

Geo-Archaeological approaches for understanding settlement history of Deltaic Bengal and its contact with neighbouring countries

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Abstract

This essay aims to delve into the geo-archaeological and historical background of the Gangetic Delta region. The Gangetic Delta is formed where the Ganges River empties into the Bay of Bengal. The lower Ganges system encompasses two primary channels: the Ganga Bhagirathi on the right and the Padma on the left. In its upper non-tidal stretch, the Ganges is known as the Bhagirathi, while the lower portion is called the Hooghly. The entire area near the mouth of the Gangetic Delta is crisscrossed by a network of tidal channels and distributaries of the major rivers. Epic tales mention the existence of five hundred rivers once flowing in the region where the Ganges converges with the sea. Even in 15th/16th century Bengali texts, the Ganges is revered as Satamukhi, meaning a hundred mouths.

The Bengal Basin, the world's largest delta, is shaped by the Ganga-Brahmaputra river system and encompasses significant portions of West Bengal and Bangladesh. Within the mid-basin zone of the West Bengal sector of the Bengal Basin, three distinct deltaic plains can be identified. The uppermost, mature deltaic plain, known as the DumDum surface, spans the districts of Murshidabad, Nadia, and North 24 Parganas. The intermediate deltaic plain occupies parts of Nadia, Burdwan, North and South 24 Parganas, Hooghly, Howrah, and Midnapur on both sides of the Hooghly estuary. This plain developed under an estuary-deltaic environment and has since been modified by fluvial and tidal processes, as observed by R.N. Ghosh. The lowest-level deltaic plain, characterized by extensive mud flats, mangrove marshes, swamps, and creeks, forms a tide-dominated, active tidal estuary delta. This portion of the deltaic plain is predominantly found in South 24 Parganas.

This study aims to shed light on the human settlements in the deltaic region of West Bengal through geo-archaeological explorations. Geo-archaeology plays a crucial role in understanding not only the landscape and environmental conditions but also in deciphering human behavioural patterns and activities within their evolving environmental context. This paper seeks to highlight some key settlement sites, their distinctive characteristics, and their interconnectedness with surrounding regions.

This essay aims to delve into the geo-archaeological and historical background of the Gangetic Delta region. The delta region of West Bengal has been considered as one of the core regions of

human settlement of ancient Bengal. The growth of extensive settlements in any region depends on its geo- physical character which not only offers a congenial environment for this development but it can provide the sustainability to the people and their culture for a longer period. So before we discuss the settlement history of deltaic region in its geo- archaeological perspectives, it is pertinent to explain first what is Geo- archaeology and its significance and then the geological and physical conditions of Delta region of west Bengal. Only after this discussion we will put the archaeological situation of the deltaic West Bengal in a proper framework.

Key words: *Geo- archaeology, Deltaic region, Mature delta, Active delta, archaeological sites.*

Geo- Archaeology

Geo- Archaeology is a major discipline which shows involvement of two specific scientific disciplines – Geology & Archaeology. A very simple definition is that, it is the application of Geological techniques to answer the archaeological question. Geo- Archaeology is a multidisciplinary approach which involves subject matter of Geography, Geology, Geo- physics and other Earth Sciences to examine the archaeological data and thought. This discipline embraces the study of soil, sediments and geographical factors to contribute an Archaeological study. It can study the natural physical processes that effect archaeological sites such as geo-morphology. It is also known as the subfield of environmental Archaeology.

Geo- Archaeology intends to trace the human interactions with the geo-sphere dating back to ancient times. Geo-archaeological investigations provide the key to recognizing landscape and environmental change within a region as well as reconstructing ancient landscape and palaeo- climatic aspects. It studies human behaviour in its dynamic environmental context. This Geo-archaeological approach allows us to determine the effects of environmental change on human societies. From the primitive time men exploited and extracted and overused the natural resources. From geo-archaeological perspective it is now established that human life and human behavioural pattern are regulated by the nature. Geo- archaeology plays a crucial role in understanding not only the landscape and environmental conditions but also in deciphering human nature, behavior and activities within their evolving environmental context. With this back drop we will try to focus the geo-morphological environment of the delta region of West Bengal and after that archaeological situation will be discussed.

The Delta:

The Ganga River system in the lower stretches has two major channels,- the right hand flow is known as the Ganga- Bhagirathi and the left one is called the Padma. The Bengal Basin, World's largest delta formed by the Ganga- Brahmaputra River system, covers major parts of West Bengal and Bangladesh. In its upper non tidal stretch of Ganges, it is known as Bhagirathi where as the lower portion is called Hooghly.

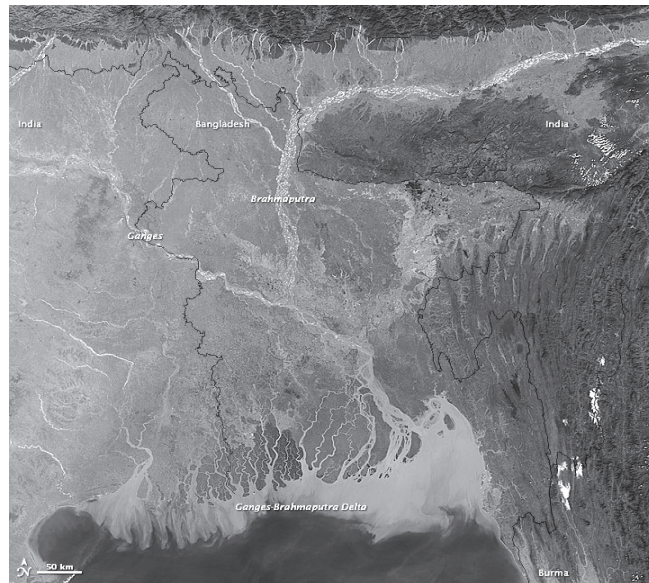


Plate-1-Delta

The Gangetic Delta is formed where the river Ganges empties into the Bay of Bengal. Several scholars have discussed the formation of the Gangetic Delta. Thomas Oldham in the *Proceeding of the Asiatic Society Bengal*, in 1870, mentioned that the whole region including the Sundarban proper, lying between the River Hooghly on the west and Megna River on the east has been marked as Delta, caused by the deposition of the debris carried by the rivers Ganges and Bramhaputra and their tributaries (Oldham. 1870). Another interesting view had been given by C.S Fox in his article “Physical Geography for Indian Students”. According to him the deltaic portion begins a little below the Rajmahal and close to the ancient town of Gaur. (Fox, 1938) The entire region near the mouth of the Gangetic Delta is crisscrossed by a network of tidal channels and distributaries of the major rivers. The Mahabharata tells the existence of five hundred rivers once flowing in the region where the Ganges converges with the sea.

The entire deltaic region has been divided into three major portions, depending on the state of maturity of the delta. These are Moribund Delta, Mature Delta and Active delta. (Ghosh and Majumdar 1991). The river condition is mainly responsible for the formation of these three deltaic units. The Moribund delta is characterized the dead rivers. Generally, the dead rivers lost their connections with the main

river flows. Here the active land formation is ceased and siltation does not happen anymore. In the second division i.e. in Mature delta area, siltation is ceased but the function of active land formation is maintained. The active deltaic division is endowed by active rivers and the land formation is still continued.

Geo-physical character – In the mid Basin zone of West Bengal sector, there are three distinct fluvial and forms which is characterized by typical estuary- deltaic environment with tidal aggradations (Ghosh & Majumder, 1991). The Moribund delta or the upper matured delta which is also known as the DumDum surface, has showed a compressed meander belt. The meander shift with onshore tidal mudflats has formed this deltaic plain. The Moribund delta plain covers mainly the districts of Murshidabad, Nadia and North 24 Parganas. The next deltaic plain is the Intermediate-level plain which is also known as mature deltaic plain. Generally it is said that under estuary deltaic environment this plain is formed and later on it is changed by fluvial and tidal processes. This portion includes the districts like parts of Nadia, North 24 Parganas South 24parganas Hooghly, Howrah and Midnapur. This area has different geomorphic aspects. It shows meander channels, palaeo- meander scars, tidal mud flats, creeks, marshes and swamps. The lowest level Active delta plain is characterized by extensive mud flats, mangrove marshes swamps, creeks which forms a tide dominated active tidal estuary delta. The rivers are broad meandering in character with low sinuosity. This plain mainly covers the district of south 24 Parganas.

These three distinct deltaic regions are richly covered with ancient settlements which have been identified by extensive archaeological investigations. The whole deltaic region has studded with many potential archaeological sites, the antiquities of which go back to the Christian era. Most of the key settlements of Delta show the urban character in their material culture; sometimes these sites have a chalcolithic village base. The growth of urban life depends on several aspects. The most important aspect is its trade and commercial activities which require suitable navigation system. The deltaic region provided these facilities for a rapid historical growth. The low lying marshy land, swamp with meandering of river channels of deltaic region became a core area of early historic settlements due to its suitable geo- physical environment.

In this present article, two early historic key sites namely Chandraketugarh in north 24 Parganas, now belonging to the Moribund delta area, but in ancient time it was associated with the active delta region and Tamluk, the ancient port town Tamralipta, located in Midnapur district, belongs to the Mature Delta land area will be discussed. In active delta region another early medieval site Kankandighi in south 24parganas will be taken into consideration for unveiling the settlement history of the Deltaic region of West Bengal.

Archaeological Approaches – Numerous habitation sites have been found in Deltaic West Bengal. It is now evident from the archaeological data that there are both larger and smaller settlements in the Mature and Active delta basins. Larger settlements, considering as cities were surrounded by the smaller settlement areas which might be the ancillary towns. These ancillary towns are the secondary settlement areas that support the primary function of a city. In this study the characteristics of both early historic and Early Medieval settlements will be analyzed in the perspectives of local geo- physical aspects.

Chandraketugarh – The site of Chandraketugarh is located on the bank of the dried up river Vidyadhari, a tributary of Bhagirathi River in north 24 Parganas. The river Vidyadhari has shifted long ago from the vicinity of the site. Now a number of palaeo- channels have been noticed here. The site falls within the Moribund delta region. The fortified city of Chandraketugarh is encompassed by the archaeologically potential villages like Berachampa, Deulia, Deganga, Jhikra, Shanpukur, Mathbari, Hadipur, Gazitala, and others. The site has two distinct areas – one is the Garh area with fortification wall and another is the temple area.



Plate-2 Garh Area

This ancient site was visited by several archaeologists like A. L. Longhurst (Longhurst, *ASI-AR-1922-23*), R. D. Banerji (Banerji, 1911), K. N. Dikshit and others. K. G. Goswami first visited the site in 1949. He made two trial diggings at two different places. One digging was undertaken on the eastern rampart wall within the city area and another trial trench was dug out at Khana Mihirer Dhipi, the temple site area (Goswami, 1966). In ancient time the city was within the easy reach of river Vidyadhari which was navigable at that time and had a direct connection with the Bhagitathi River. From the trial diggings some of the very interesting antiquities came out, which inspired K. G. Goswami to undertake an elaborate excavation programme later on. From the trial diggings an underground pottery drain of about third century BCE was unearthed at eastern rampart wall. A number of potteries like NBP, red ware and a good number of black polished cups were recovered.

The systematic excavation works were undertaken by Asutosh Museum of Indian Art, under the supervision of Late K.G. Goswami and later on, by C. R. Ray Chaudhuri under the guidance of D. P. Ghosh. The excavations were carried out from 1956-1957 to 1966-67, revealing a continuous occupation from third century BCE i.e. Mauryan period to Pala period. Five different places were chosen for excavation by the excavator. These are Berachampa, Khana Mihirer Dhipi, It khola paddy field, Noongola and Hadipur. It is reported that in early occupational levels of Chandraketugarh, people lived in the *Kacha* houses and brick built structures were started emerging only from Gupta period. Pottery assemblages have revealed different types of potteries in different levels. Six occupational levels have been identified. Period –I has revealed a kind of red ware in pre Mauryan phase. Some ivory beads have also been recovered. Period II, according to the excavator belongs to the Mauryan / Sunga time. Most notable objects found from this level are the NBP wares in various shades along with black slipped ware and polished and unpolished grey ware. A few shards of NBP have beautiful polish and exquisitely designed A few pieces of coarse NBPware and beak like spout have also found in the assemblage. Other antiquities include terracotta objects, semi precious stones, terracotta. figurines, antimony copper rods, coins and others. From the antiquities of Period- II occupational level it is now clear that the city reached a prosperous socio- and economic stage. Period- III is marked as the late Sunga period which has produced stamped red wares, terracotta figurines copper cast coins and steatite casket. Period –IV belongs to the Kushana period which has revealed some very interesting findings like roulette wares, terracotta figurines and plaques. Period- V has been identified as Gupta occupational level. In this phase burnt bricks were introduced for building purpose (Chakrabarti.1989).

Other antiquities include grey and black wares with stamped designs. The most fascinating thing of the site of Chandraketugarh is its terracotta assemblages which include some remarkable figurines and plaques. These plaques depict social scenes, domestic scenes epic and mythological stories. Some images have showed divine aspects.



Plate-3 Terracotta plaque



Plate-4 image of Kubera



Plate -5 Yakshi Image

The Chandraketugarh temple site has a magnificent brick building at Khana-Mihirerdhipi. It is identified as a temple complex, featuring a vestibule connected to the main temple and 4.26-meter-long projections on three sides. The sacred complex, consisting of a large brick temple and other shrines started emerging as prominent structures of the settlement in Gupta phase (Chattopadhyaya, 1993-1994). The excavator claimed that this temple is quite old, dating back to the Gupta dynasty. However, based on its structural features, S. K. Saraswati assigned it to the Pala period (Saraswati, 1976) Considering this time period it can be presumed that urban life at this region was in full swing also during Pala period.



Plate-6 Temple complex, Khanamihirerddhipi

Tamluk-Ancient Tamralipta —Widely known to the classical writers of early Christian era and to the Chinese pilgrims, Tamralipta, an active port on the mouth of the Ganges in West Bengal had a great role to play for the development of urban settlements, cultural heritage, and maritime activities in the coastal areas. Its relation with the Indian Ocean trade during early historic period is distinctly reported in the classical sources. *Periplus of the Erythrean Sea* mentioned the Port as a point of embarkation for overseas trade and travel. From the indigenous accounts it is also known that an unprecedented growth of the maritime activities took place at Tamralipta in early historic period. In about middle of the second century, Ptolemy referred to the port as Tamalites which stood actually on the river Ganges.

Ancient Tamralipta, as has been identified with modern town of Tamluk in Purba-Medinipur, lies on the western bank of the river Rupnarayan which meets the river Hooghli at Geokhali. The river has a length of sixty km while the estuarine portion of the river has a length of thirty km. The river Rupnarayan was known by different names in different phases of time. To the eighteenth century European geographers, Rupnarayan was known as Ganga. In Bowrey's map it was called as Tamalee. The seventeenth century Valentyne's map refers to the Rupnarayan as Patraghata and finally in Renell's

map it was mentioned as Rupnarayan. Hiuen Tsang referred to the land as a low lying country, situated on the sea coast which formed a bay, with a wet soil and hot climate. The Rupnarayan estuary is a sub-system of Hooghli estuarine complex. It occupies a sand silt clay dominated morpho - stratigraphic unit which is known as Panshkura formation.

The ancient Tamralipta still survives in the toponym, Tamluk which happens to be one of the sub-divisional headquarters of the sprawling district of Medinipur. The present day Tamluk with adjacent villages still bear the archaeological and historical edifices. A port which regulated the sea going vessels for distant countries for at least a millennium became one of the important cultural hubs of ancient Bengal. The archaeo- historical importance of this region has been established through the large scale discoveries of antiquities in and around Tamluk and its neighbouring areas. Within the periphery of ancient port city of Tamralipta, there are a number of archaeological sites which have revealed antiquities from third century BCE to the medieval period. Almost twenty eight archaeological sites have been reported, which have clustered around the modern town of Tamluk. All these sites are located on three major rivers of the region namely Rupnarayan, Hooghly and Haldi. The sites like Natsal, Amritberia, Nat- Patia, Ragunathbari are archaeologically very important. The sites of Tilda and Panna though located at some distance belong to the same culture complex. In the vicinity of the port city, the sites of Maynagarh and Mahishadal are also very important for their cultural heritage. According to Hunter, Tamluk figures as a kingdom of great antiquity and culture. Systematic excavation at Tamluk had been undertaken though in small scale during 1954-55 by M.N. Deshpande and 1974-75 by Archaeological Survey of India. The excavation of 1954-55 have revealed four successive occupational periods. Deshpande reported region's association with Neolithic Culture. The Tamralipta Museum and Research Centre explored around the excavated site of Tamluk and collected a large number of antiquities which include polished Neolithic bar celts , microliths, bone points, awls, harpoons, copper and bronze rings, bangles, fish hooks. The region has revealed both Neolithic and the Chalcolithic cultural assemblages

The antiquarian remains of the port city during this time show a great variety of terracotta figurines, cast copper coins N.B.P. potteries, rouletted wares amphoras, carnelian intaglio, inscribed pots, beads of semi precious stones, seals, sealings and a number of Buddha heads and other minor antiquities. Some of the archaeological objects show foreign influence thus indicating region's contact with foreign land. The port city has also revealed number stone sculptures of Pala- Sena Period.



Plate- 7 Pottery from Tamluk

Tilda, located in east Medinipur district belongs to the cultural zone of ancient Tamralipta port. (IAR 1954-55:23) A trial digging was conducted by the Asutosh Museum of the University of Calcutta under the direction of K.G. Goswami in the village of Tilda. The digging has resulted in the exposure of two phases of structural activities dated to the Gupta and Post Gupta periods Apart from a single shard of NBPW, quite a few terracotta specimens of early mediaeval affinity have been recovered.

NATSAL- Two trial trenches (2x2) m were taken up at Natsal in the district of East Medinipur by the State Directorate of Archaeology and Museums, Government of West Bengal under the supervision of Amal Roy in 1997-98 and 1998-99. The digging has yielded shards of BSW and associated wares along with some fragmented early historic terracotta figures. Subsequently, S.N. Rajaguru and Kaushik Gangopadhyay studied an 'exposed section cutting' at the site in 2003 and divided a deposit of more than 1.75m into three 'units' that yielded 'non-transported early historic' pottery. Panna is another archaeological site in the vicinity of ancient Tamralipta.

After analyzing the archaeological situations of two early historic key sites of deltaic region, now the discussion proposes to analyze an early medieval site in the Active delta region. This site can give us an idea of the characteristics of the material culture of early medieval people in Active delta. From the very beginning of the early historic period, the settlements that had developed in and around the Active delta part of West Bengal, have showed the evidences of a rich material culture,

indicating the growth of a well-established urban life. It is archaeologically proved that from the 3rd/2nd century BCE to 11th/12th century there is both a qualitative and quantitative improvement in the material culture of Deltaic Bengal.

The discussion currently suggests examining an early mediaeval site in the Active Delta region after examining the archaeological conditions of two early historic major sites in the deltaic region. We can get an idea of the features of the early mediaeval people's material culture in the Active Delta from the key site- Kankan dighi. The communities that sprung up in and around West Bengal's Active Delta region have demonstrated signs of a rich material culture since the early historic period, which suggests the development of a well-established urban life. Archaeological evidence indicates that Deltaic Bengal's material culture improved both qualitatively and quantitatively between the third and second centuries BCE and the eleventh and twelfth centuries.

Kankandighi- Very recently an early medieval site has been discovered in the village of Kankandighi in the district of south 24 Parganas in coastal region. The district of south 24 Parganas lies at the tail end of the Ganges flowing as Hooghly. This area is a part of the active delta region where river Hooghly along with a number of distributaries meets the Bay of Bengal. The district reveals hardly any well-defined stage of its evolution. It represents a typical deltaic strip with a flat terrain. South 24 Parganas can be considered as the district of islands interspersed with many rivers, innumerable distributaries and tidal creeks. The land marks lowest level deltaic plain with marshes, mud flats, swamps, creeks representing a very active tidal estuarine delta. The southern part of the district which is popularly known as Sundarbans, shows its uniqueness through the rich mangrove forest and numerous islands created by sedimentation and deposition of silts on the lands which were once the parts of river beds.

The village of Kankandighi lies at a distance of about 12 kilometers south west of Mathurapur railway station (on the south suburban section of Sealdah- Lakhmikanapur branch line). The site of Kankandighi was reported for the first time by late Kalidas Dutta who in his article 'The Antiquities of Khari' in Annual Report of Varendra Research Society, 1928-29 mentioned the importance of the site.

Endowed with the flows of the Mani River, the region of Kankandighi was once covered with dense forest and it was an inaccessible land during the British period. But in due course this forested land became a well-connected and habitable region. The village of Kankandighi is mainly divided into two major parts viz. Uttar Kankandighi and Dakshin Kankandighi. From archaeological point of view Uttar Kankandighi is more important than Dakshin Kankandighi. Mounds in the northern part

of Kankandighi are rolling and these are locally known as *Danga*. A number of mounds have been noticed in this area of which Pilkhana, Mathbari and Kacharidanga are archaeologically important. Among these mounds, Pilkhana in Mondalpara has revealed a structural mound which was excavated by the Department of Archaeology, Calcutta University during 2013-214.



Plate- 8. Pilkhana mound, Kankandighi

The basic aim of this excavation was to expose the structural remains and thus the trenches were laid out in horizontal method. Excavation was undertaken in nine trenches of 6x6 m. each. In each quadrant, structures were exposed except B₁ and ZA₁. The trenches at Pilkhana mound were excavated either partially or fully to different depths. These trenches are A₁, B₁, C₁, D₁, XA₁, YA₁, ZA₁, XB₁, YB₁. Among these trenches XA₁ was taken as index trench. In trench A₁ structure is represented by a north south oriented wall with a rammed floor. In trenches C₁ and D₁ a square platform with four courses of brick alignment has been unearthed. The structure was built over a mud filling. The brick platform is 4.75m x 4.75m square in measurement with 4cm. projection at each side. The total height of the structure is 80cm. The trench XA₁ was excavated up to a depth of 4.29m. and it has revealed a massive north south oriented wall of 5.01m. in length. The excavation was carried out up to a maximum depth

of 4.29m without reaching the natural soil. The wall has exposed thirty courses of brick alignment in the present digging. It was made of burnt bricks (26x18x6cm). The large size of wall indicates a plinth of a super structure. The next important structure came up in trench YA₁ where a number of small cells were unearthed. Some of these structures were made with reused bricks.



Fig. 9 Squire platform

Ceramics obtained during the excavation are dominated by red ware followed by black ware, grey ware, black and red ware and buff ware. A number of *handis*, bowls and dishes in various shapes and sizes have been found. These potteries have revealed different impressed designs, like basket impression, cord impression and floral motifs etc. Potteries found in this site range from very fine quality to coarse variety. A large in situ storage jar has been excavated in trench XA₁. Inside the jar, a number of ornamented brick fragments, broken lamps and lower part of one fragmented sculpture and terracotta image of Jambala have been found.

Conclusion- Using geo-archaeological methods, an effort has been made to comprehend the history of habitation in the deltaic region. The deltaic region is one of the primary locations for ancient

human habitation, according to archaeological research. Its deep alluvial cover and river plains provide an appropriate physiographical unit that aided in the development of concentrated settlements. Beginning in the second or first century BCE, the formation of cities was aided by large waterways and geophysical features. The Deltaic region was the core of early historic and early mediaeval settlements, as evidenced by the discoveries of abundance of archaeological materials.

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