received adequate attention from the archaeologists working in this area. A holistic study of this micro-region incorporating a systematic analysis of the archaeological record, in the backdrop of recent trends in archaeological research was lacking. Hence, the researcher took up the present study area for investigation. It must be mentioned that prehistoric investigations have been kept out of the present study.
The BRW, Early Historic and Medieval sites in the river valley have been documented and studied in this attempt.

Since the present study seeks to holistically document the sites in the river valley, the focus has been on the individual sites and their location in accordance with the landscape. The excavated site Dihar has additionally helped in understanding the nature of the sites in the river valley. The sites have undergone modifications through the passage of time. So understanding their context was very important, that has helped the investigator in properly locating the finds and forming an idea about the nature of sites in the river valley. Selection of a region according to definite ecological features has been specified as one of the first criteria of studying past human cultures (Binford 1964). The sites have been actually understood from a regional perspective, where the importance of the river in the emergence of sites has been highlighted. Equal emphasis has been laid on the smaller sites and even sites situated away from the river valley.

Archaeological studies, before the advent of New Archaeology, were largely concentrated on documentation of sites, construction of cultural and climatic sequences and classification of the artefacts. Subsequently, as a result of the influence of New Archaeology, the importance of regional studies and systematic site formation studies was realised. As propounded by scholars (Binford 1982, Schiffer 1987), the practice of conducting site formation research was taken up in India with suitable changes in the conceptual and methodological approaches. Studies based on site formation have largely been practiced in the domain of prehistoric studies (Paddayya 1987, Paddayya & Petraglia 1995, Misra et al. 1990). A consideration of geomorphic processes, leading to site formation and of artefact morphology which indicate natural processes, have been regarded as an integral part of site formation studies (Pappu 1999). Such an endeavour is relatively new, especially in Bengal where the sites are studied according to the administrative boundaries of the districts rather than specific geographical sub-regions. Of late, some sites have been taken up for studies where scholars have tried to understand the past cultural landscape and the geomorphic processes that have affected the sites through the passage of time. In such studies, scholars have made an attempt to understand the relationship between the changing
landscape and archaeological sites from the late Pleistocene to the mid-Holocene period, in selected regions of West Bengal (Panja et al. 2002). Similar studies have been undertaken by Basak (Basak 1996), Roychoudhury (Roychoudhury 2002), Chakraborty (Chakraborty 2008) and Gangopadhyay (Gangopadhyay 2008) where the geomorphic history of the landscape has been studied, that plays an integral role in governing the location of sites in specific regions of Bengal. These scholars have tried to look into sites of different chronologies starting with the prehistoric ones (Basak, 1996) followed by chalcolithic (Roychoudhury 2002), early historic (Roychoudhury 2002, Chakarborty 2008, Gangopadhyay 2008) as well as early medieval (Panja 1996). In most of these areas, the terrain has been looked upon as the chief factor that has been modified by the dynamic rivers. These studies not only helped in gaining a holistic understanding of the past cultural landscape but also raised some vital points pertaining to the nature of archaeological sites in specific areas of Bengal. The results have also aided in confronting some of the preconceived notions regarding sites of the later cultural periods, which were previously understood from a historical perspective according to the epigraphic or literary data. In the present study area, due to the absence of literary and epigraphic data, the investigator had to conduct extensive archaeological surveys in order to understand the nature of the landscape and also the archaeological record, which virtually remains the only form of evidence to talk about the past settlements. Hence, understanding the river dynamism was found to be essential in studying sites in this area. The investigator has tried to study the site sedimentary contexts, the spatial extent of artifact distribution and the morphology of the artefacts in order to ascertain the context of the explored sites.

While studying the sedimentary context of the artefacts and the exposed sections in this area, it was found that understanding the associated soils and sediments were of utmost importance. In this regard, the investigator tried to use some basic principles of geomorphology and geology in order to understand the past landscape of the area and has adopted similar methodologies as practiced by scholars in the above mentioned studies. The concept of settlement pattern which is so intimately linked with the nature and context of sites has also been highlighted in the present thesis. Here, the researcher has taken help from the studies conducted on settlement pattern
Trigger 1968, Willey 1968) and also considered the vital aspects of the landscape in governing the location and distribution of sites. Settlement studies are dominant in the field of prehistoric studies but this approach has been utilized for understanding the relationship between the sites of later cultural periods also. In the context of Bengal, settlement studies conducted by Panja (Panja 1996) on the early medieval sites of North Bengal and Roychoudhury (Roychoudhury 2002) on the protohistoric and historical sites of the Ajay basin deserve a mention. These works are also chiefly based on exploration data. The researcher has tried to adopt similar methodology in order to deduce a picture of the settlement patterning in the Dwarakeswar river valley.

The researcher has undertaken extensive explorations along the river valley for four seasons in order to locate the sites and to understand the micro-regional variations in the landscape. The sites have revealed ancient remains mostly in the form of potteries. These were found in the form of surface scatters adjacent to the mound areas, in the ploughed fields, near river sections and very rarely in an exposed context. Some specimens were also found in a buried context in the form of mounds. In the absence of a standardised pottery index for potteries of Rarh Bengal, the researcher had to depend on the excavated specimens of Dihar for understanding the explored potteries. After the early historical phase, assigning specific chronology to the sites on the basis of early medieval pottery was not possible, since early medieval phase is still not properly understood in the context of Bengal. The limitations of the present study have been discussed in the ensuing pages. But the approach, with which the sites in the present study area have been studied, is a relatively new attempt which has yielded significant results. It has to mentioned, that the researcher has also focused on the available historical data to corroborate the archaeological evidences.

1.1.1. Study area

The study area encompasses the region between 40 m and 100 m above MSL within district Bankura, along the flood plains of the river Dwarakeswar. The river Dwarakeswar exhibits the typical features of a semi-perennial river in its middle course characterized by the levees, point bars, channel bars, back-swamps, and cut-off channels. The multicultural site Dihar, situated on the left bank of the river, is the only
excavated site of the river valley and has been considered to be a significant marker in understanding the archaeological record of the area.

The area stretching from the confluence of Gandheswari and Dwarakeswar and the continuing stretch of land along the river valley till the borders of Hugli district have been selected for the current research. The total study area encompasses about 1,696 sq km. This stretch of the river exhibits changes in landscape due to micro regional differences and accordingly covers three topographic sheets. The study area has been assessed in accordance to these variations in landscape.

The study area mostly constitutes a part of the Rarh plains where a lateritic alluvial landscape has developed. Geographically the area can be defined as being highly undulating and at places there are some step formations. As a result of mixture of laterite and older alluvium, the colour of the soil in this area is red. Coarse sand and gravel pebbles are found at places. However, as the river progresses towards the district Hugli, the landscape becomes gentler till it merges with the low-lying floodplains of the river.

The concept of Rarh has changed from time to time and looking at its history, it can be conjectured that the extent of this geopolitical unit underwent changes from time to time. From the fourth century AD onwards, the epigraphic records which are assignable to distinct chronological periods (such as the Gupta, early post-Gupta, Pala and Sena phases) enable us to trace more clearly, the chief political or geographical divisions and administrative units of Bengal. Unfortunately the boundaries of some of the units cannot be fixed with any degree of certainty, and the difficulty is increased by the fact that the extent of even well-known divisions like Gauda, Vanga, and Rarh varied in different ages (Majumdar 2005). The earliest reference of Rarh is found in the Jain text Acharanga Sutra where we come across the propagation of Jainism by Mahavira as early as sixth century BC. Here the reference of Vajjabhumi and Subbabhumi is found for the first time (Sen 1942). After this we find the reference of Rarh in other inscriptions of which a Chola inscription (Tirumalai Inscription) deserves special mention in which the term Takkinaladam has been used indicating that during this time, the concept of Uttaraladam (Uttara Rarh) and Dakshinaladam
(Dakshina Rarh) was prevalent (Epigraphia Indica, Vol IX, 1907-1908). Even in the Prabodhachandradaya Nataka of eleventh century AD we find the mention of Uttara Rarh and Dakshina Rarh. The river Ajay was generally considered to be a dividing line between the two and from all these accounts it can be assumed that in all probability, the study area formed a part of Daizhina Rarh (Sen 1942).

The Sankrit word Dwarakeswar means The Lord of Dwarka, which is an epithet for Krishna. Although the etymology of the word seems to be quite ancient, no specific legend about the river could be traced. But being an old one, we find references of it in the medieval texts like Kavikankan Chandi (Banerjee 1968). The river originates near the Tilabani hills of Purulia district and flows through district Bankura and enters Hugli after which, it joins Silabati in the district West Midnapur and forms Rupnarayan. It eventually drains into the Bay of Bengal. The total stretch of the river within the district is 107.2 km. There are many tributaries of the river of which the Gandheswari, Berai and Amodar deserves special mention. The Dwarakeswar being an old river has many abandoned channels throughout its course. Most of these meander for some distance on the either side of the main stream and rejoin it at various points. These are locally called Kana-Itadis, which receive only a small flow of water during the rains (Banerjee 1968). Some archaeological sites in the area are found to be concentrated along these channels.

The scattered evidence of sites throughout the district does not allow us to develop a complete picture of the archaeological record. No systematic exploration has been conducted in the river valley, or within the district itself, in order to provide a complete picture of the archaeological record. In the earlier explorations, the methodology adopted was more inclined towards collecting isolated sculptures or focusing on the temples or isolated artefacts rather than, on ‘sites’. In many instances, it is difficult to differentiate between a ‘find spot’ and a ‘site’, because the finds like sculptures or artefacts do not have any contextual reference. In some instances, even the specific locations within individual villages from where the artefacts were collected are not mentioned (IAR references cited). Moreover, the excavated data of the sites which are unpublished in the form of reports does not provide sufficient understanding of either the site or the artefactual evidence of the sites.
Dihar, the only excavated site of the river valley stands on the left bank of the river. It was first explored by K.N. Dixit (1974-75) and subsequently by a local enthusiast Manick Lal Singha (Singha 1976). Following these explorations, a periodical excavation programme at the site was undertaken by the Department of Archaeology, University of Calcutta under the aegis of Anil Chandra Pal in 1983-85 and 1990-95 (Pal 1992). A recent excavation at the site was undertaken by R.K. Chattopadhyaya on behalf of the Department of Archaeology, University of Calcutta (Chattopadhyay, et al. 2010).

Quite intriguingly, the plentiful collection of the polished stone tools like triangular shaped axe or polished celts made of black and grey stone, chisel, pestle, ring stones made of polished red stone from surface explorations carried out at this site have bewildered archaeologists since these finds could not be placed within a definite chronological framework. But these artefacts bear resemblances with the ones found from the upland areas of Kushadwip and Sonamukhi (Chattopadhyay et al. 2010). In course of the former excavation (1982-85, 90-95) at the site, the specific occupational levels yielded large amount of ceramics dominated by black and red ware and bone tools, worked bone artefacts, microliths, copper objects that have been unearthed from the chalcolithic levels. The findings of iron implements, and profuse quantity of cast copper coins have helped the excavator to assign the subsequent levels to the early historical period (Pal 1992). Besides these, stone beads (agate, carnelian and jadeite), terracotta beads and terracotta objects have also been unearthed from the site. The cast copper coins show a close affinity with those from other sites of West Bengal like Mangalkot, and Bharatpur of Burdwan, Pokharna of Bankura, Tamluk of Medinipur, Chandraketugarh and Harinarayanpur of Twenty-four parganas. But unfortunately from all these data, it is not easy to understand whether the early medieval period is well represented at the site. For ascertaining this, perhaps precise data, detailed analysis of the artefactual assemblage and absolute dates are the essential requirements.

The site Dihar has been excavated for many seasons but regrettably we do not have sufficient data to appreciate the nature of the site and the utilisation of space within the site. Published literature on the chalcolithic period of West Bengal is substantial.
where we do get the reference of sites in specific river valleys and particular zones indicating the distribution of BRW sites (Ray 1978). The concentration of sites in the Dwarakeswar-Gandheswari zone is assumed to have been less, since Dihar standing at the juncture of lateritic zone and older alluvium zone has hard soil which might have hindered the process of the emergence of settlements in the area. But before going in to generalization, it is necessary to explore the area more extensively and even the absence of sites in this area has to be supported by proper reasoning where one needs to understand why the distribution is so dispersed. The Dwarakeswar-Gandheswrai zone is one of the major concentration areas of the prehistoric sites and while analyzing the chalcolithic (BRW), early historic and medieval sites of the area, the researcher has kept these antecedent stages in mind.

During the reconnaissance survey, besides the site Dihar, some other sites were located which revealed archaeological artefacts in the form of pottery, architectural remnants, sculptures and dilapidated temples, indicating the archaeological potentiality of the area. Whether the sites in and around Dihar developed simultaneously, is a matter of evaluation and further research.

It is a matter of concern that the sites in the area are under massive threat and were needed to be recorded at the earliest. Not only in the Dwarakeswar river valley, but also in the sub-regions of other river valleys within the district, there are many sites which are yet to be discovered and recorded. Both natural and anthropogenic factors have altered the original landscape of the area. In many villages, the river sections have been guarded by laterite boulders as a protection measure against flood waters of the river. Besides these, tracts of land within villages and in the peripheral areas of the villages have been ploughed out for cultivation and for construction of brick factories. The mounds in most of the sites have been dug out for utilising the soil. The temples, however, situated on the top of these mounds, have helped in many instances, in preserving a part of the archaeological record. It is high time that we educate the local population about the importance of archaeology and our cultural heritage. However, the investigator would like to mention at the onset that the present research is a preliminary attempt to understand the archaeological record of the study area. There is
ample scope to know more about the area with the help of further multidisciplinary work, in order to understand the dynamic riverine landscape of the river.

1.a.2. Aims and Objectives

- An attempt has been made in the present study, to holistically document the archaeological sites in the Dwarakeswar river valley by taking into consideration all the three chronological periods. Medieval sites have also been documented in the present study.
- The distribution of sites in the Dwarakeswar-Gandheswrai zone has been reported by the scholars to be negligible and dispersed (Ray 1978). One of the prime objectives was to evaluate the reasons for such dispersed nature of distribution. The site Dihar was quite extensive and it is quite improbable that the site survived alone. In order to investigate these factors the present study area was selected.
- An attempt has been made to understand the pattern of human adaptation in this riverine landscape through the passage of time. In order to understand this, the location of individual sites in the river valley has been given prime importance, through which a preliminary idea of the settlement pattern has been formed. The investigator has also tried to highlight the importance of the context of ‘finds’, in order to study the archaeological record of the area.
- The investigator has tried to understand the significance of the site Dihar in the genesis of the past settlements in the river valley. An attempt has been made to confirm whether the rest of the sites in the river valley survived simultaneously with Dihar.
- An attempt has been made to assess the chronology of the explored sites in the river valley by studying the material assemblage, especially pottery.
- The investigator has tried to prepare a comprehensive database of ceramic assemblage of the different explored sites and also understand the technology employed in manufacturing the vessels. In order to gain insights in the current manufacturing techniques, an ethnographic survey was conducted with the potters of Janta and Uliara villages.
• An attempt has been made to record all the archaeological sites in the present study area because they are fast disappearing due to natural and anthropogenic factors. The temples and the sculptures as well as the rest of the artefacts from the sites have also been documented in the present study.

1.a.3. Research Methodology

• The study area was selected on the basis of a reconnaissance survey conducted with the help of topographic sheets (73M/3, 73M/4, 73M/8, 73M/12 primarily).

• Village to village extensive surveys and systematic explorations along the Dwarakeswar river valley was undertaken which also encompasses studying river sections, palaeochannels, etc. The excavated site Dihar was taken as the nodal point for the survey and subsequently, rest of the sites on both the banks of the river were covered by extensive surveys. The total area encompasses about 1696 sq. km. Since a regional survey methodology was adopted, sites situated away from the river valley and also sites yielding feeble evidences of habitation have also been recorded.

• All the published literary data, both primary and secondary, were referred to have an overview of the historical background. Relevant articles, journals, books and medieval vernacular literature have been consulted in order to gain insights.

• Extensive village to village surveys were undertaken and local help was taken wherever possible. These surveys provided information about the archaeological sites and form the most vital source of data in the present study. Personal communication with the villagers helped to a large extent in locating the sites.

• Potsherds were collected randomly from the villages and were selected to make a representative collection for each and every explored site. Equal focus was also given on the fragmentary sherds. These sherds were separated according to the varying contexts (mound areas, cultivated fields, river sections) in order to understand the pattern of distribution of the artefacts.
The excavated potteries from the site Dihar were studied in order to relate the explored ceramic assemblage and to place them in proper chronological phases. A comprehensive database of pottery has been prepared for each and every explored site.

In case of sites lying close to the river valley, the entire river section was studied. In some cases, artefacts were found to occur in patches. However, sites located under major forest covers could not be surveyed extensively.

On the basis of the present survey, a few sites with exposed sections in the peripheral areas of the mounds were thoroughly studied. Since it was very essential to study the site formation processes in order to understand the nature and context of sites in the river valley, these exposed sections were taken up for study, after clearing them. This helped to a large extent in understanding the nature of the cultural debris and the phases of occupation and abandonment.

The satellite imageries of the area were consulted in order to demarcate the lesser order streams and these areas were subsequently taken up in order to understand the landscape far from the main river.

The museum (Bishnupur Acharya Jogesh Chandra Purakriti Bhavan) collection relevant to the present work was studied in order to know more about the area. Some of the artefacts were photographed and the reserved collection of potteries (Site Dihar, Pokhanna, Tamluk, Mangalkot and Basantapur) housed in the State Directorate of Archaeology were documented in order to draw a comparative analysis with the ceramic assemblage of the study area.

Personal communication with the excavator (Rupendra Kumar Chattopadhyay, 2009-2010), local villagers, museum authorities, local enthusiasts and other scholars helped in providing additional inputs to the data.

Geographical Information System has been used in georeferencing the topographical maps, locating the explored sites on these georeferenced maps and also drawing the site maps of the area. The location and distribution of sites were plotted on the georeferenced maps which helped in assessing the settlement
patterning of the area. Remote Sensing techniques have been used in order to study the satellite imageries and demarcate the palaeochannels of the study area. The entire data has been placed in a GIS environment so that in future, all the necessary information is available with a click of the mouse.

1.b. Archaeological Research undertaken in India and Bengal

With this ongoing discussion, it is also necessary to understand the present study in the backdrop of the archaeological research undertaken in India, and Bengal in particular. In this regard, the investigator has concentrated on the three chronological periods characterised by the BRW sites, early historic sites and medieval sites respectively. Having given an overview, the investigator has tried to place the present study in this backdrop, thereby, highlighting the prospects and the limitations of the present attempt.

Archaeological research undertaken in India show that artefactual analysis, climatic investigations, use of scientific techniques and the adoption of a multidisciplinary approach have helped in unraveling the past scenario of the Indian subcontinent to a large extent. In fact, Indian archaeological research has come a long way from the days of antiquarian surveys to a whole new era of scientific investigations where attempts have been made to study sites in a holistic manner. The present investigator has attempted to highlight the studies undertaken in these three chronological phases.

1.b.1. Chalcolithic period

The discovery of chalcolithic (BRW sites) sites and the subsequent identification of the ‘chalcolithic’ phase in the Indian subcontinent is one of the greatest discoveries in the country after the discovery of the Harappan culture. After the discovery of the ancient remains at the site of Jorwe and Nasik in Maharashtra, a series of excavations were conducted at Maheshwar, Navdatoli, Nevasa and Ahar (Sankalia et al. 1958, 1960, 1969). Although these were large scale excavations, they were not extensive enough to convey an idea of a chalcolithic settlement in its entirety. Hence it was followed by the excavation at Inamgaon (Maharashtra) which was carried out for full thirteen seasons during which a large part of the chalcolithic settlement was laid bare.
allowing an exhaustive study of material culture of the protohistoric inhabitants (Dhavalikar et al 1988). Subsequently other excavations were also conducted by the Deccan College Post-Graduate and Research Institute in Western and Central India. A sterile layer representing a break in occupation was noticed at the sites like Nevasa, Kayatha, Prabhas Pathan, Prakash and Nagda (Dhavlikar 1997). The early Jorwe culture, which was based on agriculture and cattle pastoralism, and a full-fledged sedentary existence, was succeeded by the late Jorwe culture which adopted a semi sedentary lifestyle dominated by sheep-goat pastoralism. These excavations gave us a fair idea of the lifestyle of the early farming communities.

The available data at Inamgaon, through excavations, has been interpreted through an advanced methodology, which highlighted many new aspects of archaeology. The focus on the environmental determinism helped to assess the fluctuations in the climatic patterns and consequently could be related to the changes in the lifestyle patterns of the people at Inamgaon. The site catchment studies helped in demarcating the resource utilization areas of the site. It is mostly from all these excavation reports, in Deccan as well as from the other parts of the country, that we have gained a fair and extensive knowledge about the chalcolithic cultures of central and south India.

Planned exploratory survey was similarly undertaken in some of the river valleys of West Bengal in order to discover sites (Ray 1978). P.C. Dasgupta on behalf of the State Directorate of Archaeology discovered and excavated Pandurajardhibi, the first chalcolithic site to be excavated in West Bengal (Dasgupta 1965). Subsequently other sites were also taken up for further study. Scholars have tried to trace out the antecedent stages of chalcolithic cultures and the formative stages of urbanization in West Bengal i.e. from food gathering to food producing and to urbanization. However, it will be unwise to talk about the initial phases without substantial evidences. In order to get a total picture of the chalcolithic culture of the region, the scholars have divided the entire area into four major zones: 1. Mayurakshi-Bakreswar-Sal-Kopai-zone, 2. Ajay-Kunur-Damodar-Khari-Khadgeswari zone, 3. The Dwarakeswar-Gandheswari zone and the 4. Kangsabati-Rupnarayan zone (Ray 1978).
The sites belonging to the Mayurakshi-Bakreswar-Sal-Kopai zone are concentrated mostly on the riverine plains of this region. The land surface in this area is a result of the deposition of alluvium from the western table-land is composed of reddish earth. Ferruginous laterite occupies a large area of this tract. Intensive explorations in this long stretch of land have yielded a number of sites, the chief ones being Haraipur, Hatiggra and Mahisdal. Across the Ajay in the south, lies a stretch of older alluvium belt, gradually merging with recent alluvium tract. The land mass in the second complex mentioned above is chiefly drained by Ajay and Damodar. The soil in this area varies from red to red-brown and brown, mixed with sand and kankar. The cultural identity of this phase in this vast stretch of land is reported to have been of the black and red ware associated either with bone or microliths, at some places with neolithic celts and limited use of copper. Among the excavated sites in this area the most important ones are Bharatpur, Pandurajardhibi, Baneswardanga and Mangalkot (Ray 1978).

The archaeological data of the chalcolithic people in the Dwarakeswar valley (third complex), though very slight, are quite suggestive. The present study area falls within this complex. Dihar is the only excavated site of the area. No other chalcolithic sites have been reported from this area. But from these available reports of explorations, it is really difficult to deduce the actual nature of the sites.

Explorations in the Kangsabati-Rupnarayan valley have also revealed a fairly large collection of the neolithic and chalcolithic sites near and around Tamluk. Unfortunately, the place is not well represented by excavated materials. On the basis of the archaeological artefacts collected from different regions like Amritberia, Kanainatsal and Ichapur— which are preserved in the Tamralipta Mahasanghrahasala and in the museum of the State Directorate of Archaeology, one can ascertain that a rich chalcolithic culture grew up in the Rupnarayan complex. This had a distinctive ceramic industry with its characteristic long spouted vessels and shallow carinated bowls. Bone tools and microliths were numerous, but the use of copper was however limited.
The cultural materials unearthed from all these above mentioned sites are characterised by the occurrence of black and red ware ceramic tradition (both painted and unpainted), profuse quantity of bone tools, microliths and metal implements. Both copper and iron have been found from the occupational levels, but at a few sites like Mangalkot, Dihar where iron has been traced from the basal levels, the use of copper is limited. Some sites like Mangalkot, Dihar, Tamluk continue till the early historical phases and some sites like Pandurajardhibi, Bharatpur were deserted after the chalcolithic phase. But, there is an overall uniformity in the artefactual assemblage as understood from the excavated materials of these sites. Though scholars have tried to see some affinities with the sites of western and central India, it is quite evident that the chalcolithic sites of West Bengal have large affinities with the sites of Bihar namely Chirand, Senuwar, Sonpur and others, which can be put in the time frame of 1600-700 BC.

As mentioned earlier, the only excavated chalcolithic site of the present study area is Dihar. Dihar, situated on the left bank of the Dwarakeswar river is a multicultural site ranging in occupation from chalcolithic to medieval. Dihar being the only excavated site of the area has provided substantial evidences of chalcolithic occupation. The period is characterised by the occurrence of black and red ware ceramics, profuse quantity of bone tools and both iron and copper. In fact, this site reveals the continuation of the black and red ware ceramics in the historical levels also. However, excavation reports are lacking and the continuation of the black and red ware in the later phases of the site needs further clarifications.

The main criteria in affirming the chalcolithic occupation at a site through exploration is the occurrence of black and red ware ceramics with other associated finds like copper or iron implements. But while exploring the sites of the study area, it was difficult to trace out copper or iron from the surface. Hence the usage of the term ‘chalcolithic’ was doubtful. In the present study area, only four sites revealed black and red ware potteries from the surface (primary context) including Dihar. Hence, the present investigator has termed them as ‘black and red ware’ sites which depicts the chalcolithic period. Scholars have used the terms ‘black and red ware sites’ as well as ‘chalcolithic sites’ interchangeably, which depicts the same period with variations in
the artefactual evidences. Whatever might be the terminological problems, black and red ware sites are very few in the area, unlike the sites of the later cultural periods. In some cases the term ‘chalcolithic’ has been retained according to the original published reports and in order to depict the ‘chalcolithic phase’. Chattopadhyay (Chattopadhyay et al. 2010) has however, used the term ‘BRW phase’ in order to indicate the chalcolithic phase for the site Dihar.

1.b.2. Early Historical period

In India, the period between c. 500 BC and AD 350 has been considered as the Early Historic period which was most dynamic in terms of state formation. During this period, cities emerged within the context of Buddhism and changing socio-political and economic framework in various parts of the country. The shift from sedentary to urban society had led to the establishment of a network of internal and overseas trade routes and allowed rapid inter-regional distribution of ideas and artefacts through the growth of communication and the increase in mobility of people. The religious faiths and institutions had profound impact on language, art and culture. The extension of trade networks had far reaching implication and was accompanied by the introduction of currency, a wide range of ceramics and specialised arts and crafts. But how far a holistic understanding is possible on the basis of such evidences is a matter of question.

There are controversies regarding the usage of the term ‘early historical’ because the present data does not permit us to understand with certainty what we actually mean by the term and how far the terminology can be stretched to incorporate the later time periods within its orbit. Since material culture is varied and has different cultural contexts, how far this single terminology will go to represent the entire subcontinent is a matter of prolonged investigation (Chattopadhyaya 2008).

Studies show that the first attempts to understand the early historical period was in a way an effort to relate the excavation of sites with the texts and epics. The term has also been used in a sense to establish dynastic affiliations or even, in relation to a particular ceramic-type i.e. Northern Black Polished Ware. In this regard, Erdosy (Erdosy 1988) has argued that the occurrence of Northern Black Polished Ware
can be divided into three distinct phases. He believes that the earliest phase begins around 550 BC. The middle phase is dated between 400 and 250 BC; he believes that most of the changes we associate with urbanisation emerge in the middle phase. A.Ghosh has suggested the division of early historical period into three phases: 1. 600-300 BC, 2. 300-50 BC, 3. 50 BC-AD 300 (Ghosh 1973). The early historical period was also tried to be associated to a cultural phenomenon called ‘urbanisation’. A. Ghosh observes that this phase coincided with the emergence of kingdoms under late *vedic kshatriya* chiefs and the period marks the emergence of coinage, extensive use of iron, structures of kiln-burnt bricks, urban centres with rich archaeological remains, a diagnostic pottery NBP and few other cultural components as terracotta. Iron implements, profusely being used in the early historical period was considered to be the prime moving factor behind the emergence of different urban centres (Kosambi 1965). Actually in order to study the early historical period in the Indian subcontinent, one has to take cognizance of several factors, as well as to keep in mind the spatial and temporal differences.

Since this phase is associated with Buddhism as well, historians and archaeologists have often tried to analyse the relationship between urbanism and the spread of the religion. Likewise the evidence of craft specialization and large exchange networks have also been considered to be important criteria for urbanisation. Some other important features of the early historic sites like the fortifications around the sites as well as the moats and ramparts have been studied by scholars (Mate 1970). Mate believes that these ramparts were originally embankments against floods. At a later phase they were converted into defensive ramparts. The networking system maintained in the early historical period has also been discussed by scholars thereby giving an idea of the ancient routes and the riverine networks maintained in the past (Jahan 2008).

Our literary sources abound in references to the formation of state societies around fifth-sixth century BC. In many instances, specific sites have been studied in accordance to the relevant texts and epics and in this regard the investigations at Hastinapur (1954-55) and Ahichchhatra (1946) deserve special mention. In north India, sites like Kausambi, Ahichchhatra, Hastinapura help us to understand the
artefactual evidence of early historic sites. But it will be unwise to generalise about 
the other early historic sites of the subcontinent, only on the basis of these evidences. 
Studies on the settlement patterning of the early historic sites have been conducted in 
north India by scholars like Makhan Lal (Lal 1984) and Erdosy (Erdosy 1995). 
Makhan Lal studied the settlement history of Kanpur district from 1200 BC to AD 
300. Erdosy studied the developments in the settlement pattern in Kausambi area from 
1000 BC to AD 300. These studies help us to gain insights into the structure of 
urbanism. Erdosy believed that the importance of Kausambi lay in its location in a 
transitional zone between the Gangetic plains and the Vindhyas. In such studies, the 
concepts of ‘site-size’ and ‘site-hierarchy’ have been considered to be of utmost 
importance.

It is also necessary to notice the various contexts and the regional differences in the 
manifestations of the early historic sites. The sites in north India are considered to 
have emerged earlier than the sites of southern India and in this regard the 
characteristics sites in these two different areas are diverse. In Deccan, for example, 
the manifestations of this period are slightly different. The small and big urban centres 
emerged within the ambit of the Satavahana state and the proliferation of Buddhism at 
about the same time helps us to perceive the emergence of ‘urbanism’ in a different 
way. Most of the followers of Buddhism were members of artisan and trading 
communities. It is generally believed that the growth of important niches in 
agricultural hinterlands in the delta areas of Krishna and Godavari rivers provided the 
much needed base for urban centres to flourish through which there was a 
simultaneous rise in trade and the emergence of monetary system as well. With these 
evidences cited, it can be postulated that in reality, we have to wait for some more 
horizontal excavations in order to study the sites with more details and at the same 
time understand the nature of the urbanisation in the early historical period 
(Dhavalikar 2002).

Of late, some problem oriented work has been undertaken in India through which we 

can have a fair picture of the nature of the sites in specific areas. In such instances, we 
find the utilisation of both field data that has been interpreted by improved scientific
means, as well as literary data through which sites were tried to be identified. In the recent years, the systematic survey at the site of Sisupalgarh (Smith 2002) followed by excavations have definitely helped us to gain new insights about the site and its environ. By adopting sampling techniques, Smith’s team have studied each and every location of the site and collected early historical artefacts chiefly in the form of pottery, bricks and tiles. Smith has also conducted detailed mapping of the entire site including the structural remains and have thus provided us with a thorough understanding of the site. In this regard, the explorations conducted at Kaundinyapur also deserve a special mention (Smith 2001). From south India, the investigator would also like to highlight the systematic excavations conducted by Vimala Begley and her team at the site Arikamedu (Begley 1996). She has tried to understand the site with a new outlook with respect to the external contacts that influenced the growth and development of the site. She has also tried to study the ceramic assemblage of the site with a new methodology in order to provide a clue to the understanding of the Indo-Roman networking system. Another site which is recently being worked upon needs to be highlighted in this regard is the coastal site of Pattanam. A geo-archaeological survey was similarly undertaken at the Early Historic site of Pattanam (Shajan 2008). The imported pottery from Pattanam demonstrates extensive external contacts and represents the first examples from the west coast. There is a strong argument for equating Pattanam with the renowned Indo-Roman port Muziris, and on-going excavation by the Kerala Centre for Historical Research will help to determine if this is indeed the case. These sites have been referred because the excavations as well as the systematic explorations conducted by scholars have provided us with a fair picture of the sites as well as their artefactual evidences. Moreover being located at different geographical zones, these sites have helped us to construct a fair picture of these early historic sites.

But in case of Bengal, the scenario is completely different. There is no true picture emerging out of the excavations of the early historic sites situated in this part of the country. The main reason is the lack of excavation reports. Sites like Chandraketugarh and Tamluk have been excavated from time to time by different Institutions. But unfortunately, a general excavation report is lacking due to which a major part of the
Some other major sites like Pokhanna, Mangalkot, Kotasur, Harinarayanpur have also been excavated and their excavation reports, if published could have allowed us to get a picture of the regional differences. The sites mentioned are located in different geographical zones and understanding them, in relation to the landscape, is incomplete which deters a holistic picture of the early historical period.

The initial efforts in understanding this phase in Bengal, was chiefly based on the identification of particular sites in relation to the literary texts or epigraphic data. The excavations at the site Tamluk were focused chiefly on its identification with ‘Tamralipta’, as mentioned in the literary texts and epigraphic data. Similarly, the identification of ‘Pushkarana’ mentioned in the epigraphic data led to the excavation of the site Pokhanna. But it is very unfortunate that the sites have not received adequate attention except the study of particular issues which are related with their actual identification. Scholars have rightly remarked that in absence of sufficient literary data one has to understand the artefactual evidence of the sites (Chattopadhyaya 2008). But unfortunately the focus has always been towards the exotic items like terracotta plaques, NBPW and coins. The entire gamut of archaeological record of this period still needs to be understood with precision. Pottery which forms the main focus of such studies has been kept within limits of mere identification of particular wares. The occurrence of some specific wares (Rouletted wares, NBPW) from these sites have always encouraged scholars to the extent of establishing some linkages with distant sites within India and abroad. The best example which can be cited in this regard is the site of Chandraketugarh. Some specific wares traced from the site have been subject to mineralogical and chemical analysis to cross check the sources of clay or the place of manufacture (Gogte 1997).

Chattopadhyaya (Chattopadhayaya 1993-94) has systematically studied the early historic sites of north Bengal, lower Bengal and Rarh (western uplands) from a historical perspective and has remarked that settlements which emerged as urban did not have identical backgrounds nor did they present similar ecological contexts. Chattopadhyaya has further stated that the sub-region of lower Bengal in which Tamralipta and Chandraketugarh may be taken as two major nodes in the early
historical periods, was a zone of maximum interaction, with multidirectional linkages with upper India, and Central Asia, littoral India, Mediterranean and South East Asia. But at the same time this area did not emerge as a political region with stable centres of political power as Pundravardhana and Vikrampura. He has stressed on the detailed study of the artefactual evidences from each and every site so that a comprehensive understanding of the sites can be built up.

Of late, some studies have been conducted keeping in mind the geographical parameters which govern the location as well as habitations in individual sites. In such studies, the focus has been on the nature and context of the sites and also on the settlement patterning of archaeological sites in specific sub-regions of Bengal (Chakraborty 2008, Roychoudhury 2002). In these studies the terrain, governed by river dynamism has been looked upon as the determining factor in the development of the sites. In dynamic fluvial regimes, it is difficult to talk of the notions like ‘site size’ and ‘site hierarchy’. Roychoudhury (Roychoudhury 2002) has tried to focus on this problem and has thereby allowed us to understand the settlement pattern of Rarh on the basis of her extensive explorations in the Ajay basin. Chakraborty (Chakraborty 2008) has similarly defined the problems while understanding the sites in a buried context and in this regard has cited the example of the deltaic site Chandraketugarh. These studies help to realize the problems involved in studying the archaeological record of specific areas, where the understanding of ecological factors help in substantiating the available artefactual evidences.

Coming to the study area, it has to be mentioned that excavated early historical data comes from only a single site Dihar. The site has been excavated twice by the department of Archaeology, University of Calcutta. The first excavations (1982-85, 90-95) confirmed the chalcolithic and early historical phases of the site. The second excavation highlighted towards the continuation of the black and red ware phase (as termed by the excavator) and the medieval occupation of the site. From the available evidences, it can be conjectured that the site has an early historical phase, characterised by the findings of cast copper coins, black slipped ware and other potteries, stone beads and few fragmentary terracotta plaques. Uniformity has been
noted in the artefactual data with the other excavated early historical sites of Bengal. The proportion of black slipped ware, NBPW and Rouletted ware is less in the site.

The explored early historic sites, on the other hand, have revealed only potteries on the basis of which their chronology has been determined. The ceramic assemblage of this period shows a general uniformity with Dihar, with some minor regional differences between the sites of the Dwarakeswar river valley and that of Sali (tributary of Damodar). Actually some more excavated data is necessary to form an integrated picture of the archaeological record of this particular phase.

1.b.3. Medieval period

After the early historical phase, the investigator has focused on the medieval phase. Archaeological evidence from different parts of the country shows that the Kushana levels in the north and the Satavahana levels in the west and Deccan are well represented, but the Gupta and post-Gupta epochs are poorly represented in the north, more particularly in the upper Ganga basin, whereas in western India and the Deccan they are almost absent. This phase has often been observed as a phase of deurbanisation by the scholars for which, the cessation of long distance trade, over exploitation of resources and the rise of feudalism are supposed to have been responsible. D.D. Kosambi was the first scholar who in fact stressed on the significance of religious land grants in opening new areas to cultivation and settlement (Kosambi 1965). Feudalism has been cited as one of the important causes of degeneration that set in during the Gupta and post-Gupta times but it seems more to be the consequence rather than the cause (Sharma 1987). Gross disparity between various classes of people in their control over the land and their appropriation of its product is the motive behind social transformations. However, Sharma’s views of feudalism have been heavily critiqued. Historians have conceptually observed this phase with the available epigraphic and field data and in most of the instances have tried to conceive this phase in accordance with the rise of feudalism in Europe. Significant writings provide a background of the early medieval and medieval period (Chattopadhyaya 1994, Mate 2002). These vital issues needs to be settled by means of archaeology and by conducting large scale horizontal excavations to understand
various issues like the ‘use of space’ and also the ‘urban’ or ‘rural’ nature of sites. Scholars have propounded on the practice of archaeology for understanding the cultural phases which will enable to provide vital clues in interpreting the literary data (Paddayya 2008). This implies more in the case of sites in Bengal, where we do not have sufficient literary and epigraphic data. In such instances, archaeological explorations followed by excavations provide best means to understand the sites of later cultural periods.

More intensive work is required to obtain archaeological evidences of the medieval sites. The research done on the sites of the early medieval or medieval period are scanty and in this regard the work done in Daulatabad (Maharashtra), Fatehpur Sikri (Uttar Pradesh) and Vijayanagar (Karnataka) deserves special mention (Mate 2002). There was the inevitable cutting of the medieval layers during the course of vertical digs at sites like Mangalkot (Bardhaman), Thaneswar (Haryana), Ambri (Assam) and at a few more sites. But beyond reporting the occurrence of some structural remains and a few sherds of glazed / Chinese celadon ware, nothing of a distinctive nature has been indicated. In case of the site Mangalkot (West Bengal), though there was a substantial medieval deposit but the excavators were keener on assessing the chalcolithic and early historical phases of the site. Hence the upper layers were addressed to be disturbed (Ray and Mukherjee 1992). Besides getting references of some specific medieval wares, we have no other information regarding the medieval phase at the site. Hence, there is an urgent need to document all the early medieval and medieval sites and conduct large scale excavations in order to form an idea of the artefactual evidences and the nature of the sites during this period.

Likewise, the early medieval and the medieval phases witnessed so far in some sites of Bengal are not properly comprehended due to the absence of excavated sites and well integrated explorations. There is an urgent need to excavate and study them more intensively. Though few studies in recent years have concentrated on these phases but unfortunately systematic and prolonged studies are still awaited. In response to the theory of urban decay Chattopadhyaya (2008) states that it was exactly the opposite that happened in Bengal because according to him there was a deep-rooted and
growing process of urbanization in Bengal from the Gupta period onwards. In this regard he has cited examples of Rajbadidanga and Bangarh.

It should be worthwhile mentioning that some sites (early medieval) in West Bengal have been taken up for research. In this context, the sites of north Bengal like Pichli (Panja 1996), Moghalmari (West Midnapur) (Datta et al. 2008) and Jagjivanpur (Murshidabad) (Roy 2002) have helped to some extent in understanding the nature of early medieval sites. But Jagjivanpur and Moghalmari are essentially structural sites which do not allow us to understand the nature of habitation witnessed in these areas. Most of these studies have focused on the structural evidences thereby, giving detailed description of Buddhist structural remains. In case of explorations, isolated sculptures and temples have generally been used as important criteria in locating sites and determining the chronology of the medieval/ early medieval sites.

The work done by Sheena Panja (Panja 1996) on the early medieval period is very significant because she has systematically studied the distribution of sites by intensively exploring the area and taking into account the environmental parameters. She has highlighted the importance of surface survey thereby introducing the characteristics of ‘primary’ and ‘secondary’ sites. She has tried to understand the nature of potteries and has considered pottery to be a significant marker in understanding sites in the area. There is still an urgent need to conduct similar studies to understand the internal dynamics of the sites and study the artefactual evidence with more precision, in order to assess the nature of the early medieval sites.

Regarding the medieval sites it is very unfortunate that the available data is meagre and besides the work conducted at Gaur and Pandua (Mitra 2002) within the confines of West Bengal no other significant work has been undertaken. There are many medieval sites in West Bengal that can be taken up for further study. It is high time that we have a fair idea of the ceramics and the material assemblage of the medieval sites. The upper levels of the sites in the course of vertical digging is often hastily removed which does not allow us to understand the structures or the artefactual evidences. So in order to investigate, more intensive regional surveys are necessary with the help of Aerial imageries from which the embankments, moats and the ancient
structures (chief characteristics of medieval sites) can easily be made out. Understanding these trends of archaeological research in India, one realizes the necessity of more intensive regional explorations, systematic approaches in the study of the artefacts and large scale horizontal excavations in order to provide some light on some of these unsolved issues. The transitional stages have not yet been sufficiently understood due to which many questions are still left unanswered. Though, it has come a long way from the initial stages of research, but more systematic and integrated research is necessary to comprehend our present understanding. A holistic understanding of sites is thus, the call for the time.

The present study area also revealed many medieval sites which have been thoroughly documented including their respective ceramic assemblages. Since Dihar is a multicultural site, it has a substantial medieval deposit. In order to construct an idea of the explored medieval ceramic assemblage, the investigator studied a representative part of the ceramic assemblage of Dihar and hence, could analyse the explored assemblage according to them. Uniformity in the ceramic assemblage is noted with minor differences due to micro-regional variations in landscape. In some sites, potteries could also be collected from the exposed sections which further helped in the study. The sites have been studied and conceived in a holistic manner taking the entire gamut of the archaeological record into consideration. Besides potteries, the sculptures and the medieval temples have helped in ascertaining the chronology of the sites.

Though initially the study of the medieval archaeological record of the area seemed to be difficult due to inadequate knowledge of the material assemblage of this period, but subsequently became easier to study, because of two reasons. Firstly, some sites had exposed sections that revealed medieval potteries. Hence relating them with particular contexts was easier. Secondly, the available archaeological evidence was supplemented by the literary data of this period which has helped the researcher in understanding the sites from a historical perspective also. The emergence of the semi-independent principality of Mallabhum during the medieval period, as known from the literary records, is well corroborated by archaeological data. The proliferation of archaeological sites and the uniformity in the material culture throughout the study
area is fairly visible from the present explored data. However, in order to proceed further with the study in future, it is important to deal with the limitations and working along these lines, will enable a richer and more fruitful understanding of the past.

1.c. Limitations

The investigator would like to highlight the limitations of the present study.

- The entire river valley has only one excavated site, reports of which are unpublished. The present archaeological record has been studied in relation to this excavated site and hence some amount of generalisation had to be considered.

- From the earlier reports of explorations in these areas, it is difficult to find any contextual reference of the artefacts. As a result, identifying the sites was largely based on extensive individual surveys undertaken by foot. From few of the reported sites, a singular sculpture or temple could only be located but understanding the archaeological importance was not possible due to the absence of any other artefacts.

- The earlier exploration reports in the district does not provide a consistent picture of the study area and hence locating the sites has been difficult according to these reports, since these do not mention the actual location of ‘finds’ within individual sites. Some of these prehistoric sites have revealed medieval artefactual evidences (like Kushadwip, Birringha). The intermediate stages of occupation at these sites, having prehistoric occupation, could not be assessed with certainty since there is no excavated data from these areas. Hence these aspects necessitate further probing.

- The study area has considerable forest coverage and conducting surveys in these areas were difficult due to logistical problems. Moreover, anthropogenic activities (brick manufacturing activities, road construction activities) have largely destroyed the sites due to which in some, no artefactual evidences were found and hence these could not be considered as ‘sites’. Most of the others
are multicultural sites and in some cases, assigning them to particular chronologies, only on the basis of pottery, was difficult since a large part of archaeological data was based on surface survey.

- The archaeological record had to be categorised into three chronological periods which involves a substantial time period within each phase. Differences in the early medieval and medieval potteries could not be worked out due to the absence of pottery index, full range of excavated data as well as the absolute dates.

- The artefacts in the form of potteries were mostly found from the surface due to which relating them with specific contexts were not easy. Exposed sections were noted from few sites and these helped to a certain extent in determining the context of the sites. The exposed sections could not be scraped, but cleared, to have a picture of the cultural debris. Unfortunately, the exposed sections only revealed medieval potteries; early historical and still earlier potteries were all collected from the surface. Most of them were in a primary context as understood from the morphology of the artefacts. The excavated ceramic assemblage of Dihar helped in the study.

- The sites are presently occupied by modern villages and the archaeological record thus lies buried under the modern houses, where tracing the extent of the artefacts is a real tough task. Moreover, the deposits are disturbed due to natural and anthropogenic factors. So, the artefacts are either buried, or on the surface. Sometimes the artifact spread in the two adjacent villages was found to be overlapping and deciding the exact boundaries within a single village was difficult.

- Due to the above stated reason, determining site-size and site hierarchy was difficult because demarcating the site boundaries was found to be difficult in this area. The exposed river sections in some of the sites revealed potteries in patches, indicating that a large part of the record is disturbed. Moreover, from the surface scatters or the cultivated fields, it is difficult indeed, to talk about the site-size and the grading of the sites.
• It has to be admitted that though a multidisciplinary approach has been used to interpret the data from this region, no laboratory oriented studies could be undertaken like testing of the soils and sediments, conducting provenance studies for the potteries or undertaking mineralogical and chemical analysis of the pottery samples. In future, it is necessary to corroborate the evidences with precise geological data by undertaking some trial digs at specific locations and particularly for the sites situated away from the main river.

• The area has scant literary data due to which it was difficult to understand the historical background. Only a single inscription has been found from the entire district. The political as well as socio-economic information hails only from the medieval period after the coming of the Malla Rajas.

• The investigator did not have access to the entire range of excavated artefacts of Dihar which was conducted long ago (1982-85, 1990-95) and could only study the ceramic assemblage from the recent excavation conducted (2009) at the site. The displayed artefacts from the site Dihar in BAJCPB does not have any contextual reference and hence could only be visually examined and photographed.

• Lastly, the investigator had difficulty in identifying some of the sculptures found during the course of exploration from different sites. Many of them could not be photographed because these are currently being worshipped by the people and has been applied with vermillion and oil only to distort the original form. The local villagers expressed apprehension when asked about the permission for photographing or documenting them. Some of the sculptures were again misleading because the villagers were also uncertain about the original context of the find. The sculptures and temples have helped in many instances in determining the chronology of the sites.

1.d. Discussion

The region has good archaeological potentiality which needs to be studied with a more refined approach where scientific techniques can be used to interpret the data in
a new way. Documentation of all the sites in the river valley was thus, not the only attempt. So, in this endeavour, equal emphasis has been given on the field data as well as the literary data to present a complete picture of the study area. In many instances, the help of geomorphology and anthropology has been drawn for better presentation. The results are subject to change because with more detailed surveys and the coming of new evidences the data can be interpreted with better models. It was not always possible in the course of the present study to implement scientific methods like studying the potteries with archaeometric techniques, testing of soil samples, using GPS to locate the extent of the scatters within individual sites and other quantitative analysis that are generally applied in any problem-oriented work in archaeology. But in spite of the limitations, through the adoption of a regional survey methodology, a holistic understanding of the study area could be offered.

The following chapter describes the region by discussing the environmental settings of the study area. The topographical and environmental features coupled with other details like the geology, climate, natural resources, flora and fauna have been discussed thereby providing a geographical overview of the study area.
Notes

1. The river Dwarakeswar flows for about 107.2 km within district Bankura. Since no geological study is exclusively based on the river, the middle stretch had to be selected according to the average height from the Mean Sea Level. From the entire stretch of the river, the area ranging between 40-100 m above MSL has been selected for the study (per comm. with P. Srivastava, PGRS Section of GSI, 2007). Moreover, the middle stretch can be very well discerned from the satellite imageries where the meanders, ox-bow lakes, tributaries and the sand bars, in the form of lateral bars or point bars, are prominent indicators of the middle course of a river.

2. The former excavations (1983-85, 1990-95) at the site Dihar revealed the chalcolithic and early historical phases of the site but the latest excavation (2009) confirmed the medieval occupation at the site. Excavation reports are unpublished, but the information has been gathered through the published articles and through personal communication with R. K. Chattopadhyay (Excavator of the site).

3. Copper and iron implements are common from the chalcolithic and early historical phases of the excavated chalcolithic sites specially situated in the western part of Bengal because the resource utilisation areas were most probably near the Chotanagpur plateau area. For some sites like Dihar, Mangalkot, it is true that iron implements have been found from the basal levels of the site. In the case of the excavated site Dihar, copper artefacts found were mostly stylistic objects, but not for regular usage. Whereas the iron artefacts from the site were varied and were mostly utilitarian in nature. For details see chapter 4 on Dihar. Some of them have been studied chemically by P.K. Chattopadhayya.