

## **The story of Arikamedu**

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## **Chapter 1**

### **Introduction**

Arikamedu was an ancient industrial port city located in the South Eastern coast of India near Pondicherry city. Known to Greco Roman world as Poduk'e, the city of Arikamedu lay along the eastern bank of River Ariyankuppam near the mouth where it empties to Bay of Bengal. The city was a manufacturing hub of textiles particularly of Muslin clothes, fine terracotta objects, jewelries from beads of precious and semi precious stones, glass and gold. The city had an extensive glass bead manufacturing facilities and is considered as "mother of all bead centers" in the world. Most of their productions were aimed for export.

During its peak period, 100 BC to 100 AD, the city enjoyed extensive trade relations with Imperial Rome. The city was connected with several other cities in rest of India both by road and river. The raw material and finished goods were brought to Arikamedu for manufacturing and export. The harbor of Arikamedu used to receive ships from other ancient port cities such as Muziris and Anuradhapura for transshipment of goods to countries in South East Asia such as Indonesia, Thailand, China and rest of north Eastern part of India.

Archeological excavations since early 20<sup>th</sup> century brought out fascinating evidences of an urban settlement in Arikamedu. The city had two distinct yet related parts, south and North. The Northern part of the city, nearing the sea, was a harbor and believed to have a settlement of Yavanas, or people of Greco Roman origin. The southern part of the city was predominantly industrial and was lived by native people.

The city of Arikamedu has a unique claim of having a cultural continuity from 300 BC to 1800AD. Excepting a brief period, the urban settlement in Arikamedu was unbroken from Megalithic period to mediaeval periods to modern period. Though most of the excavated trenches have been refilled after the last excavation, ruins of an 18<sup>th</sup> century French Mission house in the archeological site stands testimony to this grand history of Arikamedu. The city of Arikamedu is widely considered as the referral point in south Indian ancient history. The archeological site was acquired in 2004 by Archeological survey of India.

#### **The name Arikamedu**

The city of Poduke was mentioned along with Poompuhar (Kaveripoom Pattinam) and Muziris in the Periplus Erythraean Sea, a navigational guide written by an anonymous Greek writer in 50 AD. According to the author the city was a major trading station for goods to Greco Roman world.

The name Arikamedu is evolved from a Tamil word Arikanmedu. Most of the government records and local Tamil population still use Arikanmedu. It is only among English and French speaking archeologists and historians the city is known as

Arikamedu. The archeologists who have excavated the ruins of the ancient city in mid 20th century called the site as Arikamedu, which literally means Eroding Mount.

Another popular story about Arikamedu is that the name has been derived from an ancient Tamil word Arugan. In classical Tamil works Arugan is mainly referred to Shramanas or people who followed Buddhist or Jain religion. A section of scholars thus consider Arikamedu as an abode of an ancient Buddhist or Jaina saint. A black stone image of Buddha located near the archeological site point to this possibility, something which requires more scientific research. Another section of population believe that the word Arikamedu has some relation with popular Hindu divinity Murugan. Unfortunately there is no consensus among the scholars about the origin of the word.

The city of Poduke did not found mention in classical Tamil literature such as Silapathikaram and Sangha Poems. The reason, as argued by many scholars, is that these literatures were written after the city of Poduke or Arikamedu achieved its glory during 1 BC to 1AD.

The authors of Tamil literature of the Sangam age have written about Indian trade with the West. In Tamil epic Silapathikaram by Elango Adikal, trading of expensive beads or Muthu is mentioned. Describing the city of Puhar (Poomphurar or Kaveripattinam) Elango wrote: "The sun shone over the terraces, over the warehouses near the turrets with windows like the eyes of deer". In Puhar the onlooker's attention was arrested by the houses of Yavanas (people from the Greco-Roman world), who's prosperity never waned. "At the harbor was to be seen sailors from distant lands, but to all appearance they lived as one community".

What is known about these ancient port cities in India are sourced primarily from classical Greco Roman writings such as the Periplus of the Erythraean Sea, and the writings of Ptolemy, Pliny and Strabo. With the total destruction of the Greco Roman libraries at Alexandria and Cleopatra, the Roman cities of ancient Egypt, even these sources became scarce. Fortunately, these limitations of literary sources for the reconstruction of the story of the ancient port city of Arikamedu was overcome by the fascinating job done by archeologists.

Thus this book is largely a summary of the archeological excavations and research done by various scholars since early 20<sup>th</sup> century. This book is intended to be a guidebook for general public who are not able to access the research publications on Arikamedu. Beginning with the summary of archeological excavations, the book covers some most interesting aspects of Arikamedu history such as the characteristics of the urban settlement in southern sector or the industrial part and the northern sector or the harbour, ancient Indo Roman trade, Periplus Erythraean Sea, Mediterranean amphora found in Arikamedu, unique Arikamedu terracotta known as Rouletted wares, textile industry for manufacturing Muslin clothes for export and finally the most important product of Arikamedu, the Beads. The appendix include list of Museums where Arikamedu artifacts has been collected with relevant maps and glossary.

## Chapter 2

### Archeological Excavations in Arikamedu

In modern times, the site of Arikamedu was first mentioned in the travel writings of a French astronomer Guillaume Le Gentil who visited Pondicherry in 1768-71. He recorded the presence of some ten foot high walls built with large tanks which were put together with mud mortar. He also recorded vestiges of walls exposed along the high river bank, which according to him, were originally at least 20 feet deep and four feet wide made from a series of earthenware vessels placed above each other.

In 1941 French archeologist G. Jouveau -Dubreuil visited the ancient site and identified it with the ancient city of Poduke Emporium, mentioned in the Periplus of the Erythraean Sea. This attracted the attention of French archeologists who subsequently excavated the site. But most of these excavations were unscientific and it was left to Sir Mortimer Wheeler to excavate the site in a scientific manner in the summer months of 1945. He called the site Arikamedu, the name local villagers used, which means eroding mount.

Wheeler's excavations established the presence of a port city. The City had two distinct yet related parts, North and South, where the Yavanas and the natives settled respectively. Wheeler argued that the Northern part of the city, which is closer to the ocean, was more harbor oriented whereas the southern part of the city was an industrial town.

The excavation revealed the layout of the city with structures such as warehouses, ring wells and tanks. Findings such as Arretine ware, Red Table ware, Mediterranean pottery sherds such as Amphora fragments, beads, and metallic objects have established that the city of Poduke or Arikamedu had maintained trade relations with Rome, which peaked in 100 BC to 100AD.

Wheeler also suggested that the city of Poduke or Arikamedu was a sleepy fishing village before the arrival of Greco Romans. The city became an industrial and port town during the Yavana period and after Romans left city fell back to oblivion. So according to Wheeler the history of the city of Poduke or Arikamedu was only 200 years old.

Three years after the publication of Wheelers report on Arikamedu in 1949 French archeologist Jean Marie Casal excavated the site rather extensively along with nearby sites such as Suttukeny and Kottaimedu. Casal's excavations established the period of trade between the Mediterranean and Arikamedu beyond 200AD. He observed that the presence of Black and Red ware potteries from the southern sector belong to a period well before the arrival of Mediterranean traders in Arikamedu. In his selective publication in 1949, Casal pointed out the possibility of having strong relations between Arikamedu with that of nearby Megalithic burial site Suttukeny, from where he excavated large quantities of Black and Red ware potteries as well as gold and diamond jewelries. He argued that the city had maintained manufacturing and port activities right up to the medieval periods. So the city was alive well after the Romans left and had

survived during Chola, Pallava and Vijayanagara rulers. Scores of medieval potteries, coins and other artifacts were excavated during Casal's excavations.

It took another four decades for the archeologists to turn their Attention again to this forgotten city of Poduke or Arikamedu. In 1989 -1992 Prof. Vimala Bagley and her team excavated the site extensively. Bagley and her colleagues' excavations and further research were published in two volumes by Ecole France de extreme Orient . They have arrived at the following conclusions;

Settlement in the southern sector dated perhaps from the 2nd century BC by people whose pottery relates to the Iron age ( megalithic) cultures of south India. The original settlers continued to live during the period of trade with the West, which seems to have been at its height between 50BC to 50 AD.

The north and south sectors were occupied by two different ethnic groups. Interactions between the occupants of the two sectors are reflected in the pottery they used. In both areas there were imported goods primarily from the Mediterranean such as Amphora wines, Olive oil, ceramic oil lamps, Sigillata sherds etc, and these were more used by people in the northern sector. Living quarters were found in the northern sector near the Port and there are ample evidence for settlement and overseas commerce with the East in medieval Chola and later times.

The site was once again settled in the 18th century when a Mission House was built for Jesuits priests by the local French government. The Jesuits used this facility for nearly two decades and later abandoned it. Thus the site of the ancient city became deserted and forgotten. The local people used fine Roman bricks from the site for various constructions.

In 2004, the Government of Pondicherry acquired the land from private owners and handed it over to the Archeological Survey of India (ASI) as a protected area and a national monument..

## **Chapter 3 ARIKAMEDU: Cultural Continuity from 300 BC to 1800 AD**

Arikamedu is one of the rare archeological sites in India where the excavators found a cultural continuity from 300 BC to 1800 AD. The continuity has been established by studying various artifacts such as terracotta objects, beads, fossils and other metallic objects found in and around Arikamedu. In the second volume of Arikamedu ancient Port city, Prof. Vimala Bagley reconstructed the cultural continuity of Arikamedu in Ten phases.

### **Phase 1 300BC to 200 BC**

The earliest settlement at Arikamedu pre dates the beginning of any known overseas trade. Remains of the occupation was first documented by Jean Marie Casal in the southern sector . The settlement is identified primarily on the basis of pottery. Casal observed that the pottery found in the southern sector had similarities with the megalithic potteries found in other sites such as Suttukeni

Pic. Redware Bowl with Graffiti writing, Suttukeny, 300BC,

Archeologists so far found no remains of any Megalithic burial sites in Arikamedu The only indications of any building activity in this phase were a few post-holes . Not much is known about this phase and it was considered a small settlement of fishermen.

The important find associated with this phase was sherd of coarse ware with an inscription in early Tamil Brahmi script . According to various scholars this evidence belongs to post Ashoka period, which could any time before second/first century BC.

Pic. Coarse ware with an inscription in early Tamil Brahmi script

### **Phase 2 200BC to 100 BC**

Phase 2 is intermediary phase or overlap period which is marked by the appearance of “roulette ware” in southern sector. During this period roulette ware and megalithic wares were used concurrently . But Mediterranean wares or amphora were not associated with this phase . The first ring wells appeared during this period. Also this phase is noticeable for the first use of bricks in the northern sector . From the available archeological data and findings, it is assumed that this period ranges any where between middle or end of second century BC to first century BC.

Rouletted ware pottery sherds , Arikamedu 100 BC – 100AD

### **Phase 3 100Bc to 50 BC**

This is a period of rapid development and in many ways the most significant stage in the history of Arikamedu. The first use of bricks probably dates back to this phase. Most importantly for the first time Amphora and other items of undoubtedly Mediterranean origins are encountered during this phase.

The dates for the beginning of this phase depend upon the dates of the earliest amphora found at the site. Though it is very difficult to predict the date on which the first amphora arrived at Arikamedu from the available evidences it is inferred that the first century BC is the period of Amphora. The end period of amphora is marked by the arrival of Sigallata.

In architecture two fragmentary brick walls, a floor and a ring well of Wheelers early phase belong to this period. The first appearance of clay roof tiles is also in this phase.

#### **Phase4** **50 BC to 50 AD (Sigallata Period)**

What distinguishes phase 3 from phase4 is the presence of Sigallata or Arretine ware called by Wheeler. This phase is the continuation of phase 3 except the presence of Sigallata. Since Sigallata is the most precisely dated among all the imports in Arikamedu this phase is the most securely dated.

The Sigallata pieces found in Arikamedu are small in size and were produced in different Italian workshops and even the eastern Mediterranean. The study of the Sigallata pieces excavated in Arikamedu by scholars reveals that the earliest piece of Sigallata must have arrived here on the middle of first century BC. The Sigallata period is generally considered to be from middle of first century BC to middle of first century AD. This phase also marks the beginning of construction activities both in south and northern sectors . Harbors built with wood, ware houses, storage houses and several architectures came up during the period . Also evidences of bead manufacturing in southern sector appeared during this period.

#### **Phase 5** **50 AD- 200AD**

Post Sigallata Period

The beginning of this phase is the middle of the first century AD and the end of this phase is second century. . Mediterranean amphora made its entry into Arikamedu during this period. Amphora related trade virtually came to an end. What caused the decline in this trade was the change in the pattern of trade and trade routes in the Mediterranean. But Arikamedu continue to prosper even after the end of this Mediterranean trade . The building activities in Arikamedu even increased after the collapse of the Roman trade .

From the available archeological evidences it appears that during phase 5 major changes were taking place at the site . Building activity in brick had increased considerably after phase 4 but some of the structures were destroyed and bricks were robbed even at the end of the phase 5. In pottery fine ware was not much in demand except roulette wares. In general quality of pottery deteriorated and forms and fabrics show few changes or innovations. During this phase there is a change in the population group or its needs. If we consider this evidence with the virtual stoppage of Mediterranean imports including

amphora it would seem that the change was related to the decline of the Mediterranean trade and perhaps the relocation of the traders to other locations.

#### **Phase 6**

##### **200 AD -600 AD**

Artifactual evidences slowly beginning to surface for continued settlement or resettlement past second century AD. The amphora fragments from a British Bii olive oil jar of the fifth century, part of a handle from a spatheion ( Small African amphora) Also of the fifth century and a small fragment from the handle of a late Roman Punic jar

Datable between the third and sixth centuries are the most compelling evidences found so far in Arikamedu to prove the continuity of occupation of the site .

#### **Phase 7**

##### **600AD – 1100AD**

Coarse ware potteries and beads produced during this period are abundant from this period

#### **Phase 8**

##### **1100-1500 AD**

The artifacts especially pottery found from various trenches have been identified to belong to this period. The pottery and beads never discontinued its production in Arikamedu . Artifacts which could be medieval are coins , Chinese and Islamic ceramic, coarse ware pottery, beads and wastes, few terracotta and few fragments of roof tiles, in addition some architectural features also attributed to this period. In local pottery several vessel forms can be identified such as spouts of water jars, cooking vessels and lids .

#### **Phase 9**

##### **1500 -1700 AD**

So far no identifiable evidence has been obtained for this period . the site could have been abandoned

#### **Phase 10**

##### **1700- 1800 AD**

Towards the end of the 18<sup>th</sup> century the site was briefly occupied . In 1771-3 a seminary and residence was built for the Jesuit missionaries who have been driven out from Siam. The seminary was abandoned in 1783 The ruins of the seminary still survives and is known as Mission House , which today is the only visible structure in the Arikamedu archeological site .

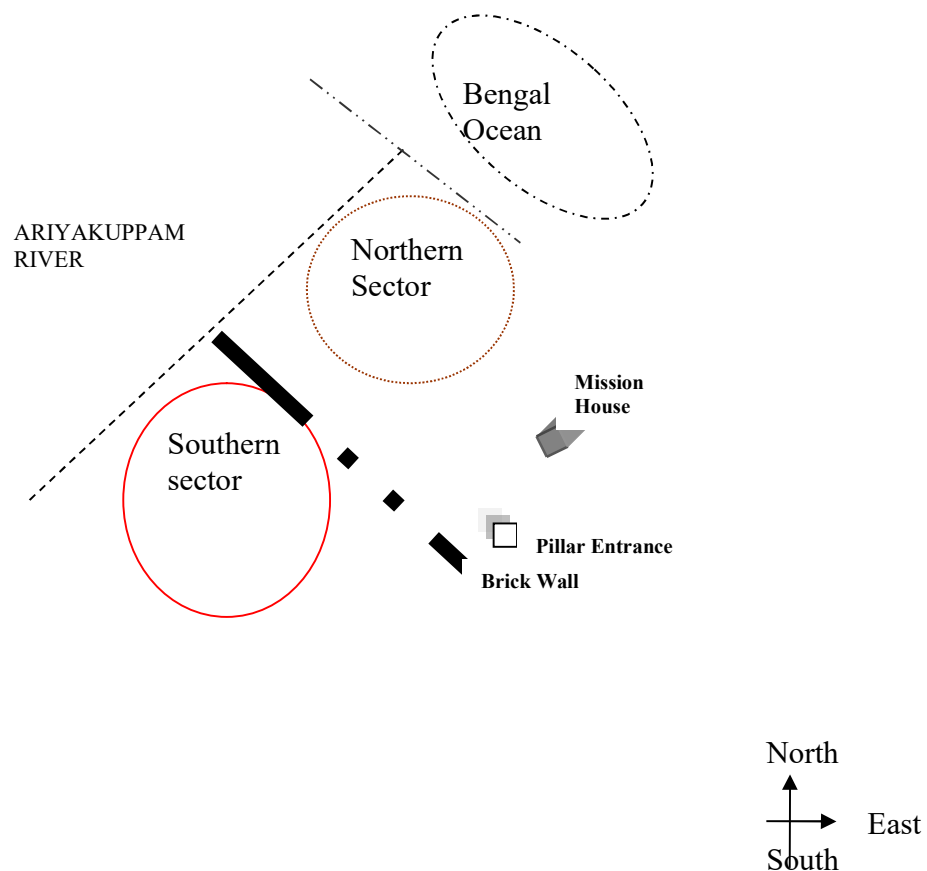


## Chapter 4

### Arikamedu Industrial Port City

#### Layout of the Settlement

From the early French excavators most of the archeologists considered the Arikamedu archeological site in to Northern and Southern sectors. From the architecture as interpreted by Archeologists it appears that Northern sector is generally regarded as Port Area and the Southern Industrial and Residential.



#### THE SOUTHERN SECTOR

The southern sector of the site which is far from the ocean front is considered to be the industrial area of the city where the inhabitants were mostly native population. From the excavated evidences it is argued by scholars that most of the industrial activities took place here. The raw materials for factories and manufactured goods for exports were

arrived in the southern sector from hinterland through Ariyankuppam River, which is connected with main River Gingee some 25 kilometers upstream.

Unlike today the drainage pattern of the Gingee river system was apparently somewhat different in ancient times. Today Ariyankuppam River is more like a brackish lagoon, the level of water in which varies according to the season. During the monsoon access to the sea is possible in catamarans and small boats but sand bars blocks the passage for any deep-water navigation.

But maps of 17<sup>th</sup> and 18<sup>th</sup> centuries and other records suggests that Ariyankuppam was navigable at its mouth ( Deloche 1980) N.For's map of 1750 indicates 12 brasses of water in the mouth of the river. A brass is equal to the length between outstretched arms.

### Textile dyeing Tanks

During the excavations, in the Southern sector, the most distinctive and recurring structural form was a small brick lined enclosure identified by earlier excavators as either a tank or a pit or a sink , depending upon the details of its form. The enclosures vary in size may or may not have drainage and some are noticeably battered. The best preserved example of a tank is near the river front in the extreme south , area R.S measuring 3.50m x 1.10m as the top interior tapering to 2.50 x 0.80 m at depth of 2.10m ( Casal 1949: 22) . The pit / sinks, on the other hand are square and smaller. The tanks seems to have built in pairs, for instance bac A and bac C.

Of all the excavated examples Tanks A and B in AK IV are the most elaborate and seem to have been placed within courtyards . These brick enclosures initially date from the period of "Indo-Roman" trade and probably renovated and used in later time.

As for function the enclosures identified as tanks have usually been considered as part of "textile dyeing" complex, originally proposed by Wheeler. Textiles have been considered as a major item of export from Arikamedu.

These tanks without paved floors or drainage outlets as identified by archeologists from Madras University (AV90- brick enclosures), which are similar in dimension and have no discoloration of the sand or soil. Such enclosures are found more in the Northern Sector. Functionally these tanks were "storage of industrial or agricultural products". The tanks in any event appear to have industrial function NOT domestic use.

### Walls

The most distinctive architectural feature in the industrial complex ( AKIV) in group II are the additional tanks and massive walls over 75m long traced in several trenches running diagonal to the river with its southern face finished for viewing ( Casal 1949: 24,28). Casal considered it to have been a "wall of a six meter wide water reservoir fitted with wells on the floor for the uninterrupted supply of water during the dry season". Wheeler suggests that these walls may rather have been a defensive revetment.

Along the northern wall of the reservoir remains of small scale, workshops working in metal , glass, semi precious stones , ivory and shell ( Casal 1949). Large chunks of raw glass sheets mica and other waste materials have been collected from here.

## CONTUNITY OF CULTURE

The continued use of Megalithic pottery in Casal's Group II suggests that the original population of Arikamedu was not displaced nor their culture obliterated with the commencement of overseas trade. If the "Graffito" on the Sigallata shred was indeed in Megalithic form of writing, it would further suggest cultural continuity through the first half of the first century AD.

## SIGILLATA SHREDS

In Trench ViB4 of group II remains of a shop or storage room with "in site" conical vessels on the floor were found.( similar conical vessels were found in Wheeler's AKI) . In Casal's trench ViB4 a shred of Terra Sigallata with a signature was also recovered; which Howard Comfort (1991:141) dates to 30 AD. On the exterior of the shreds is a graffito in what appears to be Megalithic form of writing. The presence of Sigillata, rouletted ware and megalithic pottery suggest that the Arikamedu industrial town was active in the first century BC and first half of the first century AD.

So far in south India, terra Sigallata is found only in Arikamedu It is assumed that the users of Sigallata were westerners residing at Arikamedu who imported for their own personal use. But if this graffito is in Megalithic writing and is the sign of ownership it would appear that some Sigallata was either sold or bartered or gifted to the local population who must have been affluent or important enough to own it. The users of Sigallata probably lived in the "warehouse area" of the Northern sector where the remaining shreds were recovered.

(Sigallata: Impressed with seal. Pottery decorations with impressed marks.

Sigillation: impressions with seal or stamp

Sigillaria: Large tree like fossil lycopod, marked with rows of scars resembling the impressions of a seal)

## RESIDENCE

The highly fragmentary section of the Terra Sigallata and morphology of numerous other pottery forms from the southern sector indicate that "some space in the Southern sector was for the residential purposes". The possibility remains that "the residents were interspersed with the industrial and market places as is quite common in contemporary towns".

## THE NORTHERN SECTOR

The northern sector has always been regarded or identified as the area where port facilities were located. Wheeler excavated walls of a brick structure, which could have been a “warehouse” (size 50m in length). According to Wheeler this structure date back from AD 25 or slightly later in the second quarter of the first century. It represented “Port Facilities” when most of the Sigillata and amphora were imported. The early port facilities were timber constructions since cut timber, rope and other objects were found by Wheeler.

## POTTERY

Although the so called Rouletted ware is present all along and so are other fine sherds , over 90% of Pottery belongs to a grayish brown coarse ware with white/ gray slip and a variety of forms from incurved dishes and bowls to large jars.

The grayish brown coarse ware of the Northern sector is very different from the so called Megalithic pottery of the southern sector in fabric , technology and morphology. The users of grayish coarse ware pottery appear to be the earliest known settlers of the northern sector and associated with the settlement are the first Mediterranean imports brought either by them or to them by other traders.

The pottery was extensively used in the northern sector and the adjacent space. The forms range from storage jars to cooking vessels with carbon residue on the exterior to fine ‘table ware’ dishes and bowls.

In the northern sector although mainly a port area some space were also used for living by merchants / sailors. The range in “Table wares” from coarse to fine in addition to imports may suggest social/ economical stratification.

The spatial distribution of Amphora shreds within the site indicates that a fairly large quantity comes from the northern part of the site. Many users of the products shipped in Arikamedu wine, Garum Sauce, or Olive oil must have been used.

There was an industrial waste dumping ground for shells and semi precious stones were also found in the northern sector. This suggests that there were some small scale industries in the northern sector.

## PAZZOLANA CEMENT

Elizabeth Lyding Will’s study at Arikamedu excavated patches of water resistant Pazzolana cement, which was used by Romans in the construction of under water installations. This indicates that Roman merchants had a role in the construction of Port facilities at Arikamedu.

## REMAINS OF THE MEDIEVAL PERIOD

There is considerable evidence to suggest that the site occupied during medieval Chola times ca 10 AD. Finds of Chola coins, celadon pottery and other East Asian glazed ceramics suggest occupation of the site and some involvement in the medieval East West maritime trade .

Numerous medieval Chola coins have been recovered from the site . Wicked lamps at many museums including Aurobindo Ashram Library indicate that Arikamedu was occupied by Chola and Pal lava rulers.

## MODERN PERIOD

In 1771-73 a missionary (monseigneur) Pigneau de Behaine, designated Bishop of Adran built a seminary and residence on the eastern part of the mound for the Jesuit missionaries driven out of Siam. The seminary abandoned in 1783. The ruin of the seminary is known as Mission House. What survive today are two pillars of the portal/entrance, a small brick structure to their west and a wall of the interior with six (6) arches.

## **Chapter 5**

### **Ancient Trade of Arikamedu /Indo Roman Trade**

The Roman ships during the reign of Emperor Augustus used to sail to India with expensive commodities . The classical Greek historian and geographer Strabo mentioned about the ships trading in the Roman Egyptian ports of Alexandria, Cleopatra, Bernice, Myos Hormus. The Roman used peculiar technology to built strong vessels so that the sailors could cross Arabia and Indian Ocean during deadly South West Monsoon. The ships normally leaves in July and arrived in ports of Muziris (Kerala), Barygoza( Surat) and Sindh in three months time. The ships sailed from Muziris via Sethusamudram or around Sri Lanka touching ancient port of Anuradhapura and arrived in Poduke or Arikamedu on the South Eastern Coast of India.

With the decline and eventual collapse of the Roman Empire by 4<sup>th</sup> century AD, the trading and manufacturing activities of the city also had gone down substantially. But contrary to the earlier believes the city of Arikamedu continued to exist and thrive throughout the medieval period. Arikamedu continued to be a trading port for the ships arriving from Roman world as well from China, Thailand, Indonesia. The terracotta objects unearthed from the site points to the fact that the city was populated right up to 16<sup>th</sup> century. Medieval coins belong to Chola, Pallava and right up Vijayanagara rule were unearthed from Arikamedu sites by different excavators.

This trade was NOT organized on lines like those of the European ‘factories’ established in India from 16<sup>th</sup> century .The Periplus of the Erythraean Sea ( AD 60-100) and Ptolemy ( AD150-) fairly described it as treaty-ports.

Under these treaties “permanent lodges of Western traders were settled in Indian ports under formal agreement with the appropriate Indian ruler and were visited at the proper seasons by convoys of deep- sea merchantmen.

The literary sources on Indo-Roman trade acknowledges the fact that the ships sailed from Myos Homos, on of the most important harbour ports in the Red Sea during the Roman rule of Egypt to Indian port cities for trade.

#### **IMPORTS TO ARIKAMEDU**

1. Mediterranean Wines in Amphora Jars
2. Cups and Plates of Terra Sigillata
3. Ceramic Lamps
4. Unguentaria ( Vessel for holding perfumed oil or unguen)
5. Blue glazed Faience ( Tin glazed or decorated earthen ware or pottery originally made in Faenza in Italy)
6. Glass Bowls
7. Gems
8. Olive Oil
9. Olive products
10. Garum Sauce in Spanish Jars.

## WHO WERE THE CUSTOMERS?

“If the graffito on the piece from the Musee Guimet ( Paris) is in an Iron age form of making an is a sign of ownership , some users of Sigillata at Arikamedu may have been from Tamil society”

The Periplus mentions that wine was exported to Indian market ( DME 49.56)

Reference on Yavanas or Westerners in Tamil literature ( Puram 50 Volume 16:21 from Zvelebil:402) “ having increased the joy by giving to the girls of shining bangles , who every day have taken in hands vessels beautified by gold to drink the cool fragrant wine brought by Yavanas in beautiful bowls”. Therefore the customers of these imported products from Meditteranean were rich local population as well as those Yavanas settled in the city.

## EXPORTS FROM ARIKAMEDU

1. Textiles
2. Beads of semi precious stones, glass, plant and Gems
3. Bangles from shell
4. Spices

## IDENTITY OF TRADERS & REGULATIONS OF TRADE AT ARIKAMEDU

The overseas trade was initiated and controlled by Roman subjects. Greco- Roman involvement in the trade is almost certain from the findings . Furthermore, pottery suggests that some westerners may have resided at Arikamedu on a long terms basis.

From the finds it is difficult to gauge what was the strength of the western population might have been at any time ; or what role westerners had in the trade.

From the Pazzolana cement it can be inferred that Roman subjects had a role in the building of Port city. But it is apparent that the architecture of Arikamedu is not Greco Roman.

The imported pottery, including Amphora forms a mere fraction of one percent of the pottery at the site and even pottery, which seem to evolve from western prototypes is limited amount.

The imports and derivatives from imports reflects the presence , perhaps needs of westerners but not a larger scale.

## THE WESTERNERS IN ARIKAMEDU WERE MIDDLE MEN?

On the basis of Periplus, Lionel Casson in several of his recent publications proposed that western ships did not, at least on a regular basis, sail to the East Coast of India. The merchants from Rome and Egypt bought eastern products from Malabar. The forwarding of merchandise between the two coasts were in local vessels (Casson 1989.16 n 24:25). In order to reconcile the evidence of Western residents in Arikamedu and Kaveripattinam with that of Periplus, Casson suggests that westerners residing on the east coast were chiefly middle men engaged in forwarding goods to their associate on the Malabar coast and not all the way to Egypt. But the obvious question is that if the western merchant could procure goods from Malabar ports why would they reside at Eastern Coast Arikamedu which is quite far?

## TRADE WITH THE EASTERN COUNTRIES (SOUTH EAST ASIA)

The eastern coastal trade networks suggest that Coramandel sailors were navigating in the waters of the bay of Bengal through Palk straits and around the Adams Bridge. They were quite likely sailing to the Malabar coast as well. Archeological evidences strongly suggests that the sailors from Coramandel coast ventured out to sail in the open sea. The excavations and the studies in Bali (Indonesia) strongly indicate the uniformity in material design and pattern of pottery between the two regions.



## **Chapter 6**

### **Periplus a Handbook for the sailors**

Periplus Maris Erythraea is a handbook , in Greek, for the merchants and skippers of Roman Egypt who carried on trade with the various ports in those waters of India. It is probably the work of the navigators from Greece or Roman Egypt, for it is written in unvarnished business man's language and clearly based on first hand experience . There has been much scholarly wrangling over the date , but the surest clue points unmistakably to the middle decades of the first century.

At the time of the Periplus the ports that served as starting point for vessels leaving Egypt for India were Myos Hormus and Bernice. Goods to be exported were shipped up the Nile to Coptos and then brought by Camel or donkey across the desert to one of the ports. From either ports ships sailed straight down to Red sea to the Arabian port Mouza , just north of the strait of Babel- Mandeb or to the port of Okelis on the strait itself; they then followed the coast along the Southern Arabian shore as far as Karie. From there one branch took off for the parts of north west India and another for those of south west India. An alternate route to south India probably used by skippers who worked on the northern coast of Somalia took off from Cape Guedafai.

#### **Proper time for Sailing**

The proper time to leave Egypt for India according to the Periplus would in July. This would enable the navigators to

1. Sail down the Red Sea with the northern wind that prevails over that body water during the summer.
2. Sail through the gulf of Aden with the South west monsoon
3. Sail with the same monsoon, as specifically counseled by Periplus ,a cross the Arabian Sea or western India ocean to India. The return could be scheduled for anytime after the beginning of November, when the north East monsoon provides favorable winds right up to the entrance of the Red Sea.

Departure from Egypt in July as recommended by the Periplus would bring a ship into the open waters of the Arabian Sea or western Indian Ocean just when the south west monsoon was its height . The wind velocity during this season averages 22-33 knots and frequently rises to the gale force ( 34-47 Knots).

As the Periplus wrote “crossing with these ( south west monsoon winds) is hard going but absolutely favorable and shorter. The departure date together with swift crossing , resulted in the arrival off the Indian coast in September or early October when the tapering off of the south west monsoon , the coast is once again open to maritime activity.

Such an arrival also leaves a comfortable time before the onset of the north east monsoon brings in contrary winds. By November that monsoon is well set in, so any skipper who had managed a quick turn around could shove off for home and thus be back in Egypt in well under a year from the time he left Egypt.

The Arab sailors never preferred this time for the year for sailing to India. They avoided both North West and south west monsoon for smoother and calmer periods.

### **Arab ships were small**

The hulls of the ships used by Arabs were NOT strong enough nor their rig NOT fitted for the blustery blasts of the south west monsoon. These shortcomings prevented the Arabs from venturing out to the open sea during South west monsoon season, when the ships from Roman Egypt sailed to India.

### **Roman Egyptian ships were strong**

The ships used for sailing to India by Roman Egyptians were of superior in quality and strength. The hulls were supremely strong, for they were built in the very special fashion that was the hallmark of the ancient shipwrights, one that resembles more cabinet work than carpentry.

### **Ancient Shipwright of the West**

The traditional method in the west of putting together a wooden hull starts with the setting up of a skeleton – a spine of Keel , stem post and stern post and a cage of ribs (9 or frames) to which there is then fastened a skin of planks . the ancients reversed the procedure.

They first put together the skin , joining the planks edge to edge to build up as it were , a wooden shell; this itself is not an exceptional , for ship builders in many parts of the world. Have followed this method and still do.

What is exceptional about Ancients?

Is the way they joined the planks to each other; they locked them together not by casual joinery but by thousands of closely set mortise and tenon joints

(Tenon: A projection on the end or side of a piece of wood or to other material made to fit into a corresponding cavity, especially a mortise.)

They then transixed each joints with dowels to ensure its never coming apart. And lastly into the shell thus created , they inserted a complete set of frames , at times as strong as that in the ships of later ages made with a precreated skeleton. The result was a hull that was absolutely staunch and incredibly strong.

They fitted these hulls with a conservative rig, one designed first and foremost for safety and NOT for speed, and equipped with the ancient Special systems for shortening sail, which was for safer and more effective than that favored in the western world until the present century .

### **Roman Egyptian Ships were Big in size**

Only big ships dared to use the south west monsoon over open waters. The vessels that piled between Alexandria and Rome carrying Egyptian grain could run up to 180 feet in length and over a thousand tones in burden.

The Indian goods that attracted the Western traders were NOT bulky and cheap commodities but compact and costly commodities. Silk , fine cottons , pepper, costus , nard, spikenard, and similar items. A Roman merchant man of no more than moderate size when fully loaded with cargo of such goods represented a monumental investment. Such huge cargoes were jointly owned by a team of merchants each chartering a given amount of space in the hold, which means these merchants had to have plenty of capital or command the credit to borrow plenty of it.

A shipment from Alexandria involved somewhere between 700 to 1700 pounds of Nard , over 4700 ivory, and almost 790 of textiles . The total value was about 131 talents , a mighty sum , one that could have purchased almost 2400 acres of Egypt's best farmland. Yet this represents a merely one consignment , a meager portion of a cargo owned by a single merchant / partnership.

The finds at Arikamedu and other sites make it absolutely certain that Roamn Egyptians did trade with East coast of India or Coramandel coast .

It seems to have been Indian rather Western craft that handled the East coast's trade that carried its goods to west coast ports and returned with goods from these ports including the imports fro Roman Egypt .

The archeological finds at Arikamedu point to the presence of a foreign colony ( Wheeler) , a group of Western merchants permanently lived in the Northern Sector( Vimala) If so, the objects of trade they dealt in , both import and exports were transported in the ships of their hosts than their country men.

For Periplus in referring to the Eastern ports , “ these put into them vessels which sail out of both Limryke ( Malabar coast) and the North ( Ganga delta or perhaps Burma) ; “ in them are local ( east coast) craft that follow the coast as far as Limryke , as well as others , made out of very big dugout canoes held together by yoke called SANGRA” This must have had an important effect on the nature of the their business , making it considerably different from that of the merchants at Muziris. Or elsewhere on the western coast.

They received shipments of western goods , en bloc once a year in September or October. Since the wind a pattern of the bay of Bengal was /is not rigid like Malabar coast the merchants from eastern coast cold trade between the coasts through the year easily .

## **Chapter 7**

### **Mediterranean Shipping Amphora from Arikamedu**

From at least as far west as the Canary islands to least as far east as the Bay of Bengal , Roman ships during the late Republic and the early empire carried the objects of trade that were the basis of Roman economy. Shipping amphoras , the chief commercial containers used by the Romans are the most important material evidence of that trade.

Roman Greece , the Istrian peninsula, Campania and Roman Spain stand out as the export areas with closest ties to the Indian trade.

#### Literary evidences

Strabo ( XVII.1.13) wrote about Romans dispatching large commercial fleets to India in the Augustan period . Pliny the Elder lamented that the annual loss of 550 million sesterces apparently in cash to the Indian trade.

#### Material Evidences

The amphoras and the other material evidences such as Roman coins found in India points to this Indo Roman trade.

The Greek and Roman amphora fragments found at Arikamedu and at several other sites on the south east coast of India provide tangible proof that from as early as the second century BC to as late as the first century AD , Roman ships were making long and dangerous trip to India with wine, olive oil and popular fish sauce – garum. Many of them were headed for Arikamedu or Poduke . More amphora fragments found in Arikamedu than any other sites in India clearly show that Arikamedu was the favourite destination of the Greco roman trade.

Many of the amphora fragments found at Arikamedu are covered with pieces of cement resembling Roman Pazzolana. Like similar finds in the ports in Italy , these cement covered fragments suggest that the amphoras had been broken after being emptied and the fragments then reused as building material in such underwater installations such as wharves, piers and jetties. Pazzolana was impervious to water and presumably the Romans would have brought it to India from Italy with the intention of making the harbor at Arikamedu/ Poduke accessible to their large ocean –going cargo ships.

Here the ships could leave their cargoes of amphoras full of exotic wine, olive oil, , garum and dishes and mercenaries for the Tamil Kings . The ships left the shores with pepper, spices, rare woods, silk, jewels, and many other valuable items.

Study of the amphora fragment found at Arikamedu reveal that the chief Roman product that Arikamedu consumed was the wine .Two thirds of the amphora fragments found at Arikamedu during 1945-50 excavations came from wine jars Initially wine came from Roman Greece especially from Kos. In the accompanying years Koan amphoras

originated from Campania in the area of Pompeii and Rhodian amphoras also found their way to Arikamedu. Amphoras from these places are distinct in their appearance.

In addition to wine jars several fragments of jars for olive oil were also found at Arikamedu. These jars were manufactured primarily in the Istrian peninsula and probably northern Italy as well as containers for the famous Istrian Olive oil .

The category amphora dates mainly from the Augustus period but survived until the end of first century AD

Another product that Arikamedu imported was Garum. Manufactured in Spain these Garum amphora are easily recognizable from their shape. This type of jars , datable to the first century AD , is known on solid grounds to have been a shipping container for fruit especially for apples. Of the city of Cumae. The garum amphora found in Arikamedu was thickly coated on their inner surfaces with a yellowish substance in which numerous fish shells and outlines of fish shells can be seen . This same substance often found inside garum amphora . These garum jars originally manufactured as fruit containers were later reused as garum for fish sauce.

A picture emerges from the study of the amphora , of course , of active importation of Mediterranean products at Arikamedu from as early as the second century BC to the latter first century AD . A few stray pieces may be of later date. The Greek islands seem to have dominated the Indian trade initially and then to have come the Campania, Istrian, and southern Spain.

From the latter areas would have come the products carried by Strabo's large commercial fleets. . By the time of publication of Pliny's Natural history less Mediterranean products , more Roman coins were being sent to India

## Chapter 8

### ARIKAMEDU POTTERY

Before Vimala Bagley's excavations it was assumed that all the pottery at Arikamedu excavations are of ancient origin. Mortimer Wheeler argued that "southern sector represents an essentially red-ware culture which contrasts with the gray-ware culture of the Northern sector. The transition from gray to red was achieved by slow stages which were all traversed in the Northern sector, so that the monopoly of red ware in the southern sector does not indicate a cultural intrusion there.

#### POTTERIES FROM THE NORTHERN SECTOR

The pottery from most loci (trenches) has lost much of its contextual significance for refining ceramic chronologies or dating the loci with which it is associated because of robber trenches, dumps and secondary deposits. But the study team could locate some undisturbed trenches.

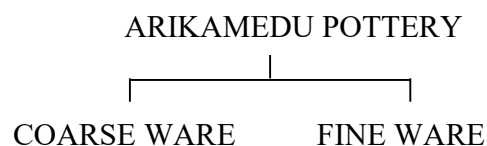
An important feature regarding pottery making in Arikamedu is that the basic forms in use in the Pondicherry area have not changed over the centuries and the source of the raw material are also likely to have been the same for pottery produced in the region during ancient and medieval times. The changes from ancient to modern times are either due to advance in technologies, changing needs of the consumers of the pottery and occasionally style.

Although dishes and bowls have been replaced by metal ones in contemporary households large storage jars, troughs, thick heavy basins, small portable ovens, *carinated* cooking vessels and globular water jars with restricted orifices are still manufactured and used and have retained their basic form from ca first centuries to modern times.

The source of the raw material clay are in the Gingee river drainage region and the red ochre used for a slip or wash on most pottery is usually from the *lateritic* red soil area particularly of Gaurimedu.

#Unfortunately no permission been granted by ASI to send samples for laboratory analysis no petrological or chemical analysis of the clay or clips could be undertaken.

Since the properties of the clay or paste have not been analyzed generally no distinction is made between the two; clays are described as fine or coarse depending upon whether particles or sand / rock or other non-plastic inclusions ( simply called inclusions in the descriptions) are visible in the cross section of the wall or on the surfaces.



The intention of classification of Arikamedu Pottery was to

1. Whether certain clusters of vessel forms could be considered as products of a single or a specific workshop.
2. Which vessel forms were produced in more than one fabric.
3. Whether change of fabric was related to change in date or source of manufacture

#### Coarse Ware1

The main characteristics of this coarse ware are that the inclusions are visible to the naked eye. They are small in size and generally white or gray tiny specks of mica almost always visible. The surfaces are slipped, moderately lustrous, frequently glazing of the slip occurs and is visible to naked eye.

#### Coarse Ware2

Most of the Arikamedu pottery belong to the category of Coarse ware 2. The pottery of this group have inclusions 1mm – 2mm clearly visible in the cross section of the wall or on the surfaces; these are varied in color ranging from white or gray to dark brown or brownish black. These potteries further classified into ancient or medieval.

The ancient coarse ware has two distinctive slips a white/ gray slip, possibly kaolin and a red slip believed to be hematite; both slips are poorly bonded to the vessel surface.

The medieval coarse wares are more complex and ornate in forms. The body shreds of this group are weak and break easily and the walls of the border and base are thinner than those of the ancient coarse wares.

They appeared to have been formed by hammering with a paddle, a practice widely prevalent in Pondicherry area today, especially for shaping the bottom portions of the water jars and cooking pots. Surfaces are rough with inclusions protruding. There are also differences in the color of the surfaces and cross sections of the walls, possibly reflecting different firing methods.

#### Coarse ware 3

The clay/ paste of coarse ware 3 has many relatively larger inclusions CA 2mm or more in diameter occasionally rice husk or coconut fiber is added to the paste. Hand formed thick body-vessel, ovens and roof-tiles were generally made in coarse ware3.

### FINE WARE POTTERY

#### Fine ware 1

In Fine ware 1, the clay is fine textured and usually only tiny specks of mica are visible but exceptions with inclusions similar to coarse ware1A also exist. Surface appears to be slipped and smooth and occasionally lustrous as well. The slip on the interior surface frequently appears to be thicker; this seems to be due to smudging at the time of firing.

The forms which could be identified definitely are dishes with inverted rims, rouletted ware, bowls and cessionary jars.

#### Fine ware2

The clay / paste is also fine to very textured and tiny specks of mica and visible. Surfaces are invariably smooth but matted; they are either unsliped or a thin clay slip is applied and the interior surface is not smudged. The forms are dishes with inverted rims , rouletted dish and occasionally small jars.

#### Fineware3

The texture of the clay is very fine with tiny specks of mica. Walls are compact and surfaces are smooth but usually unsliped and matted. The surfaces and the body are evenly fired gray or light gray instead of the uneven coloration typical of fine ware 2. the known forms are narrow necked jars , dishes and lids.

#### Fine ware4

The clay is fine to very fine textured with tiny specks of mica. The surfaces are smooth but unsliped and matted. The forms are bowls and jars which are frequently footed.

#### Fine ware5

It is also made from fine textured clay but has a higher content of mica and brownish inclusions in the paste, visible but not protruding from the surfaces. It is brittle and often thick bodied. The surfaces are unsliped reddish yellow on the exterior and gray on the interior. The shreds recovered are from the body of vessels, so no shapes could be reconstructed.

### DECORATED POTTERY SHERDS

Painting as a method of decoration is rare is occasionally post fired and is limited to sherds of coarse ware. Since painted decoration is rare in Arikamedu, the few sherds that the excavators found were either produced for very special occasions or were brought from elsewhere. The present day pottery in the area is unpainted, but occasionally a couple of jars are painted (either before or after, mostly after) for use in wedding, funerals or other rituals.

Most of the decoration on pottery is either incised or impressed and with the exception of rouletting or chattering. The method of decoration is simple and mechanical.

### ROULETTED WARES

The term rouletted ware was devised by Sir Mortimer wheeler and colleagues in 1945 to describe a distinctive type of decorated pottery found in Arikamedu . Since the method of decoration is obviously similar to the rouletting found in Greek, Hellenistic and Roman ceramic wares and since the site also contained Mediterranean amphoras and some terra Sigallata , the excavators concluded that Rouletted ware must have been derived from the Classical period.



Wheeler even argued that many of the best or finer pieces of these potteries were imported from Greek not of local origin. But these two assumptions of the earlier archeologists have been contested through new findings and evidences and it is now evident that these potteries are of native origin and the rouletting might have some influence with the Greek or Roma potteries of the same nature .

What is rouletted ware ?

What is commonly known as rouletted ware is actually a dish with a thick incurved rim contiguous body and base without any foot smooth , lustrous surface showing a variety of colours and indented decoration on the inner surface of the base.

Majority of the pottery excavated at Arikamedu belong to fine ware and a few coarse ware potteries belong to later years. The fine are, as a general rule , was made from well levigated clay and in a few instances tiny particles of mica can be seen , but the component of the past and their sources have yet to be identified. The pottery is wheel turned as the uniformity of shapes indicates.

From the available evidences it can be argued that rouletted dishes were ca 5.5 cm high with a maximum diameter of 24-32 cm . There are slight variations in the curve of the body and rim . but the most outstanding feature of the form is the contrast in the thickness at the rim and base. The majority of dishes found by Wheeler are 1.0-1.2 cm thick at the rim , tapering to 0.7 to 0.9 cm below the rim and with a few exceptions 03. to 04. cm at the base.

The incurved rim is frequently beaked and faceted on the inside . the lip is usually trimmed straight possibly with a sharp knife .

The shape and thickness of the rim appear to have been functional, allowing strong grip on a dish which has a thin base and no handle or foot. It was the most distinctive type of table ware .

It is significant to note that many pieces of rouletted wares bear graffiti marks in Tamil Brahmi script appear to refer to the owner of the dish . The first reads “The Akal ( Tamil word for wide mouth pot) of Mutikuluran and other reads “ The pati ( prakriti fro vessel?) of yadu Valabhuti Both graffiti simply that the owners these wares were Indians

#### Surface Treatment and Firing

On the basis of the colour combinations on the interior and exterior surfaces two varieties of fine Rouletted ware can be distinguished . In the first variety , the interior surface and approximately half of the lip is black, while the rest of the lip and 20-25 cm of the contiguous exterior surface is brown and the base black. Occasionally the brown is quite light or even gray. The core is dark gray , except for a thin brown section along the exterior brown surface as well as part of the lip is fired to shades of gray

Dishes of what is commonly known as rouletted are the most extensively distributed of all types of pottery found at Arikamedu.

The distribution of rouletted wares shows that the pottery or its technology was extensively traded from some point of original manufacturing center. It also appears that one network on which rouletted wares traveled all along the eastern sea board including Sri Lanka , the other networks interconnected with the interior.

#### Bowl with stamped Figurative Motifs

This bowl which is widely seen and distributed along Arikamedu has been identified at Chandraketugarh, Karaikadu ( Kudikadu) and Alagankulam on the Indian main land and at Kantaroda and Anirudhapura in Sri Lanka and overseas in Bali . Most of the rouletted wares were appear as rim profiles. The letters are in Tamil – Brahmi scripts.

#### Rouletted wares found

- I. INDIA
  - a. Chandraketugarh
  - b. Tamluk
  - c. Sisupalagarh
  - d. Kalingapatnam
  - e. Amaravati
  - f. Kanchipuram
  - g. Puliparakovil
  - h. Vasarasamudram
  - i. Arikamedu
  - j. Karaikamedu
  - k. Kaveripattanam
  - l. Ayodhya
  - m. Raj Ghat
  - n. Nasik
  - o. Ter
  - p. Kondapur
  - q. Sattanikotta
  - r. Chandravali
- II. Sri Lanka
  - a. Kantaradi
  - b. Manta
  - c. Anuradhapuram

## Chapter 9

### Arikamedu Beads