Pattanam Represents the Ancient Urban Periyar River Valley Culture: 9th Season Excavation Report (2014 - 15)

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***Abstract**: The paper attempts to give an overview of the Pattanam research since 2007 with a focus on the excavation procedures of the 9th season (2015). The Pattanam research may be approached as a "barefoot archaeology" initiative evolving into a multi-prong project in interdisciplinary archaeology or material cultural studies. The main points discussed include the Pattanam vision and research design, excavation objectives, procedures and methodology. Then the effort is to focus on the major finds of the season in the backdrop of the Pattanam data-base from 2007 onwards. The major argument the paper attempts to put forward is the need to engage Pattanam as part of the larger Periyar river valley culture rather than an isolated archaeological site. The evidences further prove how Pattanam was an integral part of the 2nd urbanisation wave that swept across the Indian Ocean, Red Sea and Mediterranean during the early historic period (5th c BCE to 5th c CE).*

Keywords: Pattanam, Periyar River Valley Culture, Excavation, Stratigraphy, Indian Ocean, Early Historic Period, Green Archaeology

Introduction

The overall objective of the Pattanam archaeological research is to illuminate the site; explicate its historical context and web of relationships following advanced research methods and practices.

Vision

The vision of the KCHR is the promotion of scientific practices with human face.

Pattanam Research Design

- Multi-inter and trans disciplinary Excavations and explorations
- Post excavation studies
- National and International academic collaborations
- Digital database of Pattanam archaeological record
- Site conservation with community participation
- Site interpretation centres and imaginarium

- Green Archaeology Project
- Multi-purpose archaeo-science laboratory
- A model archaeological park (World Heritage Status)
- Indian Institute of Archaeology (Deemed University for material culture studies)

The objectives of Pattanam Excavations/Explorations 2014–'15

- To refine the present understanding of the cultural sequence of the Pattanam site.
- To explore the spatial organization of the urban settlement.
- The Iron Age-Early Historic transition period which witnessed the entry of Europeans and West Asians, requires closer study in terms of chronology and local-non local interfaces.
- To investigate the natural features of the site and to reconstruct its paleo-environment.
- To understand the connection between the legendary port of Muziris and the Pattanam site.
- To study the overseas, coastal and inland trade networks that intersected at Pattanam and the trade dynamics.
- To understand the state and polity of the region.
- To study the layout of the ancient port town, its industrial output and technological legacy.
- To conserve the site as a model site.
- To continue the exploratory survey of the area surrounding Pattanam to locate other Early Historic satellite settlements, burial sites or archaeological remains.

Excavation Procedures

The pre-excavation preparation starts with the submission of application for license to the Archaeological Survey of India (ASI). For this season, KCHR received the license in March 2015. Being busy with the establishment of the Indian Institute of Archaeology (IndIA/IIA) and the starting of the one year PG Diploma Course in Archaeology at Pattanam, the excavations were conducted from 12th March 2015. Other than the objectives mentioned above, this excavation was also a practical training for the IndIA PG Diploma students. The excavation was confined to a single trench in the season 2014-15. The most ideal place seemed to be the compound of the Pattanam camp office-a rented facility. We are thankful to the family of late Shri. Jacob Mazhuvancherril, who gladly gave permission for excavation. The student volunteers, interns and unskilled workers were trained as archaeology researchers and specific responsibilities were assigned to each in the excavation procedures.

Trenches and Locations

So far KCHR has excavated sixty one trenches and that is less than 1 percent of the total extent of the Pattanam mound which is presumed to be circa 111 acres. The locations of all the excavated trenches (Fig. 1) till 2015, GPS co-ordinates and list of trench supervisors are presented in Table 1.

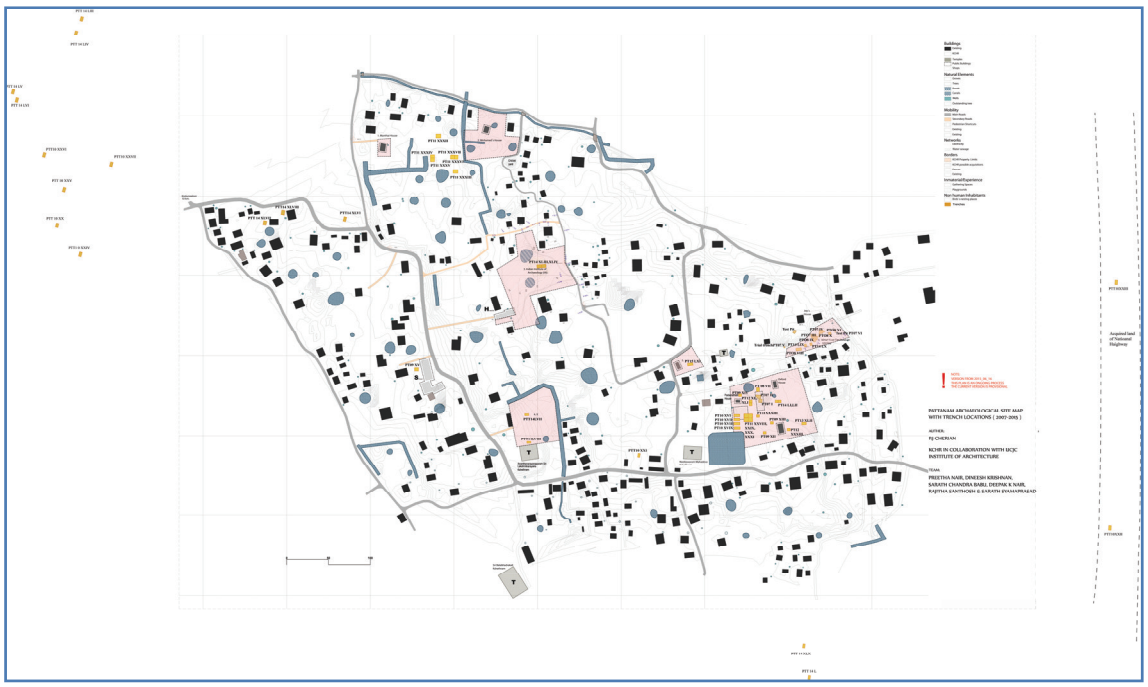

Figure 1: Pattanam Trench locations 2007-2015

Table 1: Location Details of all Excavated Trenches at Pattanam

Trench	GPS Co-ordinates	Location	Trench Supervisors
PT07 I (1)	N 10° 09′ 24.8″ E 076° 12′ 33.6″.	Padamadathil plot of the KCHR	K P Rajesh
PT07 II (2)	N 10° 09′ 25.0″ E 076° 12′ 33.6″.	Padamadathil plot of the KCHR	Dineesh Krishnan
PT07 III (3)	N 10° 09′ 27.2″ E 076° 12′ 35.7″.	Wharf plot of the KCHR	Sreelatha Damodaran
PT07 IV (4)	N 10° 09′ 27.2″ E 076° 12′ 35.7″.	Wharf plot of the KCHR	Sujana Stephen
PT07 V Trial trench (5)	N 10° 09′ 26.8″ E 076° 12′ 34.6″.	Shri Narayanan's plot, west of the wharf plot	V Selvakumar
PT07 VI test pit near pond (6)	N 10° 09′ 27.2″ E 076° 12′ 34.7″.	Wharf plot of the KCHR	P J Cherian
PT08 VII (7)	N 10° 09′ 25.3″ E 076° 12′ 33.5″.	Padamadathil plot of the KCHR	K P Rajesh
PT08 VIII (8)	N 10° 09′ 27.0″ E 076° 12′ 34.6″.	Wharf plot of the KCHR	Jenusha K S
PT08 IX (9)	N 10° 09′ 27.2″ E 076° 12′ 35.7″.	Wharf plot of the KCHR	Sreelatha Damodaran
PT08 X (10)	N 10° 09′ 27.7″ E 076° 12′ 06.2″.	Wharf plot of the KCHR	Sujana Stephen

PT08 XI (11)	N 10° 09′0 27.3″ E 76 12′ 36.1″	Wharf plot of the KCHR	Dineesh Krishnan
PT09 XII (12)	N 10° 09′ 23″ E 076 ° 12′ 3.″	Padamadathil plot of the KCHR	Dineesh Krishnan
PT09 XIII (13)	SW : N 10° 09′ 24.2″ E 076° 12′ 33.9″ NW: N 10° 09′ 24.4″ E 076°12′ 34.0″.	Padamadathil plot of the KCHR	Rachel A Varghese
PT09 XIV (14)	SE : N 10^0 09′ 25.2″ E 076^0 12′ 32.8″ NW: N 10^0 09′ 24.6″ E 076^0 12′ 32.9″.	Padamadathil plot of the KCHR	Jenusha K S
PT09 XV (15)	NE : N 10 09′ 25.^{0}″ E 076^0 12′ 20.4″ SW : N 10 09 ^{0}′ 25.^{0}″ E 076 12′ 20.2″.	Government LP School, Pattanam	Sujana Stephen
PT10 XVI (16)	N 10^0 09′ 24.4″ E 076^0 12′ 32.7″.	Padamadathil plot of the KCHR	Dineesh Krishnan
PT10 XVII (17)	N 10^0 09′ 24.1″, E 076^0 12′ 32.9″	Padamadathil plot of the KCHR	K P Rajesh
PT10 XVIII (18)	N 10^0 09′23.9″ 076^0 12′32.8″	Padamadathil plot of the KCHR	Vijimol P K
PT10 XIX (19)	N 10° 09′ 23 8′′ E 076^0 12′ 32 8′′.	Padamadathil plot of the KCHR	Madhavi K
PTT10 XX (20)	N 10° 09′ 26.6″; E 076^0 12′ 12.1″	St Thomas Jacobite Syrian Christian church plot- Thoppil Parambu	P J Cherian
PTT10 XXI (21)	N 10°04′ 22.3″ E 76^{0}12′29.2″.	Near Neeliswaram Mahadeva temple, behind the NSS auditorium (western side) owned by Dr. Krishnakumar	Dineesh Krishnan
PTT10 XXII (22)	N ˚10 09′ 24.4″, ` E 076 ˚12′ 44.0″	Land proposed for National Highway	Abhayan C S
PTT10 XXIII (23)	N10009′21.6″, E76^{0}12′45.3″	Located in the acquired land for National Highway	Rajesh K P
PTT10 XXIV (24)	N 10 ,“26.0 ‘09 ° E 076“09.7 ‘12 °	St Thomas Jacobite Syrian Christian church plot ThoppilParambu	Ajeesh Krishnan
PTT10 XXV (25)	N 10 ,“26.0 ‘09 ° E 076“09.8 ‘12 °	St Thomas Jacobite Syrian Christian church plot ThoppilParambu	Rajesh K P

PTT10 XXVI (26)	N 10 ° 09′ 28.2′′; E 076° 12′ 08.0′′	In front of the Catholic church at Pattanam	Abhayan G S
PTT10 XXVII (27)	N 10 ,“29.1 ‘09 ° E 076° 12′ 09.0″	Located near the Catholic Church.	Ajeesh Krishnan
PT11 XXVIII (28)	N 10 ° 09′ 24.2″ E 076° 12′ 33.0″.	Padamadathil plot of the KCHR	Dineesh Krishnan & Sarath Chandrababu
PT11 XXIX (29)	N 10 °09′ 24.2″ E 076^{0} 12′ 33.0″.	Padamadathil plot of the KCHR	Ajeesh Krishnan
PT11 XXX (30)	N 10 ° 09′ 24.2″ E 076 ° 12′ 33.0″.	Padamadathil plot of the KCHR	Vijimol P K
PT11 XXXI (31)	N 10 ° 09′ 24.2″ E 076 ° 12′ 33.0″.	Padamadathil plot of the KCHR	JaseeraMajeed
PT11 XXXII (32)	N 10° 09′33.9″ E 076° 12′ 20-2′′	Madathilparambu, owned by Shri Clement Varghese	Andrew Blair
PT11 XXXIII (33)	N 10° 09′32.8″ E 076° 12′ 20.4″.	Madathilparambu, owned by Shri Clement Varghese	Sarath Chandrababu
PT11 XXXIV (34)	N 10 “33.2 ‘09 ° E 076 ° 12′ 20.1″.	Madathilparambu, owned by Shri Clement Varghese	Vijimol P K
PT11 XXXV (35)	N. 10 ‘33.1 ‘‘09 ° E. 076° 12′′ 20.2′.	Madathilparambu, owned by Shri Clement Varghese	Sarath Chandrababu
PT11 XXXVI (36)	N 10‘‘33.2 ‘09 ° E 76° 12′ 20.7′′.	Madathilparambu, owned by Shri Clement Varghese	Jaseera Majeed
PT11 XXXVII (37)	N 10“33.1‘09 ° E 076° 12′ 20.9″	Madathilparambu, owned by Shri Clement Varghese	Remia K
PT12 XXXVIII (38)	N 10 °09′ 24.4″ E 076° 12′ 34.0″	Karukayil plot of the KCHR	Sarath Chandrababu
PT12 XXXIX (39)	N 10 ° 09′ 24.2″ E 076° 12′ 33.0″	Padamadathil plot of the KCHR	Tathagata Neogi
PT12 XL (40)	N 10 ° 09′ 24.2″ E 076° 12′ 33.0″	Padamadathil plot of the KCHR	Remia K
PT12 XLI (41)	N 10 ° 09′ 24.2″ E 076° 12′ 33.0″	Padamadathil plot of the KCHR	Vijimol P.K
PT13 XLII (42)	N10 ° 09′ 23.950″ E 76°12′ 35.629″	Karukayil plot of the KCHR	Vijimol P.K & Sarathchandrababu
PT14 XLIII (43)	N 10° 09′29.1″, E07°6 12′24.9″.	Panikkasseri plot of the KCHR	Sarath Chandrababu
PT14 XLIV (44)	N 10° 09′ 29.1″, E 076°12′24.9″	Panikkasseri plot of the KCHR	Dineesh Krishnan

PTT14 XLV (45)	N 10⁰ 09′ 31.2″, E 076⁰ 12′ 27.5″	Mazhuvancherry plot of Shri Babu George (S. No.220/21).	Dineesh Krishnan
PTT14 XLVI (46)	N 10⁰ 09′31.0′′ , E 076⁰12′16.6′′	Kariyathuparambil plot of Shri Omanakuttan K.L	Sarath Chandrababu
PTT14 XLVII (47)	N 10° 09′ 16.1″, E, 07°60 12′ 36.2″	Kollamparambil plot of Shri. Sukumaran T. R,	Dineesh Krishnan
PTT14 XLVIII (48)	N 10⁰ 09′31.2′′, E 076° 12′ 14.8′′	Plasseril plot of Shri Velayudhan	Sarath Chandrababu
PTT14 XLIX (49)	N 10⁰ 09′15.3′′, E 076°12′ 36.7′′	Thevalil plot of Shri T.R Sivadasan	Sarath Chandrababu
PTT14 L (50)	N 10⁰ 09′ 16.1, E 076⁰12′ 36.2″	Athirumparambil plot of Shri Shanmukhan	Dineesh Krishnan
PT14 LI (51)	N 10° 09′ 24.2″, E 076° 12′ 35.3″	Puthenveedu plot of the KCHR	Wendy Morrison (Oxford University) & P J Cherian
PT14 LII (52)	N 10° 09′ 24.2″, E 076° 12′ 35.3″	Puthenveedu plot of the KCHR.	Dineesh Krishnan & Sarath Chandrababu
PTT14 LIII (53)	N 10° 09′36.9″, E 076°11′54.7″	Plot of Shri. Bhageerathan P.A	Vinod V
PTT14 LIV (54)	N 10° 09′ 31.5″, E 076° 11′ 582″	Plasseril plot of Shri Velayudhan	Ed Peveler (Oxford University)
PTT14 LV (55)	N 10° 07′20.3″, E 076°11′28.2″	Plot of Shri. Bhageerathan P.A.	Vinod V
PTT14 LVI (56)	N 10° 09′ 31.4″, E 076° 11′ 58.5″	Plasseril plot of Shri Velayudhan	Ed Peveler
PTT14 LVII (57)	N 10° 09′ 22.9″, E 076° 12′ 25.1″	Lakshmi parambu plot of the KCHR	Chris Gosden (Oxford University)
PTT14 LVIII (58)	N 10° 09′ 24.1″, E 076°12′ 24.6″	Lakshmi parambu plot of the KCHR	Chris Gosden (Oxford University)
PTT14 LIX (59)	N 10° 09′27.1″ , E 076°12′35.3″.	Wharf plot of the KCHR	Vinod V
PTT14 LX (60)	N 10° 09′27.1′′, E 076°12′35.6′′	Wharf plot of the KCHR	Laura Jones (Oxford Uni)
PT15 LXI (61)	N 10 09.436′; E 076 12.515′.	Plot owned by Shri Jacob Mazhuvancherril family (Pattanam KCHR House)	Deepak K. Nair & Sarath Chandrababu

Significance of the Trench Location

The area of the excavation was significant taking into account the results of the previous excavations. The area identified was about 200 meters to the west of the

wharf plot which was excavated in the first and second seasons (2007 and '08). The GPS co-ordinates of the trench is N10^0 09" 436'; E 076^0 12" 515'. It was also about 100 meters North West of Padamadathil plot which was rich in archaeological evidence. (2007, 09, 10,11, 12, 13 & 14 had trenches in the Padamadathil plot and enjoining plots.) By elevation, this trench (PT15 LXI) was in the highest point of the Pattanam mound. The area is densely occupied. Other than an Amphorae sherd from the backyard of the house in an earlier season, there was no indication of archaeological potential of the site. The team even considered the possibility of the trench turning out to be archaeologically barren. An archaeology researcher accepts absence of artefacts and features as indirect evidence. Spatial organisation of an ancient port or habitation context could have been entirely different from the present one, for the simple reason that the paleo-landscape might have been very different.

Excavation Methodology

- As in the previous seasons locus based method was employed by assigning sequential numbers to each human/natural activity context encountered in the trench. Such a unit known as locus represents a single and discrete action that occurred in the past. This method helps to understand the human activities diachronically as well as contemporaneously. It can also take care of the systematic recording of both horizontal and vertical excavation procedures.

- Harris matrix is used as a tool to diagrammatically represent the stratigraphic relationships among the loci. It reflects the relative position and stratigraphic contacts of observable stratigraphic units i.e. loci to establish the stratigraphic sequence of a site.

- The loci in sediment deposits are marked as rectangles. Loci representing pits are marked by concave semicircles and dumps by convex semi circles. Masonry deposits such as structures, walls, etc are represented by two horizontal parallel lines.

- This season also the volume of the soil excavated from each locus was roughly measured using metal pans (chattis). One metal pan full soil weighed approximately 7.5- 8 kg.

- Only 25% of excavated soil was sieved in normal situations while the soil from important loci was fully sieved with 0.3 mm wire mesh.

- Excavated finds were broadly classified as artefacts (antiquities) and ceramics (pottery) features, botanical finds, zoological remains, geological finds. bricks and tiles were registered in separate registers.

- Pottery has two separate registers- for Indian and non- Indian and for the unidentified categories.

- All the ceramic sherds are documented in the pottery register and the diagnostic sherds are stored systematically. The huge quantum of body sherds from the Early Historic layers is also stored for later studies or artistic and other imaginative uses.

- For systematic documentation, two rough note books, one fair note book, graph sheets, detailed locus based data sheets, daily tally sheets, photo and video documentation and digital record set are maintained.

- Features are documented separately as plan drawings, scaled drawings and photographs and videos and are registered in a separate register.

- Section drawings and photographs are taken for understanding the stratigraphy of the site.

- As usual daily discussion sessions were held to report and review the day's work and plan the next day.

Stratigraphy

The stratigraphic understanding of the Pattanam site indicates five cultural layers, stretching a span of 3000 years from 1000 BCE. They are the Iron Age, Iron Age - Early Historic transition, Early Historic, Medieval and Modern layers

The stratigraphy at Pattanam site differs in various excavation areas depending on the actual occupation levels and its preservation. Generally, the upper loci are found to contain the cultural remains that belong to the modern period. Some loci are marked by the occurrence of remains characteristic of the medieval period. Further down most of the units of Pattanam stratification belong to the early historic period with a thick occupational deposit marked by burned brick structures, triple grooved tiles and artefacts belonging to Indian subcontinent and non Indian- cultural regions. The early historic period is preceded by Early Historic-Iron Age transition and Iron Age.

The analysis of stratigraphy helps to identify the chronological signatures imprinted in them. It helps to securely date the deposit as well as to identify the cultural conflations and negative interfaces (disturbances) in the site formation process.

A close look at the stratigraphy of this season strengthens the general stratigraphic assumptions so far gathered at Pattanam (Fig. 2). Of the total 51 loci the loci up to locus 12 (up to 50 to 60 cm depth) are modern and medieval layers. From locus 012 to 049 the stratigraphic, artefactual and AMS radio carbon dates (Samples from loci 028, 034, 042 - see Harris Matrix table) point to that layer as belonging to the Early historic period (300 BCE to 500 CE). The other two layers, the transition and Iron Age layers (1000 BCE to 300 BCE) though was slippery in terms of their stratigraphic location, their conflation with the Early Historic layer can't be ruled out. Though the natural layer in some parts of trench was reached around 280 cm, the locus 49 associated with the toilet feature

was going to 362 cm, The ground water level at 266 cm was creating hurdles to the excavation; however the toilet feature could be explored till its bottom level of 362 cm.

The interpretive aspects especially on the urban features of the site this season provides greater insights. The fine quality brick architecture, allied evidence of roof tiles, toilet feature, tubular jar feature etc point to the sophistication of the planned living at the site. The evidence of expertise in metallurgy, lapidary, cotton weaving etc are also strengthening the urban character of the site. In terms of the cultural DNA as emanating from the artefactual evidence points out the admixture of far and near cultures reinforcing the possibility that Pattanam was the ancient port city of Muziris or MuciriPattinam or Vanji as mentioned in the Sangam epics of Chilappadikaram and Manimekhalai.

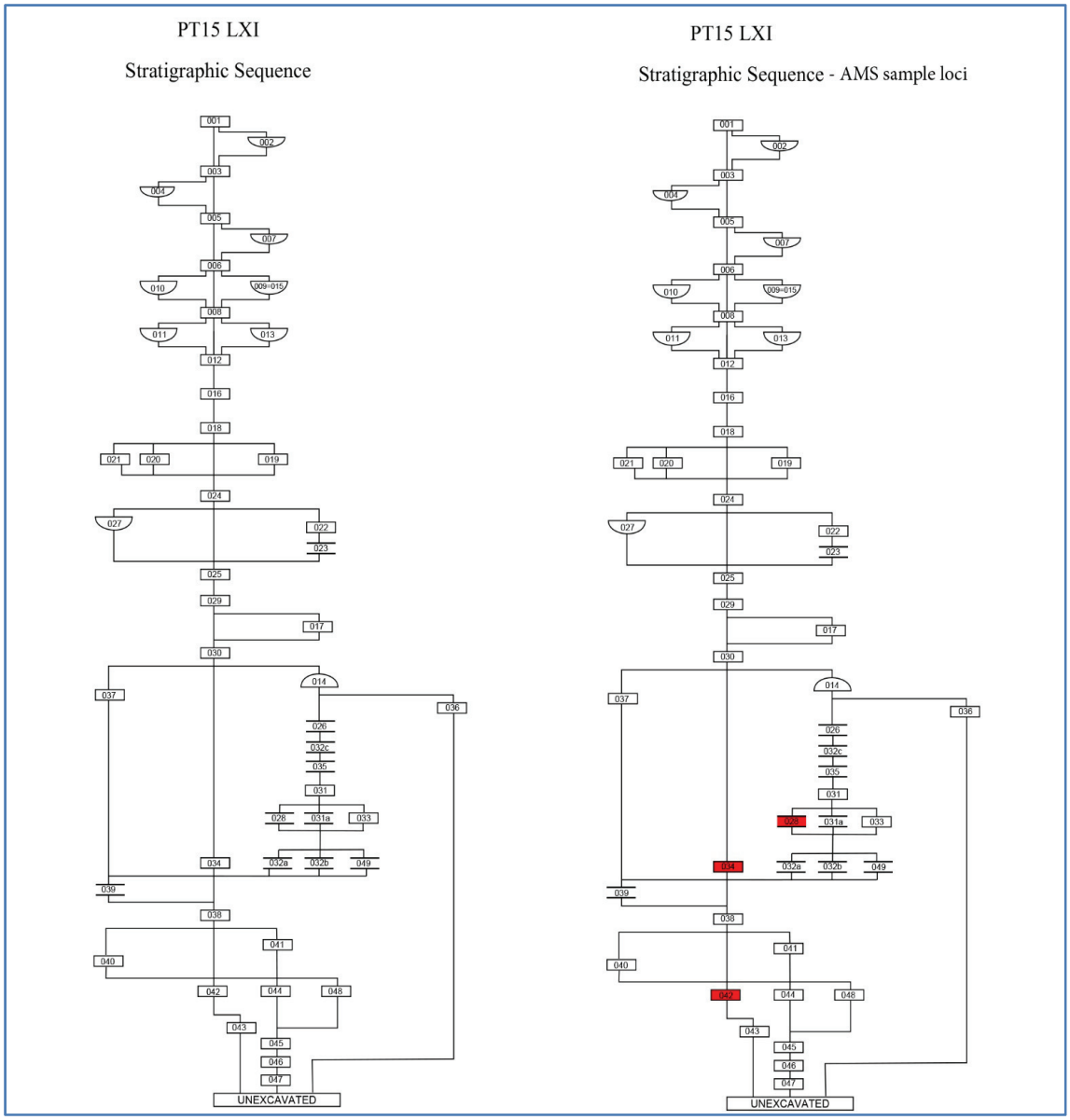

Figure 2: Harris Matrix table (PT15 LXI Stratigraphic Sequence)

Radiocarbon Dating Results

Sample Data	Measured Radiocarbon Age	d13C	Conventional Radiocarbon Age(*)
Beta - 412327	1970 +/- 30 BP	-24.7 o/oo	1970 +/- 30 BP
SAMPLE : PT15 LXI Locus 028/1451			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 35 to 30 (Cal BP 1985 to 1980) and Cal AD 20 to 125 (Cal BP 1930 to 1825)			
Beta - 412328	2060 +/- 30 BP	-24.8 o/oo	2060 +/- 30 BP
SAMPLE : PT15 LXI Locus 042 /1498			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 90 to 80 (Cal BP 2040 to 2030) and Cal BC 70 to AD 40 (Cal BP 2020 to 1910)			
Beta - 412329	2050 +/- 30 BP	-25.4 o/oo	2040 +/- 30 BP
SAMPLE : PT15 LXI Locus 034 /1426			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 60 to AD 60 (Cal BP 2010 to 1890)			

Major Finds

Features

Excavations are always a search for the unknown. The archaeological sites are the "miracles of nature" which carried the womb past life. Everything that survives in that womb is part of a web of relationships. Excavation is a surgical operation to retrieve everything related to that web of relationships for the reconstruction of a lost culture otherwise often impossible. In one sense whether one finds artefacts or features beneath the ground is not that important. Even the absence as mentioned earlier would require analysis and explanation. But one has to admit that unexpected discoveries boost the morale of the excavation team. This season we had many jubilant moments during digging and discussion sessions.

One big surprise was an architectural feature of the Early Historic Period. It was extending beyond the trench, hence we refrained from removing it and continued our digging without disturbing the bottom layers of the architectural context that is approximately 1/3 portion of the trench measuring 7m x 3m from a depth of 172 cm. The well made bricks were of different dimensions, some were like the Early Historic bricks excavated earlier. The biggest bricks found this season had the dimension 38 x 19 x 6 cm.

The more surprising and puzzling find of the season was fifteen tubular jars, these types of jars were being found for the first time in the Pattanam excavations. Initially, we felt they could be tubular jars of the Mesopotamian and Arabian regions which had trade exchanges with ancient 'MuciriPattinam' or 'Muziris'. But both ends of the tubular jars are open and they were deliberately made so. So the possibility of them being storage jars of the normal types can be ruled out.

The excitement of the team knew no bounds when eight of the tubular jars were found in a vertically stacked row. All of them were intact and were filled with soil. Six others were either found horizontally or in slanting positions. Yet another base part of one jar was found in vertical position making the total number of tubular jars from the trench to 15 (Fig. 3).

Figure 3: Tubular Jars from Pattanam

We carefully removed the soil from the tubular jars hoping for some clue about its function. We adopted dry sieving, floatation and careful segregation of the deposit inside the jars. An agate roughout, three glass beads, one crucible fragment, very few brickbats and potsherds were all that we got. Those disappointing finds, weren't helpful to understand the social context or their use. The intact jars were 40 cm long and the diameter of the rim was 12 to 13 cm. (for details see locus 31a in the trench report).

We applied archaeo-science methods to analyse the tubular jar pottery. We used the PXRF device to compare the mineral profile of them with the other types of pottery found at Pattanam. The PXRF results some indications for the potential of future studies. The ceramic of the tubular jars did not conform to any identified Indian nor Non-Indian pottery at Pattanam. It could be from an altogether different context yet to be identified at Pattanam or those familiar to us in its contemporary sites. More detailed studies would be needed to understand the provenance and manufacture technique of the tubular jars. (See for details of the PXRF analyses and OM readings in this report elsewhere).

Another exciting feature was the toilet feature (Fig. 4), so far the fifth of its kind in the Pattanam excavations. There were total 3 jars as found in earlier excavations with the top jar placed over 2nd one and and the 2nd placed over the third jar. The bottoms of all

the jars were found broken to let the content reach those in the lower levels and finally into the natural layer. These jars looked like reused huge pots or jars originally meant for storage. This needs further research for confirmation. All the three jars were in broken stages and none could be retrieved in intact condition. Since it was located very close to the brick structure it was a difficult task to dig out even the broken parts of the jars. If the floor level of the brick structure was 172 cm the first jar appeared at a depth of 246 cm and the bottom of the 3rd jar was 362 cm. The deposit inside the jars was very ashy and clayey. The contents included lot of pot sherds including rim parts, brick bats etc probably indicating it being used as a dump pit after it was abandoned. Clayey deposit samples were collected from the jars for coprolite study. Definitely the jar content had a faecalodour- and all team members 'enjoyed' a whiff of it -with distinct facial expressions. For detailed discussion of the toilet feature see Loci 42 to 49 in the trench report.

Figure 4: Toilet Feature, Pattanam Excavations

Pottery (Figs. 5 & 6)

Consolidated count of pottery 2007 – 2015			
Sl No	Pottery type	Consolidated count of pottery 2015	Consolidated count of pottery 2007-2015
Indian pottery			
I . A. Indian classified pottery sherds			
I.A.1	Indian rouletted ware sherds	337	12030

I.A.2	Black and red ware sherds	55	384
I.A.3	Russet coated painted ware sherd	0	1
I.A.4	Black ware and Fine ware (Type 10)	48	221
	I . B. Indian pottery – Full or partially broken pots/bowls/jars		
I.B.1	Indian rouletted ware	0	1
I.B.2	Black and red ware	1	1
I.B.3	Tubular jars with open base (Indian?)	15	15
I.B.4	Kooja type pot	0	1
I.B.5	Bowls	2	6
I.B.6	Pots(Kudam, Kalam, Chatty)	0	12
I.B.7	Conical base of the huge jar	0	1
I.B.8	Lid	1	2
	I . C. Indian pottery sherds (mostly Red Coarse Ware)		
I.C.1	Body sherds, Rim, Base, Lid, Handle, Decorated pottery, Impressed pottery, Grooved pottery, Perforated pottery, Knob of oven, Knob of lid , Spout, Sherd with graffiti, Sherd with script, Organic impressed pottery (Leaf impressed) and Edge ground pottery	64335	4401466
	Non Indian pottery		
II . A.	Mediterranean pottery		
II.A.1	Amphora jar sherds	108	9125
II.A.2	Terra Sigillatasherds	8	179
	II . B. West Asian, South Arabian and Mesopotamian pottery		
II.B.1	Torpedo jar sherds	28	4110
II.B.2	Turquoise glazed pottery sherds	71	2219

II.B.3	South Arabian pottery sherds (39 South Arabian ovoid jar sherds)	46	84
	II . C. Chinese pottery		
II.C.1	Chinese ceramic sherds	7	480
	Unidentified pottery		
III.A	Pattanam-KhorRori ware sherds	16	848
III.B	Brown glazed jar (full)	0	1
III.C	Unidentified pottery sherds	898	124302
	Grand total	**65976**	**4555489**

Artefacts (Figs. 7-13)

Material-wise consolidated count of artefacts 2007 – 2015

Sl No	Artefact – name	Consolidated count of artefacts 2015	Consolidated count of artefacts 2007-2015
	Glass artefacts (110519)		
I.1	Glass bead	398	98207
I.2	Gaming counter	0	3
I.3	Glass bead fragment	117	9425
I.4	Glass pendant	0	1
I.5	Glass waster	3	132
I.6	Glass bangle fragment	0	51
I.7	Molten glass	1	1
I.8	Glass fragment /Other Glass artefacts (Roman pillared-102, With painting-7, Mosaic -7)	78	2699
	Stone artefacts (4667)		
II.1	Cameo blank	2	71
II.2	Ring stone/Inlay/Gaming counter	2	28
II.3	Intaglio	0	2

II.4	Stone mould	0	4
II.5	Stone bead fragment	1	168
II.6	Stone bead	11	1134
II.7	Stone rough out	26	282
II.8	Stone bead blank	2	21
II.9	Stone debitage	65	2711
II.10	Stone raw material	3	159
II.11	Stone pestle	0	12
II.12	Stone weight	0	2
II.13	Stone adze	0	1
II.14	Stone seal	0	1
II.15	Stone ring	0	1
II.16	Stone pendant	0	2
II.17	Polished stone	1	10
II.18	Worked stone	16	44
II.19	Rubbed/Grinding stone/other stone artefacts	1	14
	Metal artefacts (A. Gold, B. Silver, C. Iron, D. Copper and E. Lead)		
	III . A. Gold (178)		
III.A.1	Gold bead	0	3
III.A.2	Gold micro bit (Below 01mg)	13	76
III.A.3	Gold ornament fragment	4	49
III.A.4	Gold filament/Thread	0	8
III.A.5	Gold pendant	0	1
III.A.6	Gold ring	0	8
III.A.7	Other gold artefacts	0	33
	III . B. Silver (3)		
III.B.1	Silver coin/Silver fragment	0	3

	III . C. Iron (11806)		
III.C.1	Iron nail /Iron nail fragment	378	8451
III.C.2	Iron slag	24	402
III.C.3	Iron arrow head	0	2
III.C.4	Iron chisel	0	3
III.C.5	Iron dagger	0	0
III.C.6	Iron hook	0	21
III.C.7	Iron ore	5	10
III.C.8	Iron ring	0	3
III.C.9	Iron knife	3	79
III.C.10	Iron tong	0	1
III.C.11	Iron fragment/Other iron artefacts	76	2834
	III . D. Copper (721)		
III.D.1	Copper nail	0	35
III.D.2	Copper antimony rod	1	7
III.D.3	Copper coin	2	143
III.D.4	Copper slag	10	74
III.D.5	Copper ring	0	10
III.D.6	Copper cosmetic object	0	0
III.D.7	Copper ore	1	8
III.D.8	Copper fragments/Other copper artefacts	13	444
	III . E. Lead (337)		
III.E.1	Lead coin	1	4
III.E.2	Lead scroll	5	38
III.E.3	Lead fragments/Other lead artefacts	23	295
Terracotta artefacts (1500)			
IV.1	Spindle whorl	0	70

IV.2	Terracotta ball	0	35
IV.3	Terracotta stopper	0	21
IV.4	Terracotta bead	0	35
IV.5	Terracotta bead fragment	0	18
IV.6	Terracotta lamp	6	97
IV.7	Terracotta disc/Hopscotch	16	332
IV.8	Crucible	0	2
IV.9	Crucible fragment	457	872
IV.10	Ceramic seal	0	2
IV.11	Terracotta mould (Rouletted ware?)	1	1
IV.12	Other terracotta artefacts	3	15
Other artefacts (1134)			
V.1	Other artefacts (Aluminum, Plastic, unknown etc.)	6	1134
	Grand total	**1775**	**130865**

Consolidated Count of Terracotta Features

Year	**Trench**	**Locus**	**Terracotta feature type**					
			Ring well		**Storage jar**		**Toilet feature**	
			Number of Ring well features	*Number of rings*	*Number of storage jar features*	*Number of jars*	*Number of toilet features*	*Number of jars*
2007	PT 07 II	008e Extension II			1	1		
	PT 07 II	008f Extension II			1	1		
	PT 07 III	050	1	3				
	PT 08 VIII	031					1	2

2008	PT 08 VIII	033					1	2
	PT 08 IX	096	1	2				
	PT 08 X	016			1	1		
	PT 08 XI	012			1	1		
2009	PT 09 XIII	021			1	1		
	PT 09 XIII	050a			1	1		
2010	PT 10 XVI	092					1	1
	PT 10 XVII	090	1	2				
2011	PT 11 XXVIII	039					1	3
	PT 11 XXXII	031	1	2				
	PT 11 XXXIII	006	1	5				
	PT 11 XXXV	015			1	1		
2012	PT 12 XXXVIII	070	1	4				
	PT12 XXXIX	054			1	1		
2015	PT 15 LXI	049	0	0	0	0	1	3
Grand total			**6**	**18**	**8**	**8**	**5**	**11**

Figure 5: Undiagnostic Sherds, Pattanam

Figure 6: Foreign Ceramics, Pattanam

Conclusions

The Pattanam archaeological research has confirmed the existence of an urban settlement in the Periyar river valley approximately 2000 years back. The settlers had built structures with burnt bricks, roof tiles, iron nails and a mixture of clay, lime laterite and pottery granules resembling surki; the prototype of concrete. The toilet features excavated at Pattanam could be indicators of planned living and probably concern for privacy and cleanliness.

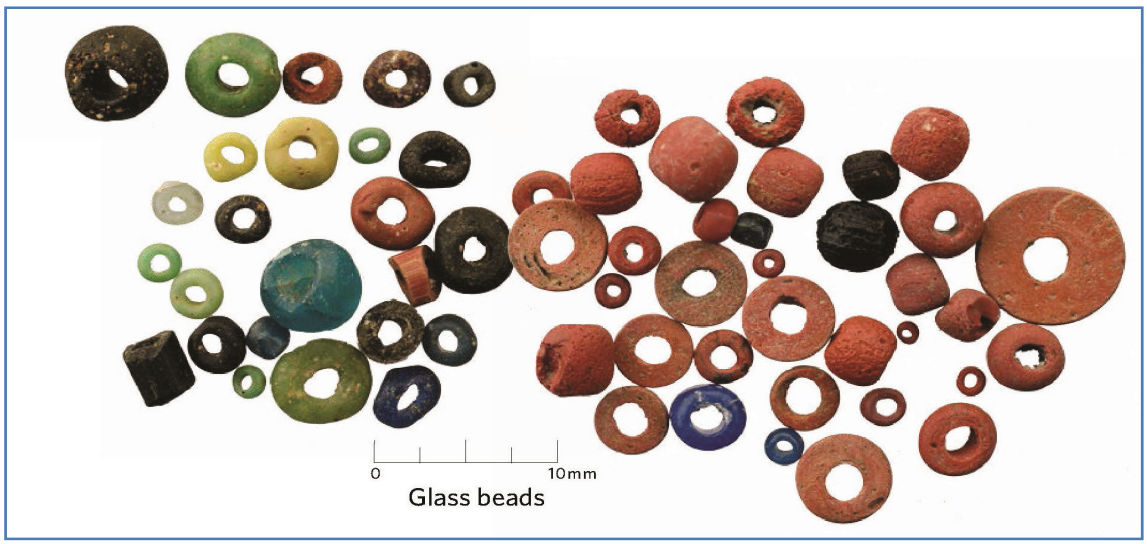

Figure 7: Glass Beads, Pattanam

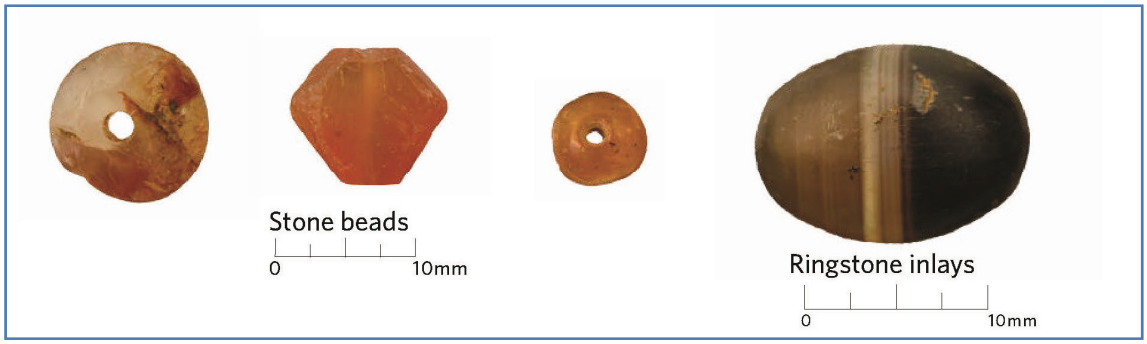

Figure 8: Stone Beads and Inlay, Pattanam

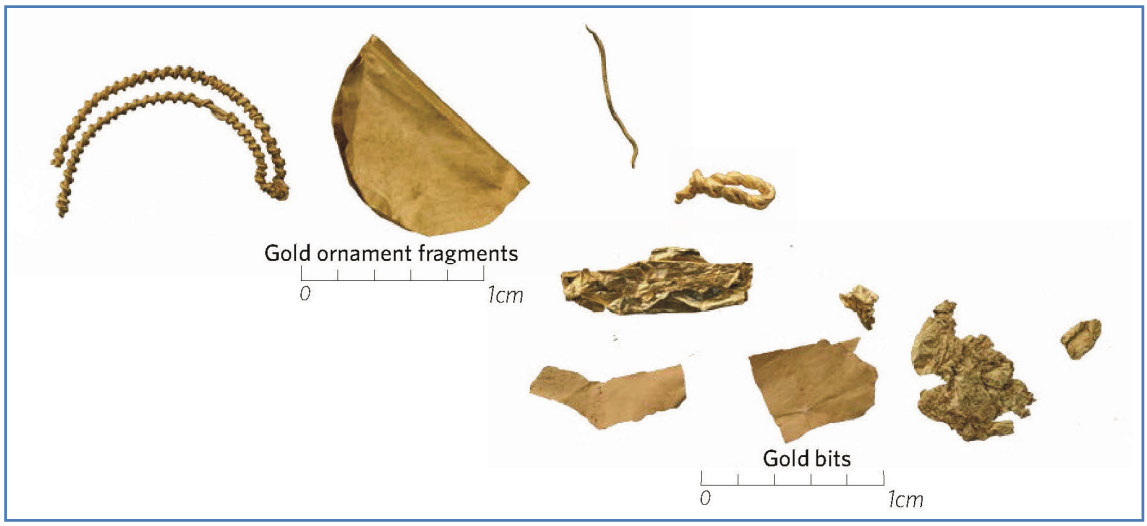

Figure 9: Gold Bits and Ornaments, Pattanam

Material objects reflect the technological strengths and technical skills of the community which produced them as well as those with which it had contacts. Certain societies might have developed their own sciences and processes in the production of

objects based on the availability of natural resources and their cultural contexts. The technological and technical interfaces of a society with others at comparable intellectual and cultural levels might bloom to adaptations and creativity of a hybrid kind. The concomitant mesh of relationships and its structural manifestations were foundational to the rise of early complex societies.

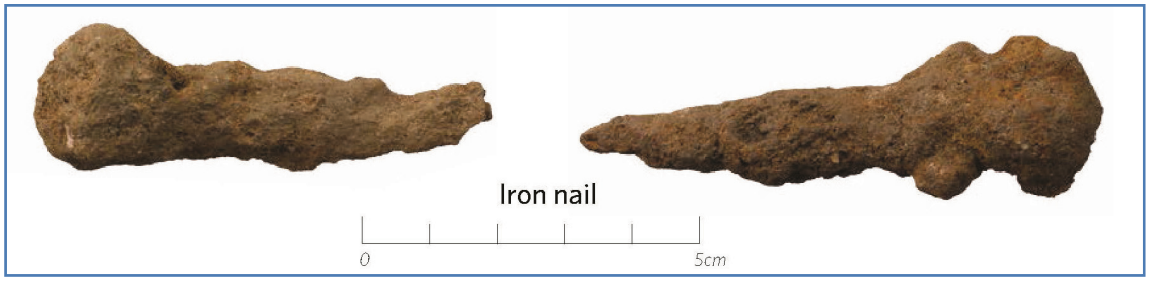

Figure 10: Iron Nails, Pattanam

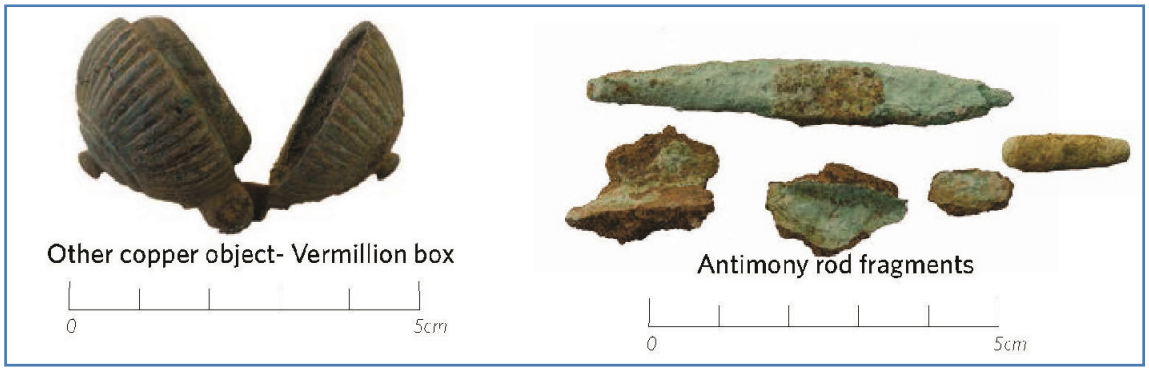

Figure 11: Copper Objects, Pattanam

Figure 12: Lead Objects, Pattanam

The material objects retrieved from Pattanam point to the possibility that they could have been cotton weavers and highly gifted semi-precious stone artisans. Besides the expertise in iron metallurgy, they could also handle gold, copper and lead.

It is highly probable that, unlike many early societies where production was in accordance with consumption needs; the Periyar river valley people might have had an economy partly dependent on trade exchanges. The quantum of pottery assemblage recovered from the region amounting to over 4.5 million sherds including 1.40 lakh

sherds of Mediterranean, West Asian, Red Sea, South Arabian, Mesopotamian and South China Sea regions, is impressive. Their social biographies might reveal their facilitating role in one of the earliest trade interfaces in human history. The intensity of trade contacts of the Indian subcontinent with Europe, Africa and other parts of Asia from an advanced social and cultural landscape is inscribed on them.

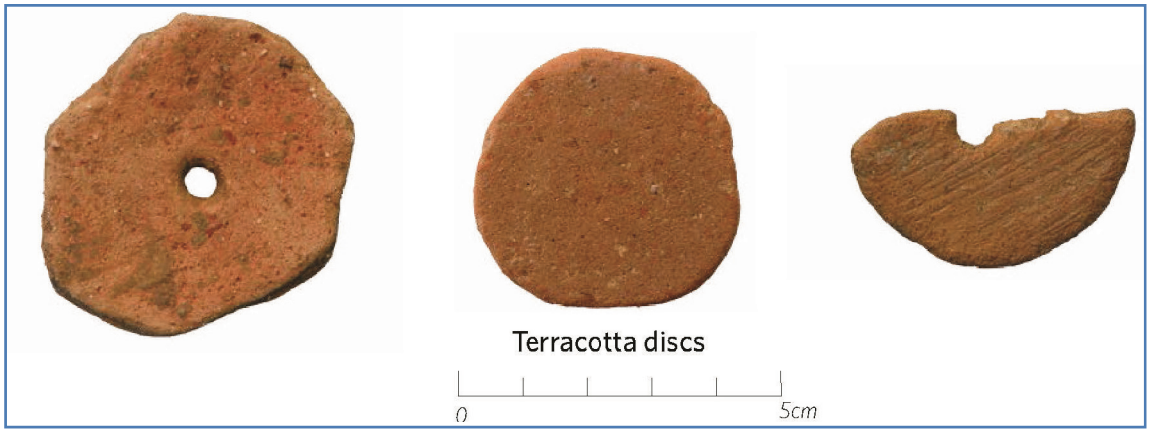

Figure 13: Terracotta Discs, Pattanam

The artefacts and pottery assemblage of this season have strengthened the hypothesis that Pattanam could be Muziris, if not, an integral part of it. Beyond that they have also thrown up new questions and riddles and only the tip of iceberg has been exposed in the excavations of the past 9 years. The perspective grounded on the archeological evidence is that Pattanam needs to be seen as part of a large web of human-nature-technology relationships, than an isolated site in a village in the Ernakulum district of Kerala. The surge of archaeological discoveries in the Periyar river valley region, South Western Coast of India and across South India, Sri Lanka and different parts of the Indian Ocean, also suggests that Pattanam represents a region that experienced the waves of urbanization, cultural and technological exchanges that were transforming Indian Ocean into a "Trade Lake" during the Early Historic Period (3rd c BCE to 5th c CE).