CHAPTER 3: EARLY HISTORIC SETTLEMENT PATTERN

The study of settlement patterns in archaeology aims at reconstructing the manner in which peoples' cultural activities and social institutions are distributed over the landscape (Rouse 1972). In simple terms it aims at understanding 'why the settlements are situated and where they are'. Settlement approach includes the investigation of three broad systems, viz. cultural, sociological and ecological, with a probe into the possible relationships or interactions amongst them. Of late, this approach has become an integral part of the archaeological research, whose primary concern has been to understand the social, political, cultural, and religious and symbolic aspects of ancient cultures that are accessible only in the form of material manifestations.

This chapter contains three sections: (1). origin and development of settlement pattern studies in archaeology, (2). description of the Early
Historic sites within the study area and their distribution pattern and, (3).
Site categorization in terms of site function.

3.1 Origin and Development of Settlement Pattern Studies in Archaeology

Settlement pattern Studies in Archaeology is a post-World War development. The concept of settlement pattern was originally developed by Julian H. Steward, an ethnographer and has to came to archaeology from the discipline of geography. The pioneering application of this approach in the field of archaeology was made by Willey (1955, 1956), in the course of his archaeological investigations in the Viru valley of Peru. He defines settlement archaeology as the study of the way ancient sites are located where they are and working relationship between people, their environment and technology, man’s relationship over the landscape where he lived and the dwelling structures, and considers it “a strategic starting point for the functional interpretation of archaeological cultures, since they reflect the natural environment.” The concept of Settlement Archaeology, according to Willey, “does not comprise a self-contained approach to Prehistory… a ‘new archaeology’…. But is a ‘new approach’ within archaeology, which must
nevertheless begin with the same factual analytical data” (Willey as quoted in Tringham 1972:1).

Chang (1962, 1972) defines settlement pattern Studies as “the manner in which human settlements are arranged over the landscape in relation to the physiographic, geographic environment and community pattern, as the manner in which the inhabitants arrange their various structures within the communities within the aggregate”. According to Flannery (1960), “settlement pattern is the study of rules governing the physical arrangement of sites across the landscape”. Emphasis has been commonly laid on the study of the relationship between human activities and various micro- and macro-environments. Settlement pattern studies help particularly in understanding the cultural and social systems of the past. They are also useful in establishing the correlation between civilization and urbanization, in terms of settlement patterns and material remains.

Trigger (1968) defines settlement pattern as “the manner in which people’s cultural activities and social institutions are disturbed over the landscape and it is the study of distribution of sites over a given area”. The concept of settlement archaeology has been summarized by him as “the
study of social relationship using archaeological data”, and it provides one of the strongest links between archaeology and ethnography” (Trigger 1963). Trigger (1967) initiated the development of settlement archaeology in a new methodological perspective. He demarcates three different levels of settlement studies in archaeology namely, individual buildings and structures, community level, and zonal pattern. In the first level, emphasis is placed on independent structures and their internal arrangements. The second level i.e., community level, focuses on the arrangement of buildings in a confined locality, highlighting social hierarchy and economic strategies. In such a study, environment and subsistence pattern are taken into account in assessing the size and stability of the community. The third and most important level of settlement study is the zonal pattern, which has a wider geographical perspective covering aspects such as natural resources (water, land, flora and fauna, forest products and such other sources) and their exploitation, economic and ecological adoption of the communities. Studies in India and abroad in settlement archaeology have been mostly based on this approach.

Settlement pattern studies have been carried out in India, especially in the river valleys where sites are generally located. These
studies have in general focused on the zonal pattern while analyzing the pattern of site distribution. In studies involving the prehistoric sites, an ethnographic approach has been adopted to understand the past human behavior and settlement system (Nanda, 1984; Ota 1986; Mohanty, 1989; Paddayya, 1993; Pappu, 1995). It is, however, the Proto historic/ later prehistoric phase which has attracted the maximum attention with regard to settlement studies (Bhan, 1977; Dhavalikar, 1978; chitalwala, 1979; Possehl, 1980; Shinde, 1998). In the Early Historic context, research on settlement pattern has been conducted in the Middle Ganga Valley, in the districts of Kanpur (Makkan Lal, 1984) and Alahabad (Erdosy, 1988).

In the present study, the zonal perspective has been adopted for reconstructing the Early Historic Settlement pattern of Arikamedu and its satellite settlements. With this aim, intensive and extensive archaeological fieldwork was carried out in the study area during 2003-2008. The results of which are discussed in the followins. The data collected through the field work has been carefully analyzed, and corroborated with available literature on excavations and previous explorations.

The satellite settlements were, in fact, the backbone of the entire trade web, for the urban centers which could never have flourished without them.
It appears that the small settlements were specialized in craft activities, extraction of gemstone raw materials and local forest resources which were supplied to the nearby centre. Iron smelting and manufacturing of iron objects constituted another primary occupation.

3.2 Settlements

A distance of about 100 km was explored during five field seasons, along the banks of rivers Gingee, Middle Pennaiyar, Vellar and Manimuka with their major distributaries and tributaries. A total of 14 Early Historic sites were newly discovered, three along the right bank of Pennar, another three along Pombai river, two sites in Gadilam and one each in Gingee and Malattar (Fig. 6). 29 sites were re-investigated. Except multiple mounds Tirasu and Karaimedu the vast majority of newly discovered sites are made up of single mound. The surface features at these sites are dominated by potsherds, beads, terracotta objects, occasionally brick architecture are also found. Most of the sites have been subject to disturbances. These are:

- Agricultural expansion is one of the causes of site destruction.
- The major natural factor, which disturb site is the floods. Early Historic sites located on the banks of rivers have suffered damage
Fig. 6: NEWLY DISCOVERED SATELITE SETTLEMENTS OF ARIKAMEDU.
• during past 2000 years. Flood reach has increased during the last 200 years and that has augmented large-scale deforestation in the area.
• Expansion of settlements: residential and industrial colonies are on the increase that causes the destruction. For instance, the sites of Manikolai and Karaimedu.

3.2.1. Important Earlier explored & excavated sites in the Study Area

1. Arikamedu

The site of Arikamedu is located on the southeastern coast of India, 4 km south of Pondicherry town, within the Union Territory of Pondicherry. The site is on the right bank of the river Ariyankuppam, at a point where the river joins the Bay of Bengal (Fig. 7, 8 and 9). Ariyankuppam is a branch of the river Gingee or Varahanadi that, about 6 km from its mouth, forks into two- the Ariyankuppam to the north and the Chunnambu Aru to the south. Ariyankuppam resembles a brackish lagoon, in which the level of water varies according to the season. During the monsoon season, one could sail along the river to the sea in catamaran or even in small motor boats but sand bars often block the passage. Archaeological and historical records,
Fig. 7: Arikamedu - General view at present

Fig. 8: Arikamedu on the banks of river Ariyankuppam
Fig. 9: Site Plan of Arikamedu with contour (Wheeler et al., 1946)
however, indicate that the river was navigable at its mouth till the 18th A.D. The site can be easily reached from Pondicherry town by road.

The site has been identified with the place name Poduke cited in the Periplus (80-90 AD?) and the ‘Podouke emporion’ mentioned by Ptolemy (150 AD). Before the arrival of the French and British in this region, in 16th century AD, Pondicherry town was called Puducheri (‘new town’ in Tamil), probably a derivation from the Tamil place-name Potikai and Greek Podouke. Very recently, Pondicherry has again been renamed as Puducheri by an act of Parliament.

The site is mentioned in the travel records of a French astronomer, Guillaume Le Gentil who visited Pondicherry in 1768-71 and records that along the high bank of the Ariyankuppam River, diggings had revealed some ten-foot high walls built with large-size bricks. The historical importance of the site and its connection with the Roman Empire was first recognized by Jouveau-Dubreuil, who had started collecting antiquities from the surface of the mound and the river bank as early as 1937. It was excavated for the first time by the Archaeological Survey of India under the direction of Mortimer Wheeler (Wheeler et al., 1946).
Wheeler's excavation divided the site of Arikamedu into two: the Northern Sector and the Southern Sector (Fig. 10 and 11). The Northern Sector was an extension of an area cleared by the earlier French excavators in or after 1941. The Southern Sector had a higher elevation with the mound rising to a height of over 6 m above the river level. The Northern sector revealed a brick structure covering over 50m land identified as a ware house along with a ring well (Fig. 12, 13 and 14). The Southern Sector revealed two tanks that may have been used as dyeing vats along with other structures (Fig. 15, 16, 17 and 18).

The pottery finds from the digs included both imported and local varieties. Among the imported pottery were fragments of the *terra sigillata* and amphora jars of ancient times and Chinese Celadon pottery of a later period, mainly tenth-twelfth centuries AD. The excavators presumed that many of the rouletted pottery (Fig. 19) specimens were imports but later studies have firmly indicated that this was a local variety inspired by the Mediterranean pottery. Besides, inscriptions in Tamil Brahmi have been found engraved in many of the potsherds at Arikamedu (Fig. 20).

The digs revealed over two hundred beads made of various materials like terracotta, glass, shell, bone, gold and semiprecious stones such as
Fig. 10: Arikamedu excavation in progress (Wheeler et al., 1946)

Fig. 11: Arikamedu- Brick enclosure (Wheeler et al., 1946)
Fig. 12: Arikamedu- South eastern wall of Ware House (Wheeler et al., 1946)

Fig. 13: Arikamedu- Ring well (Wheeler et al., 1946)
Fig. 14: Plan of Ware House in Northern Sector (after Wheeler et al.)
Fig. 15: Arikamedu- Tank A (Wheeler et al., 1946)

Fig. 16: Arikamedu- Tank B (Wheeler et al., 1946)
Fig. 17: Plan of structures of early phase in southern sector (after Wheeler et. al)
Fig. 18: Layout of structures belonging to the Middle and Late phases of occupation at Arikamedu and submergence of the settlement (after Wheeler et. al)
Fig. 19: Arikamedu- Rouletted wares (Wheeler et al., 1946)

Fig. 20: Arikamedu- Inscribed potsherds (Wheeler et al., 1946)
Fig. 21: Arikamedu- Multicoloured beads

Fig. 22: Arikamedu- Multicoloured beads and roughouts
Fig. 23: Arikamedu- Glass bead Necklaces

Fig. 25: Gold Strands- Suttukeni
Fig. 24: Plan of Arikamedu prepared by V. Begley (1992)
agate, carnelian and amethyst (Fig. 21-23). The occurrence of unfinished beads and bits of semi-precious stones indicated the existence of a lapidary at the site. Other finds from the site included fragments of Roman glass bowls, broken mud lamp, a group of terracotta human figurines, iron nails and blade, a copper rattle, an ornamented ivory rod, conch shell ear ornaments or bangles and the wooden leg of a cot or a stool. Of the numerous pieces of rope, the longest had a length of about nine inches and a diameter of about one inch. It was made of three strands of coconut fibers twisted together. Among the stone objects were four pestles and a grinding-stone. Various stones such as granite, sandstone and steatite were used for making these objects. Three coins were unearthed—two of them were corroded beyond identification; the third one belonged to the reign of the king Raja Raja I (985-1014 AD) of the Chola dynasty. On the basis of the excavated materials, Wheeler concluded that Arikamedu was an Indo-Roman trading station that flourished during the first two centuries AD. According to him, the Chinese Celadon pottery and the Chola coin of a later period clearly relate, not to the occupation of the site, but for its destructions during the medieval period.
A full report of Wheeler’s excavation was published in *Ancient India* No 2 (1946). A noteworthy contribution of the excavation was the preparation of a contour map of the site and the surrounding area. This was one of the first large scale archaeological excavations in the whole of South India. The excavation received wide publicity throughout India and it soon emerged as a model for its methodology. Throughout the digs at Arikamedu, Wheeler taught his principle of stratigraphy-based excavations to the students. Another interesting but little-known fact is that it was Wheeler who vigorously popularized the name ‘Arikamedu’ for the place, although this name was not known prior to his time. The earlier French scholars generally referred to the place as Virampattinam. In fact, the first article written by Wheeler (1944), drawing attention to this site, bore the title “Virampatnam”. Following Arikamedu excavation, Wheeler intensified his research on the maritime trade between Rome and South India.

Arikamedu was excavated again in between 1947 and 1950 by the French archaeologist J.M. Casal (Casal, 1949). He excavated a very large area, spread over three excavation seasons. His excavation revealed that the site extended at least 420m north-south along the river while the width was about 200m east-west in the Northern Sector and 100m or more in the
Southern Sector. Many of the artifacts collected from his digs are comparable to those of Wheeler. However, Casal was the first to recognize Iron Age levels in the stratigraphy. But unlike Wheeler’s excavation, Casal’s digs went almost unnoticed and till recently, the latter’s writings were rarely cited. There are many reasons for this. First Casal’s excavations were never fully published; they were partially published by him in 1949 and again, in 1956. Both these publications are in French and hence, were not available to the non-French scholars.

After a comprehensive review of archaeological work at Arikamedu Vimala Begley carried out further excavation during 1989-92, supported by a joint Indian-American team. The excavation was formally christened as *Arikamedu Excavation Project*. The basic objectives of this excavation were to better understand the nature of maritime commerce between ancient South India and the Mediterranean region and also learn more about an early Indian port town-how it functioned and what sustained its economy. The excavation spanned three seasons- 1989-90, 1990-91 and 1991-92. It adopted the latest sophisticated methods hitherto unknown to either Indian archaeologists or to Indian Archaeology. It, however, retained the earlier division of the site into Northern and Southern Sectors (Fig. 24).
Simultaneously, the Arikamedu Excavation project attempted a reexamination and reassessment of the finds from the earlier work of Wheeler and Casal at the site. The results of these digs and researches have been published in two sumptuous volumes (Begley et al., 1996 and 2004).

Results of these excavations clearly revealed that Arikamedu was not only fashioned by the minds of Romans, but was at the heart of Megalithic Culture. As per the latest archaeological evidence, the site was first occupied around the late 3rd century or early 2nd century BC. This period belongs to the late Iron Age or Megalithic Age in South India. The earliest habitation was in the Southern Sector and not in the Northern Sector. Fishing and bead-making were important occupations of this community.

*Karaikadu*

Karaikadu, also called Kudikadu and Nattamedu, is a coastal site over 30 km south of Arikamedu. Karaikadu lies at the backwaters (*uppanar*) which could provide the necessary shelter for the anchorage of boats. The Archaeological Survey of India excavated the site in 1966. At that time, the area had extensive plantations and hence, the land available for excavation was very limited. After the clearance of the plantations, the Department of
Ancient History and Archaeology of the University of Madras conducted further digs at the site in 1989. The finds from Karaikadu, specially the locally-made and imported pottery, are strikingly similar to those reported from Arikamedu. For example, like Arikamedu, Karaikadu too revealed bricks, conch shell artifacts, Roman style rouletted pottery, fragments of imported amphora jars, and conical jars modeled on the amphora jars. The other finds from Karaikadu include terracotta pipes, crucibles and waste slag used in the manufacture of glass. The site has yielded glass and semi-precious stone beads at various stages of manufacture. Some of the glass beads from Karaikadu are so similar to those from Arikamedu that it has been remarked that these beads might have been made in Arikamedu and sent to Karaikadu. A brick structure associated with the bead-making industry was also unearthed at Karaikadu. All these finds have been dated to around the 1st century AD. Like Arikamedu, Karaikadu has evidences of human habitation up to the medieval times. In view comparable finds and close spatial proximity to Arikamedu, archaeologists sometimes regard Karaikadu as an extension of Arikamedu.
In the 1990s, modern factory buildings have sprung up on the ancient site of Karaikadu. Some of the artifacts recovered during this construction are now in the small Government Museum at Cuddalore (Tamil Nadu).

*Tirukoilur*

Tirukoilur, earlier called Koval or Kovalur, is now a small town located on the south bank of the river Thenpennar (or south Pennar). The place has many Hindu temples built during different periods.

During the period of the Roman trade, Tirukoilur was the capital of the Malaiyaman chieftains. They exercised control over Malaiyaman Nadu which included parts of present-day Pondicherry and the adjoining South Arcot region of Tamil Nadu. The Malaiyaman rulers were very powerful. Malaiyaman Tirumudi Kari was one of the most famous rulers of this dynasty. It is locally believed that the port of Arikamedu was under their control for some years.

Tirukoilur has revealed hundreds of quadrangular copper coins minted by the Malaiyamans. One face of most of these coins exhibits hillocks, road and river. According to art historians, these motifs may together represent the physical topography of the Malaiyaman chiefdom, particularly their capital Tirukoilur. The hills on the coins together represent the physical
topography of the Malaiyaman chiefdom, particularly their capital Tirukoilur. The hills on the coins may denote the Muller hills that were part of the Malaiyaman territory. The river on the coins may be the South Pennar on whose bank Tirukoilur is situated. When the river reaches Tirukoilur from the hills, it takes a sharp bend that has been clearly shown on most of the coins. Close to this bend, there is a rocky outcrop which may be the mound appearing on the coins. The road seen on the coins may be one of the ancient highways that connected Tirukoilur with other trade centres such as Arikamedu, Kanchipuram, Karur and Uraiyur. Significantly, in ancient South India, the highway often ran parallel to the river. Tirukoilur has also yielded Roman gold and copper coins ranging from the 1\textsuperscript{st} to the 3\textsuperscript{rd}-4\textsuperscript{th} centuries AD.

The Tamil Nadu state Department of Archaeology conducted excavations at Tirukoilur in the year 1994. Due to modern constructions, it was very difficult to find vacant sites for the excavations. Hence, the digs had to be conducted in places such as a temple and school playground. The excavations revealed three cultural periods based on the artifacts unearthed at the site. These are period I (100 BC.-400AD); Period II (400 AD- 1300 AD) and Period III (1300- 1700 AD).
Period I (100 BC to 400 AD) at the site represents the Megalithic culture and evidence for Roman trade. The period has yielded glass beads, the Roman Style rouletted pottery and a unique amphora jar fragment—all objects similar to those found at Arikamedu. The Tirukoilur amphora fragment is from the body portion of the jar. Pale pink in colour, the sherd is devoid of any slip or incrustation. Besides, there is a unique inscription on a cave in the hill to the east of a neighbouring village named Jambai on the north bank of the South Pennar. The inscription is in the Tamil Language and the Tamil Brahmi script. It belongs to the 1st century A.D. It records the gift of the cave shelter by a local chieftain.

**Suttukeni**

Suttukeni or Soutoukeny is situated on the banks of the river Gingee in the Union Territory of Pondicherry. It is an important Megalithic settlement that was excavated in 1950 by a team of French archaeologists headed by J.M. Casal. As Arikamedu is situated, around 30 km away from Suttukeni, closer to the sea, on the banks of the river Ariyankuppam, a branch of the Gingee there is a strong suspicion that both these sites may have had commercial and cultural contacts through the riverine route. Both the sites share several common features. The Megalithic burials at Suttukeni
are almost contemporary with the earliest settlement at Arikamedu (3rd-2nd cent. BC). Some of the typical megalithic potteries found at Suttukeni are identical to those reported from Arikamedu.

Suttukeni has yielded a fragmentary bronze vessel that appears to be an import from the Mediterranean region. If so, the vessel would have reached the site via Arikamedu. The Megalithic grave at Suttukeni revealed several specimens of gold jewellery including decorated gold spacers probably intended for four-strand necklaces (Fig. 25). A similar four-holed separator but without any decoration has been discovered at Arikamedu. Further, many of the beads found at Suttukeni are similar to those reported from Arikamedu (see Fig. 22 and 23).

Sengamedu

This site is situated at a distance of 80 kms southwest of Arikamedu, Sengamedu is a very extensive site, nearly 26 acres in area, perched on the left bank of the river Manimuktar, a tributary of river Vellar (Fig. 26). The site is about 23 km from Vriddhachalam town in Villupuram district. The site has the unique distinction of being one of the earliest Megalithic habitation sites to be excavated in Tamil Nadu. The excavations were conducted by the ASI in the early 1950s.
Fig. 26: Sengamedu- Ancient mound on the banks of the river Manimuktar
A unicultural site in nature, the chronology of Sengamedu on the basis of the cultural material has been designated to Pre-rouletted, Rouletted and Post rouletted roughly ranging from 300 B.C. - 200 AD. The occupation of the site (period I) begins with the Black and Red ware of the Iron Age. Period II (post-Megalithic, roughly around first century AD) of the site has revealed the Roman style rouletted pottery resembling the ones from Arikamedu. The most important finds from the Sengamedu are the ruins of ancient brick structures spread over a large area at least 20 m long and 5 m wide. Indeed, the very name ‘Sengamedu’ is believed to have been derived from the Tamil words ‘Sengal medu’ meaning ‘mound of bricks’ (Fig. 27 and 28). These ruins, like those at Arikamedu, lie right on the river bank. The size (30cm x 18cm x 7.6 cm) of the Sengamedu bricks is almost the same as that of the bricks of the Roman period bricks at Arikamedu. Like Arikamedu, Sengamedu has also revealed ring wells, terracotta figurines, mud lamps and a large number of beads. Hence, the excavators of this site are tempted to suspect that Arikamedu and Sengamedu had commercial links through riverine routes. But the precise details of these links await further investigations.
Fig. 27: Sengamedu- Ruins of brick structure

Fig. 28: Sengamedu- Ruins of bricks
Sendamanglam

This historical site lies 1 km east of the NH No: 42a. This once served as the capital of Kadava king Koperusinganan. In the inscription this place mentioned as Sendamanglam. The site was excavated in the year 1995 and 1996 by the State Archaeology Department. The site yielded a brick structure, a conical jar, a bronze seal, rouletted ware, terracotta figurines and medieval tiles (Rajan 1997).

Tiruvamattur

The site lies on the river Pambaiyar and 5 km northwest of Villupuram. According to the local legend, the village named after the hornless cattle got its horn by praying god Shiva. The habitation mound on the bank of the river on the southern side of the village was excavated in the year 1987-88 by the Dept. of Ancient History and Archaeology, University of Madras. Three trenches were laid. It yielded Black and Red ware, Red polished ware, Rouletted ware, graffiti marks, terracotta figurines, lamps, stone beads and bangles (Rajan 1997).
Kurur

This habitation-cum-burial site is on the Kallakurichi-Kuttakudi road at a distance of 9 km from Kallakurichchi. There are two habitation mounds. The habitation mound with Iron Age cultural deposit called *nattamodu* is found on the southern side of the village in the field called *mudikondan*. This mound yielded black and red ware of thin variety. The historical habitation mound covering an area of more than 15 acres found near the village Ramanathapuram. Bricks, terracotta lamps, coarse red ware and beads were collected. There is a Siva temple nearby. An urn burial site found on the left bank of river Gomuki is in the field locally called *Kuppaimodu* (Rajan, 1997).

Niraimathi

It lies on the Kallakurichchi-Kuttakudi road at the distance of 9 km from Kallakurichchi. Historical habitation mound covering an area of more than 10 acres found on the bank of river Gomuki yielded red ware, tiles, brick bats and terracotta beads. Ringwells are noticed on the bank of Gomuki probably used for agriculture (Rajan, 1997).
**Palayapattinam**

Palayapattinam lies 10 km from Vridhachalam and 3 km from Vridhachalam-Ulundurpettai road passing through the village Virareddiyur.

The habitation mound covering an area of more than 10 acres lies near the village. The surface collection include terracotta beads, tiles, brick pieces in addition with usual BRW, BSW and RW suggested that the site would have existed till historical period. The mound is locally known as niralaimodu. The urn burial site lies opposite to the habitation (Rajan 1997).

**Maligaimedu**

This site is located in Panruti taluk of Cuddalore district. The site was excavated by the State Department of Archaeology, Tamil Nadu Government in the year 1999-2000. Three cultural sequences have been exposed from the excavation. The excavation has yielded black and red ware, red ware, black ware, rouletted ware, coarse red ware, inscribed potteries and a copper coin with the Ujjain symbol. According to the excavator the habitation at the site starts from c. 3rd century BC (from State Archaeology web site).
Newly Explored Sites

As mentioned earlier during the course of field work in the study area, a total number of 14 Early Historic sites were discovered, 3 along the right bank of Pennar, another 3 along Pombai river, 2 sites in Gadilam and 1 each in Gingee & Malattar. A descriptions of the sites is in the following.

**Kottaimedu**

This Early Historical site is located in Puranasingapalayam village which is located 4 km. north of Tibhuvani (once a great Chola town), which is situated about 27 km. west of Pondicherry towards Villupuram. The village Puranasingapalayam, is located 20 km west of Arikamedu. In the vicinity of Puranasingapalayam, the pottery and debris-bearing deposits rise to 5 m meters above the dry river bed of the Pambai (Fig. 29). The very name Kottaimedu reminds us that there once a fort (kottai), which in later years collapsed (Fig. 30 and 31), and the debris of the collapsed fort walls then formed a Mound (medu).

The site, as it stands today, has suffered considerable damage from a variety of factors, particularly agricultural expansion. Indeed, the site is approximately 8 to 10 acres, and is now widely used for cultivation of both
Fig. 29: Kottaimedu- Dry bed of river Pambai
Fig. 30: Kottaimedu- Bricks used in ancient wall

Fig. 31: Kottaimedu- Brick bats
irrigated and non-irrigated crops such as paddy, egg plant (brinjal), tomato, flowers, coconuts and bananas.

Artefacts collected from the site include an amphora, and rouletted ware, together with those of white slipped bowls and dishes, the bluntly pointed base of a large storage jar and top, body and lower fragments of tall conical vessel tapering town to a point at the base. In addition, two beads and a glass object were also discovered on the surface.

The ceramic types are typical of the Early Historic period. The forms and fabric have a very high similarity with that of Arikamedu’s classical trade phase (Fig. 32, 33 and 34).

**Ring well**

A terracotta ring well has been discovered a few meters east of a new bridge under construction on the river Pambai in the vicinity of Puranasingapalayam. Five rings have been noticed in a section at the site. The top and bottom of the ringwell are uncertain; presently two top rings are damaged. The diameter of the third visible ring is about one meter and the
Fig. 32: Pottery Reconstruction, from Arikamedu and Kottaimedu
Fig. 33: Kottaimedu - Pottery with knob

Fig. 34: Kottaimedu - Potsherds of Red ware
height of each ring is about 30 cm. this type of ring well was discovered in Arikamedu and contemporary sites.

**Tirasu**

Tirasu (Long: 79° 34' N; Lat: 11° 48' E) is located in Panruti taluk of Cuddalore district (Fig. 35). It is situated 22km southeast of Villupuram and on the right bank river Pennar. Adjacent to this site excavated site Maligaimedu is located. Here a mound has been identified in the form of cultivation ground. The height of the mound varies from 50 cm to 1m. During the course of exploration few ancient bricks (Fig. 36 and 37), potsherds of coarse red ware, fine red ware and Black and red ware have been found. Graffiti is also observed on some potsherds. Other antiquities include shell bangle, brick bats, terracotta figurines and hopscotch. On the basis of material evidence this site is assigned to Early Historical period and match with Arikamedu chronology.
Fig. 35: Tirasu – General view

Fig. 36: Tirasu – Broken ancient brick
Fig. 37: Tirasu- Ancient brick

Fig. 38: Karaimedu- Exposed section
Karaimedu

Karaimedu (Long: 79° 37' N; Lat: 11° 48' E) is about 15 km from Villupuram on Villupuram-Pondicherry road. A huge mound lies close to the local pond. The height of the mound varies from 2 to 3 m (Fig. 38). Here some years ago villagers had dug the mound in order to provide a pathway to the pond. This had brought to light many ring wells (Fig. 39). During the course of present exploration on the advice of the villagers a trench measuring 1 X 1 m was dug, where larger rim portions of ring wells were unearthed. After documenting the surface carefully at a depth of about 7-10 cm a broken ring came to surface. At a depth of about 1.5 m a total number of four rings were found (Fig. 40 and 41). As mentioned by the villagers here too broken dish and some bone fragments were also found from the bottom level (Plate XI). The rings were red in colour and approximate dia of each ring measures 80 cm. From the excavation it is inferred that originally the rings were prepared for storing/getting potable water later when the rings were not in use they were either for burial purpose or for as dust bins.
Fig. 39: Karaimedu- Broken urn

Fig. 40: Karaimedu- Ringwell shape urn burial
Fig. 41: Karaimedu- Potsherds recovered from urn

Fig. 42: River Pennar- near Arakandanallur
Arakandanallur (Long: 79° 14' N; Lat: 11° 58' E) lies opposite to Tirukkoyilur on the northern bank of river Pennar (Fig. 42). The incomplete rock-cut temple, facing due east, is cut on the eastern scarp of the large rock, on the top of which stands the gopuram and the stone enclosure of the Opporuvarumillada Nayanar and Ponniyamman temples. Ponniyamman was perhaps a Jaina goddess Jvalamalani or Ponniyakki.

During the course of present survey large bricks were found in the northern bank of river Pennar (Fig. 43 and 44). The bricks were found scattered in hapzard manner. The size (30X 18X 7.6 cm) of the Arakandanallur bricks is almost the same as that of the bricks of the Roman period at Arikamedu. The exact purpose of these bricks could not be ascertained because the floods had submerged the area. When enquiring the local people who frequently use to come to river for bath and fishing informed that whenever the river is dry they happened to see a huge brick structure in the northern bed of the river. Further proper excavation in the river banks may prove the importance of the so called structure.
Fig. 43: Arakandanalur- Ancient bricks

Fig. 44: Fragment of ancient brick found in river Pennar
**Kottapakkatuveli**

This village Kottapakkatuveli (Long: 79° 30' N; Lat: 11° 57' E) is located 2 km away from Villupuram town (Fig. 45). Adjacent to this site the dry bed of river Pombai (a tributary of river Pennar) is visible. Here during the course of exploration large size bricks and terracotta figurines were found. The brick size is of the standard 30X 18X 7.6 cm of the Roman period bricks as at Arikamedu. A few Terracotta figurines have also recovered.

**Manikolai**

This site Manikolai (Long: 79° 42' N; Lat: 11° 30' E) is located about 30 km Cuddalore town (near Ottathai village) on Cuddalore to Chidambaram road. During the exploration potsherds of black and red ware, coarse red ware, fine red ware and grey ware found from a cultivation field, which is located opposite to Modern CSI church. Besides potsherds, large number of glass beads along with rough outs were collected from the same locality (Fig. 46). The glass beads in different shapes and variable colors mainly include dark blue, dull red, black, violet, green and yellow shows similarity with Arikamedu bead discoveries. The approximate area of site is 2 ha.
Fig. 45: Kottabakkatuveli- General view of the site

Fig. 46: Manikollai- Multicoloured glass beads
**Thirusopuram**

This site Thirusopuram (Long: 79° 45' N; Lat: 11° 35' E) is located about 15 km east of Cuddalore town (after crossing Pondiyampakkam railway station) on Cuddalore to Chidambaram road. River Uppanar flows near the site (Fig. 47). This place along with adjacent village Thiyagavalli (named after Kulothunga Cholan’s wife) was part of Chaturvedi Mangalam in later Chola period (c. 12<sup>th</sup> -13<sup>th</sup> cent. AD). A temple dedicated to Shiva with a Late Chola inscriptions attest the Chola antiquity of the village. Here along the seashore area, during exploration, a mound locally known as *chalimedu* (i.e. mound with full of potsherds) is located. The site has yielded humpty a numbers of potsherds of black and red ware, coarse red ware, Fine red ware and grey ware (Fig. 48). Further intensive survey in the same area yielded good number of glass beads (Fig. 49).

The glass beads in different shapes and variable colors mainly include dark blue, dull red, black, violet, green and yellow shows similarity with Arikamedu bead collections (Fig. 50). According to local historian this place Thirusopuram is nothing but ancient *sopatna* mentioned by western geographers.
Fig. 47: River Uppanar- near Thirusopuram

Fig. 48: Thirusopuram- river section with potsherds
Fig. 49: Thirusopuram- Glass beads on the surface

Fig. 50: Thirusopuram- Glass beads
In this context, the recent excavation (2005-06) conducted by State Department of Archaeology, Tamil Nadu Government at Marakkanam, a site located about 35 km from Tindivanam in Villupuram district (which is supposed to be believed as ancient sopatna) did not yield any artefacts beyond Medieval period. Even the local historian further informed that about a decade he had found base of conical jar (amphora?) from the same site. But the same he has lost recently. Whereas the meaning of the term “Sopuram” indicates that Fort. It may be inferred that from the name Sopuram that the place was a fortified town. Adjacent to this mound a small stream known as uppanar flows into sea. Further thorough exploration/excavation may attest the antiquity of this site and comparison of this to ancient sopatana.
Smaller Sites

Besides above mentioned newly discovered sites, some less important sites but significant once with Early Historical vestiges were also discovered during the present survey. They are likely contemporary with Arikamedu and details of them are mentioned as below:

**Thirunavalur**

Thirunavalur (Long: 79° 24' N; Lat 11° 45' E) is located 34 km south of Cuddalore town and it is situated on the right bank of Gadilam river. During the exploration Coarse Red Ware, red ware and Black and Red Ware sherds were found. Besides this, one terracotta human figurine was also found.

**Kattuselur**

Kattuselur (Long: 79° 10' N; Lat: 11° 50' E) is located about 50 km north of Villupuram town and 15 km east of Tirukoilur. It is situated on the right bank of Kadilam River. During the exploration coarse red ware, red
ware and Black & red ware sherds were found. One terracotta figurine was also found.

Terracotta Lamps

During the exploration Terracotta lamps with many sides found from three sites viz. Arasur (Long: 79° 14' N; Lat: 11° 58' E) (located on the right bank of river Malatar), Sendiyambakkam (Long: 79° 18' N; Lat: 11° 59' E) (located on the left bank of river Sankarabarani) and Siruvalai (Long: 79° 25' N; Lat: 12° 00' E) (located 16 km east of Villupuram).

Smoking Pipes

Further during the exploration Terracotta smoking pipes were discovered from Karaimedu, Kottapakkatuveli, Arasur and Parikal (Long: 79° 22' N; Lat: 11° 47' E) along with early historical potsherds.
3.2.2 The Distribution of Archaeological Sites in the Study Region

Pondicherry Region

The distribution pattern of Iron Age cemetery sites in the Pondicherry area and its immediate neighborhood shows that they are concentrated mainly on the northern area of the Gingee River (Fig. 51). A few cemetery sites have been discovered on the southern area of the Gingee River. These are basically urn burials and the burial urns are placed in pits cut in to the red soil. The pits are occasionally marked by a stone circle. Less often, sarcophagi have been placed in a chamber of granite slabs placed in a swastika pattern. This type of burials are normally found in the vicinity of Thiruvakkarai (Fig. 52) and Suthukeni and Auroville (Fig. 53) around Pondicherry. Urn burials found at Perambai and Mutharapalaeom are without any surface marking.

Urn burials have also been identified in alluvial deposits of the Gingee river, at Purangkuppam and Sorappattu. An urn burial was dug out at Bahour by a local historian by name Kuppusamy (Kuppusamy, 'Funeral urns of
Fig. 51: Map showing Arikamedu and late Iron Age burial sites in the vicinity of Pondicherry.
Fig. 52: Urn burial- Thiruvakkarai

Fig. 53: Urn burials - Auroville
The distribution of Iron Age burials in the Pondicherry area seems much more complicated. Both the cist and urn burials are found together in the same region. Due to this I have classified the Pondicherry area into three regions on the basis of Geological formations and same as follows:

Zone A- Area covered by Cuddalore formation
Zone B- Area covered by Upper Cretaceous and Palaeocene formations
Zone C- Area covered by fluvial deposits

Zone A

The upper tertiary sediments of the Pondicherry region is represented by the Cuddalore formation, which occurs as two widely separated outcrops: one on the north-eastern margin, just along the northern coast of Pondicherry (Fig. 54). Interestingly a great density of Iron age burials are noticed in this zone.
Main Sites: Auroville, Thiruvakarai and Suthukeni. These sites are having both urn burials and Cist burials.

Typology of Iron Age Burial

Typologically the Iron Age burials in the Pondicherry area are not different from those of Tamil Nadu.

ZONE B

It lies between the Cuddalore Formation on the east and to the west of the Gingee River. It is a combination of Vanur sand stone, ottai clay stone and Turuvai limestone of Upper Cretaceous period and Kadaperi and Manveli Formation of Palaeocene period.

There are no known archaeological sites in this zone.

ZONE C

Three-fourth of the Pondicherry area is covered by quaternary fluvial deposits, largely alluvium(Fig. 55). The thickness of this alluvium varies from 10.5 to 0.5 m. At Sathamanglam it is about 0.55 m. Zone C is mostly under cultivation because of this alluvium deposit.

Important Sites: Soarppattu, Puranagkuppam, Nattamedu and Bahour.
Fig. 54: Region A - Cuddalore formation

Fig. 55: Region B - Alluvium deposit
Soarappattu

It is located in the doab of Gingee and Pambai rivers. The site is under cultivation, although a few body sherds and rims of urns, black and red ware, red ware, black ware are found in the ploughed field. But as of today no site in this region has the evidence for megalithic burials.

Puranagkuppam

It is located on the south bank (of the South outlet) of the Gingee river and another site known as Nattamedu is located between Gingee and South Pennar.

Therefore Zone- C is only noted for urn burials and no evidence of cist burials have been reported from this region so far.

South Arcot Region

In 1876 J.H Garstin made the first discoveries of megalithic at Kollur and Devanur (Garst in 1876). Since then explorations carried out over the years, have revealed a number of megaliths all over the region. About 175
archaeological sites have been recorded of which 143 are Megalithic and remaining are Early Historic. Among the burial sites, 24 are cairn circles, 11 are with stone circles, 1 dolmenoid cist, 86 urn burials and 12 sarcophagi sites (Fig. 56). Each type is distributed with in a specific geographical zone of this region (Rajan 1998).

**Spatial Distributional Pattern of Megalithic Burials**

In the South Arcot region there is a dominance of three distinct megalithic types, confined to three separate geographical zones. The first, cairn circle category is mainly concentrated in the hilly tracts. The stone circles without any cairn packing are also seen. The second type - the urn burials are noticed in the eastern part of the region particularly to the south of the river Pennar, widespread in the deltaic area of the rivers Kaveri and Vellar. The third variety, consisting of sarcophagus burials are mainly found to north of the Pennar River in the non-deltaic region of this district. In some parts of the study area these three categories overlap. The concentrations of cairn circles enclosing a cist with a round porthole on the east are found in great density in the western part of this region, particularly in the Kallakurichchi and Tirukkoyilur taluks. This area is drained by the rivers Pennar, Vellar and Gomuki. The distribution of cairn circles with cists in
Fig. 56: Megalithic sites in old South Arcot region (i.e. present Villupuram and Cuddalore districts)
concentrated in the zone between 200-500 AMSL. Once the river reaches the plain (below 200 AMSL) the density of cairn circles decreases drastically. The area covered by the talukas of Kattumannar koil, Chidambaram, Cuddalore, Panruti, Tidivanam, Virdhachalam and the eastern part of Tittakudi, all of which occupy the eastern part of this region, is devoid of megalithic sites of any category.

Stone circles, which are degenerate forms of the cairn circle, are found to the north of Varahanadi (Tindivanam and Gingee taluks). These stone circles invariably contained within them an urn or sarcophagus depending on the external context.

**Early Historical Phase**

In the old South Arcot region (Villupuram and Cuddalore) the Early Historic period is marked by the emergence of brick structure, ring wells, terracotta lamps, beads, Rouletted Ware, punch-marked coins, Roman coins and coins of Malayaman (the Sangam Age chieftain), Tamil-Brahmi inscriptions from Jain beds (Fig.57). There are 26 sites as shown in the following Table.
**Table 1: Important Early Historical Sites in South Arcot Region**

<table>
<thead>
<tr>
<th>S. No / Name</th>
<th>Taluk</th>
<th>District</th>
<th>Nature of the Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nekanurpatti</td>
<td>Gingee</td>
<td>Villupuram</td>
<td>Tamil-Brahmi Inscription, rock painting.</td>
</tr>
<tr>
<td>2. Perumpugai</td>
<td>Gingee</td>
<td>Villupuram</td>
<td>Jain beds on hillock</td>
</tr>
<tr>
<td>3. Thondur</td>
<td>Gingee</td>
<td>Villupuram</td>
<td>Tamil-Brahmi Inscription, Jain beds</td>
</tr>
<tr>
<td>5. Niraimathi</td>
<td>Kallakurichi</td>
<td>Villupuram</td>
<td>Tiles, brickbats, T.C. beads &amp; ring wells.</td>
</tr>
<tr>
<td>6. Peral</td>
<td>Kallakurichi</td>
<td>Villupuram</td>
<td>Historical mound</td>
</tr>
<tr>
<td>7. Siruvallur</td>
<td>Kallakurichi</td>
<td>Villupuram</td>
<td>Crucible fragments.</td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>Site</td>
<td>Town</td>
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<tr>
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</tr>
<tr>
<td>8.</td>
<td>Perumukkal</td>
<td>Tindivanam</td>
<td>Villupuram</td>
</tr>
<tr>
<td>9.</td>
<td>Tiruvakkarai</td>
<td>Tindivanam</td>
<td>Villupuram</td>
</tr>
<tr>
<td>10.</td>
<td>Adichchanur</td>
<td>Tirukkoyilur</td>
<td>Villupuram</td>
</tr>
<tr>
<td>11.</td>
<td>Arakandanallur</td>
<td>Tirukkoyilur</td>
<td>Villupuram</td>
</tr>
<tr>
<td>12.</td>
<td>Jambai</td>
<td>Tirukkoyilur</td>
<td>Villupuram</td>
</tr>
<tr>
<td>13.</td>
<td>Kiranur</td>
<td>Tirukkoyilur</td>
<td>Villupuram</td>
</tr>
<tr>
<td>14.</td>
<td>Kottakam</td>
<td>Tirukkoyilur</td>
<td>Villupuram</td>
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<tr>
<td>15.</td>
<td>Thotti</td>
<td>Tirukkoyilur</td>
<td>Villupuram</td>
</tr>
<tr>
<td>16.</td>
<td>Tirukkoyilur</td>
<td>Tirukkoyilur</td>
<td>Villupuram</td>
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<tr>
<td>17.</td>
<td>Virapandi</td>
<td>Tirukkoyilur</td>
<td>Villupuram</td>
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<tr>
<td>No.</td>
<td>Place 1</td>
<td>Place 2</td>
<td>Place 3</td>
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<tr>
<td>18</td>
<td>Tholudur</td>
<td>Tittakudi</td>
<td>Villupuram</td>
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<td>19</td>
<td>Sendamanglam</td>
<td>Ulundurpettai</td>
<td>Villupuram</td>
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<tr>
<td>20</td>
<td>Kalpattu</td>
<td>Villupuram</td>
<td>Villupuram</td>
</tr>
<tr>
<td>21</td>
<td>Karuvakshi</td>
<td>Villupuram</td>
<td>Villupuram</td>
</tr>
<tr>
<td>22</td>
<td>Iranji</td>
<td>Virudhachchalam</td>
<td>Cuddalore</td>
</tr>
<tr>
<td>23</td>
<td>Sengamedu</td>
<td>Virudhachchalam</td>
<td>Cuddalore</td>
</tr>
<tr>
<td>24</td>
<td>Palayapattinam</td>
<td>Virudhachchalam</td>
<td>Cuddalore</td>
</tr>
<tr>
<td></td>
<td>Karaikadu</td>
<td>Cuddalore</td>
<td>Cuddalore</td>
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<tr>
<td>25</td>
<td></td>
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</tr>
<tr>
<td>26</td>
<td>Kudikadu</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cuddalore</td>
<td></td>
</tr>
</tbody>
</table>

(after Rajan 1997: 324-334)
Fig. 57: Early Historic phase in old South Arcot region (i.e. present Villupuram and Cuddalore districts)
3.3 Site Categorization

The Early Historic sites in the study region comprise a few large settlements (centres) and several small settlements (satellites) which are located in the proximity of large settlements. On the basis of area of occupation, habitation deposit and material remains, it may be suggested that the sites of Arikamedu, Kudikadu, Manikollai and Thirusopuram are functioned as central places. These sites are situated in strategic locations, and by virtue of their location controlled the dynamics of inter- and intra-regional trade.

Here these four sites served as trade centres where iron (as raw material/finished products), terracotta objects, precious and semi-precious gemstones, molluses and forest products (timber, bamboo, herbs and medical plants) were brought in from satellite sites, and traded.

The satellite settlements were, infact, the backbone of the whole trade network, for the urban centres could never flourished without them. It appears that the small settlements were specialized in craft activities, extraction of gemstones and local forest resources.
3.4 Centre - Periphery Relationships

A study of the relationship between Centre - Periphery is a Post-war development. It developed as a capitalistic approach where the relationship of urban market system or industrial setups with rural settlements was analyzed (Wallerstein 1974). The Centre- Periphery model has figured in a variety of ways in the geographical analysis of the spatial organization of human cultures and societies. According to Champion (1989: 2), *the main intention of the centre-periphery model is to explore a particular alternative framework* - the analysis of long distance relationship, especially between societies with markedly different patterns of social or economic organization, and the potential of such argument interactions to bring about *major transformations of social relations*. The demarcation of such type of long distance relationship may be drawn with the concepts such as 'diffusion', 'influence' and 'trade'.

This perspective has been adopted in the present study, while dealing with the relationship between urban and satellite settlements and relationships between and among them in a defined geographical area. As noted above, the small settlements in the study region show a tendency to converge around the larger centres. These smaller settlements were rich in
diverse economic resources with opportunities for diversifying human activities and occupation such as extraction of gemstones and forest resources, weaving, terracotta art and pottery making. Material products were supplied to the nearby centres, from where these were transported to distant settlements. This interaction consequently led to integration of resource areas with production and distribution areas.

3.5 Early Historic Urbanization in Tamil Nadu

Early Historic

The term ‘Early Historic’ is defined as a chronological unit spanning the period from c. 300 BC to 500 AD. The Early Historic period in Tamil Nadu has been variously known as ‘Sangam Age’, ‘Megalithic’ and ‘Indo-Roman period’, though there is no discernible variation in the character of culture (Gurukkal 1989). ‘Megalithic’ is not treated as a distinct chronological period, but a burial tradition that is more frequently associated with the Iron Age continuous into later period (Fig. 58). The Early Historic period may be divided into Phase I (pre-1st century BC), and Phase II, (1st century BC to 3rd century AD), coinciding with the ‘Indo-Roman’ or Indian Ocean trade, and Phase III (post-3rd -6th century to 500 AD), the post-
Fig. 58: Iron Age and Early Historic sites of South India
Sangam Age, with each of these phases witnessed distinct levels of development (Selvakumar 2008).

3.5.1 Urbanism and Urbanization

Urbanism and Urbanization have been the focus of geographical, anthropological and historical studies (Weber, 1992; Wirth, 1938; Childe, 1950; Mumford, 1961; Rapport and Overing 2000: 374-380). Gordon Childe was the first to define urbanization in the context of social evolution and distinguished it by craft specialization, emergence of political economy which did not involve subsistence related activities; generation of social surplus through taxes or tribute; presence of monumental public buildings; use of a writing system; increase in long distance trade; and the dominance of the social elite (Childe 1950). Childe's ten criteria on urbanization have been a subject of discussion among several scholars (Venkatasubramanian 1988; Parasher-Sen 1989: 124). Wirth (1938) defined city as 'a relatively large, dense, permanent settlement of socially heterogeneous individuals'. According to Sjoberg (1960), pre-Industrial cities were characterized by government, religious centres and literate elites rather than dense concentration of population focused on manufacturing and commercial activities.
Urbanization is a process that leads to the emergence and sustenance of cities, which are differentiated by higher population density, large scale commercial and manufacturing activities, among other characteristic (Carter, 1983; Fields, 1999). Cities are to be viewed as an integral part of the society rather than separate entities (Weber, 1922). Hence, the recent urban studies focus on the processes (substance) that influenced the entire society rather than cities (forms) (Al-Zubaidi, n.d).

3.5.2 Current Theories on Urbanization in Ancient Tamilakam

The Harappan civilization is considered to represent the first urbanization in South Asia. The emergence of cities particularly in the Ganga valley, in the pre-Mauryan- Mauryan period is considered second urbanisation (Lal 1984; Thaper 1984; Erdosy 1988; Chakrabarti 1988, 1999; Sharma 1994; Allchin 1995). The subject of Early Historic urbanization in Tamil Nadu has received considerable attention from scholars. There have been a series of debates on the dynamics and processes of urbanization in Tamilakam. This second urbanization spread all over South Asia through
political expansion and trade control (Selvakumar 2008). These deliberations have centred on the internal dynamics, e.g. growth and interaction among the micro regions within the Tamil country, and external dynamic such as migration of people, ideas and artifacts from North India, and trade contacts with the outside regions (Begley 1986; Champakalakshmi 1996; Venkatasubramanian 1996; Gurukkal 1998).

Champakalakshmi (1975-76; 1996: 9) contends that urban forms of ancient Tamilakam did not result from internal growth. It manifested as a ‘secondary generation’ triggered by inter-regional trade over a widespread region including the nearest neighbour Andhra Pradesh and the distant Ganga valley. Maritime trade with the Mediterranean region was also very effective. In her view, there was no state society in the Early Historic Tamil region and it was largely ‘tribal’ in nature (Chambakalakshmi 1996: 16). She also emphasises that Mauryan influence was minimal in the Tamil country and that the impact of overseas trade was higher.

Gurukkal (1989, 1995), while discussing socio-economic formations in the Tamilakam, contends that ancient Tamil society was in a ‘tribal stage’ where relationships of productions were kinship-based and the political
formations were at chiefdom level, not representing the 'early stage'. He highlights the role of Mauryan contacts on Tamilkam (Gurukkal, 1998), and argues that state formation took place during Early Medieval period when orthodox religions and wet agriculture took firm roots in the Tamil region.

Seneviratne (1993) lays emphasis on the coalescence of internal and external factors in the emergence of early political economics (and urbanisation) in Tamilakam. Giving primacy to the role of internal dynamics, he argues that the interactions among micro zones led to the integration of smaller settlements \((kudi)\) into macro eco-zones \((nadu)\), and the formation of 'areas of attractions' in the coastal deltaic plains due to the internal developments.

Morrison (1997) in her synthesis of the Early Historic period argues that the urbanism in south India had an indigenous growth. She states that the interpretations of the distribution of NBPW can also be seen as uncritical archaeological transformations of arguments by historians about the primary of the Gangetic plain as an exporter of 'civilization' to central and southern India, arguments that range from a notion of simple cultural and political 'influence' to outright control (Morrison 1997: 94).
Rajan (2001) on the other hand argues that the early states of Tamilakam were well known in the 3rd century BC and the antecedents would certainly date back to 500 BC. This argument is based on the fact that if the southern kingdoms were a force to reckon with compelling Ashoka Maurya to remain on their northern frontiers.

Ray (2002) is of the view that there must have been some local developments that led to urbanization in the peninsula India from its moorings in Mediterranean trade on the one hand, and early historic North India on the other (Ray 2002: 351).

Gogte (2002), based on the XRD-analysis Rouletted Ware and the associated fine ware from Arikamedu, Alagankulam and other sites on the Coromandel coast, inferred that they were produced in the Bengal region (Chandraketugarh). Citing the similarity of bricks and other materials from Tamil Nadu and Bengal region, he argues that the megalithic people might have procured horse and Rouletted Ware from Bengal in exchange of iron weapons. He emphasizes on the external factors as the catalytic agent for the emergence of cities: these 'trade-kings' (from Bengal) must have maintained
an army, established ports at several places such as Arikamedu, and Kaveripattinam on the east coast of India between 250 and 200 BC and continued to operate them at least up to 200 AD. Thus they controlled the maritime trade from Bengal to Sri Lanka. They also ruled a sizeable region of south India during the early historic period. Trade in this instance could be described as a ‘state owned’ enterprise (Gogte, 2002: 64).

3.5.3 Genesis and Development of Urbanism in Tamilakam

The genesis and development of the urbanism in Tamilakam is discussed here through an analysis of some of the important criteria such as demography, territoriality, town planning, architecture, trade and exchange networks.

Growth of Population and Territoriality Divisions

Settlement Pattern: Site Hierarchy, Rural and Urban Settlements

Archaeological research reveals an increase in the number of settlements their size and diversity of material objects in the Early Historic period when compared to the Iron Age. Despite the lack of comprehensive
settlement data for the study area, data from a few regional studies support this inference. For example, studies in the Upper Gundar Basin revealed eight Early Historic settlements with Russet-Coated Painted Ware in contrast to only one site of the Iron Age remains (Selvakumar 1997). From the analysis of site size, it is clear the settlements that can be characterized as rural in the Gundar Basin usually cover less than 5 ha and the same is the case in the Upper Palar Basin in Northern Tamil Nadu (Darsana 1997), while the urban centres of Tamilakam range from 7.5 ha to 81 ha (cf. Shanmugam 1997). There is a discrepancy regarding the exact size of the settlements. Different publications mention varying sizes for the same site. According to Shanmugam, Arikamedu measures 33.75 ha, however systematic site maps prepared by Begley et al. (1996) indicate that the site covers about 7.5 ha. Since the excavations are restricted to limited area and most of the sites are covered by medieval settlements, it is difficult to determine the exact size of Early Historic occupation at several sites. Kaveripattinam has multiple sites covering an area of 10 sq. km, with a few of them having medieval occupation. Thus determining the site size during the Early Historic period is not possible. Site hierarchy is reported in the Pennar and Vellar Basins (Rajesh and Arun Raj 2003) and Pudukkottai region (Rajan 2003), where the site area ranges from 2 to 20ha (Fig. 59).
Fig. 59. Size of Urban Centers in Tamil Nadu
References to various types of settlements such as *kudi/ur* (settlement), *sirukudi* (small settlement), *perur* (large settlement), *pattanam* (port or coastal town) *nagar* (city), *managar* and *moodur* (old city) in the Sangam literature are suggestive of a settlement hierarchy. Cities are mentioned in the literature as rich in wealth (‘the rich Muciri’, *Ahananuru*, 149: 11) or encircled by fortifications (Devakunjari, 1979; Suresh, 1989) or as the residence of chieftains, while a settlement of the fishing community, the *parathavars*, is mentioned as *sirukudi* (small settlement, *Ahananuru*, 140: 1) and that of shell bangle makers as *ceris* (*Maduraikanchi*, 136). This emphasizes the settlement hierarchy and disparity in the economic prosperity of the settlements. The descriptions found in the literature reveal that the cities were the foci of a number of activities and that non-local traders were frequently present. From the allusions in the Sangam literature, clear distinction is also noticed in the life-ways of urban and rural settlements (Balasubramanian 1994: 29-33).

The growth in the number of settlements and the site hierarchy in the Early Historic period are clear indicators of population growth and varying population density at these settlements. The demographic increase cannot be attributed to external factors alone. Internal dynamics such as effective
application of iron technology and increased variety of crops and rice production in particular were critical to this development. Different types of settlements such as markets and ports, pastoral settlements and, hunter gatherer settlements were present. The urban centres were generally multifunctional, combining resource mobilization production, distribution and administration of resources, maintenance of civic amenities, etc. (e.g. Madurai). The interactions among the Tamil micro zones led to the formation of territorial divisions called nadus, controlled by chieftains from their settlements (mudur), which began to grow as commercial centres subsequently (Selvakumar 2008).

Movement of the people

The Sangam Literature refers to movement of people from one tinai (landscape) to another tinai in order to earn wealth, especially from kurinji (mountainous zone) and mullai (pastoral zone) to marutam (riverine zone) and neytal (coastal zone) where cities began to develop. The poems frequently mention about the hero being away in search of wealth, while the heroine was in deep distress in separation (e.g. Ahananuru, 123). The panans (bards) who were on movement to the courts of the chieftains
praising them for gifts are discussed in the *Arrupadai*. There are also references to people, who went to areas where foreign languages were spoken in search of wealth, and the belief that not traveling for earning will lead to poverty (*Ahananuru* 127: 17). The *Sirupanarrupadi* refers to itinerant merchants. These movements and interactions of people seem to have triggered for formation of urban centres at a few places. Migrations of traders from North India, Sri Lanka and neighboring regions also triggered maritime trade.

**Town Planning and Architecture**

The majority of urban settlements reveal evidence of brick structure (generally measuring 39-42 x 16-18 x 5-7 cm) and the architectural remains date back to 1st century BC. Remains of burnt bricks and roof tiles (triple grooves with double perforations) are commonly found at the sites datable mainly to the later phase (post-first century BC) of the Early Historic. Kaveripattinam has evidence for the earliest brick construction. The Early Tamil literature does give reference to large mansions, wide streets, markets and fortifications (*Maduraikanchi* 11, 18-20: 350-356; *Pattinapalai* 142-
Some of the cities had fortification with moats and ramparts (Suresh 1989 and Devakunjari 1979: 44-48) and early Madurai was a fortified town and there are also references in the literature to moats and ramparts in this city. However, so far archaeological excavations have not revealed no such monumental buildings but for the warehouse at Arikamedu. This is perhaps due to the lack of horizontal excavations. Arikamedu, the only extensively excavated site, has exposed drains, tanks and warehouses, and the orientation of the buildings at this site reveals a planned layout. Remains of a chaitya were found at Kanchipuram (Raman 1987). The material assemblage of certain ceramic forms, bricks, tiles, etc. found at sites such as Arikamedu, Kaveripumpattinam, Korkai and Pattanam shows pan-Indian similarity, and perhaps resulted due to external contacts (Selvakumar 2008).

Crafts and Craft Specialization

Archaeological and textual sources shed light on craft productions and craft specialization in ancient Tamilakam (Rajan, 2001). Among the crafts, iron smelting (Arulraj 2000; Srinivasan and Ranganathan, 2004), pottery making and stone bead making were perhaps well established in the Iron Age itself. Such specialized craftsmen had established settlements all over
the region to meet the widespread demand for their products. In the Early
Historic period, gem stone cutting, shell and glass bead industries were
prominent. Textile industry flourished as revealed by the evidence of spindle-
whorls, a piece of woven cloth from Kodumanal, and structures identified as
dyeing vat from Uraiyur and Arikamedu, and the reference to various types
of cloths in the Sangam and Greco-Roman literature. Perhaps the craftsmen
were concentrated in or near the urban centres or near the source of raw
material. According to Champakalakshmi (1996) fulltime craft
specialization was not established during the Iron Age. Details on nature of
the craftsmen and their organization, if any, like their counterparts of the
Deccan who had their own guilds (Ray 1985), are not available. However,
the reference to craftsmen with specific name and ceris (exclusive colonies)
of shell bangle makers mentioned in the Sangam literature points to their
prominence and are suggestive of existence of some kind of organization
among the craftsmen and perhaps full-time work in the urban areas. Distinct
references to goldsmiths and gold merchants indicates that craftsmen and
traders were separate communities.

Commodities produced from the crafts were internally consumed, as
revealed from the distribution of a variety gold ornaments, glass beads, shell
bangles and stone beads, in the settlements of interior Tamil Nadu, and as
evidenced by the literary sources (*Ahananuru* 125: 1). Definitely these commodities were also exported to other regions. Ptolemy’s reference to the cloth variety of Argartic is an evidence for the increased demand for such fine products outside Tamil Nadu. Thus the internal consumption and external trade appear to have facilitated fulltime specialization, especially in the post-first century BC scenario (Selvakumar 2008).
<table>
<thead>
<tr>
<th>Crafts</th>
<th>Type of Evidence and reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell working and</td>
<td>Arch: Shell bangle and waster fragments from pearl fishery archaeological sites (Begley et al., 1996) Lit: Ref. to shell cutters (Muduraikanchi 511-522), and pearly fishery (Athiyaman 2000)</td>
</tr>
<tr>
<td>Stone bead making &amp;</td>
<td>Arch: Glass beads in various stages of manufacturer (Kodumanal, Rajan, 1994, 2001) Lit: Ref to people who perforate beads (Maduraikanchi 511-522)</td>
</tr>
<tr>
<td>Gem cutting</td>
<td></td>
</tr>
<tr>
<td>Glass bead making</td>
<td>Arch: Bead wasters at Arikamedu (Francis 1987). Arch: Wooden artifacts from Arikamedu (Francis 1987). Ins: Ref to Tacchan, Carpenter (Mahadevan, 2003: 142) Lit: Ref. to different types boats &amp; woodworkers</td>
</tr>
<tr>
<td>Carpentry/woodWorking</td>
<td>Arch: Ceramics and terracotta from archaeological sites. Lit: Ref. to potters.</td>
</tr>
<tr>
<td>Iron working</td>
<td>Arch: Furnace, slag of iron from archaeological sites. Lit: Ref. to blacksmiths and their equipment in literature.</td>
</tr>
<tr>
<td>Textile Manufacture</td>
<td>Arch: Brick tank identified as dyeing vat at Uraiyr (Xaman, 1988); Spindle-Whorls; woven cotton fabric from Kodumanal (Rajan, 1994, 2001).</td>
</tr>
<tr>
<td>Gold working</td>
<td>Arch: Gold ornaments from Megaliths and habitation sites. Ins: Ponkolvan (gold trader) In Alagarmalai inscriptions; a touch stone (perumpadankal) in Khuan Luk Pat (Thailand); (Mahadevan, 2003: 142) Lit: Ref to Goldsmith (Muduraikanchi 511-522)</td>
</tr>
<tr>
<td>Bronze Working</td>
<td>High-tin bronze artifacts from megaliths and copper coins of the Sangam kings. Silver Working Silver rings with Tamil-Brahmi inscriptions</td>
</tr>
</tbody>
</table>

Ref: (Selvakumar 2008: 337-370) Arch: Archaeological, Ins: Inscriptional, Lit: Literary