PORPANAIKKOTTAI EXCAVATION (2021-2022): A PRELUSIVE INQUISITION ON SANGAM AGE LIFESTYLE

Dr. E. Iniyan

Abstract:

This article portrays the significance of sangam literature through the Porpanaikkottai excavation. It talks about the Tamil people's way of living and infrastructure at that point of time in history. It also dwells on the historical sites of Pudukkottai district in Tamil Nadu, and describes about the Sangam Age hero-stones and archaeological sites around Pudukkottai. The paper also discusses about archaeological techniques like the ground penetrating radar survey, layout of the trench, brick and clay made canals, ceramic ware, black and red pottery wares. Holistically, this paper describes the archaeological significance of Porpanaikkottai vis-à-vis the sangam literary period.

Introduction:

The The Sangam era, which encompasses every aspect of Tamil culture, is regarded as one of the most crucial and significant periods in the long history of the ancient Tamils. It greatly aids in comprehending the methodical evolution of the Tamil way of life. All the qualities of the ancient Tamil people are expressed in the Sangam literary works, which were written during a 600-year span (300 BCE to 300 CE). The Sangam Literature illustrates a variety of ancient Tamil cultural sequences as well as love, friendship, environmental conditions, ecological variables, battle sequences, literary knowledge, the construction of burial monuments, rites performed for the departed, and several other social themes. Forts, palaces, and other historical relics from different dynasties, as well as the activities that took place under different kingships, are typically portrayed in Sangam literary works. The remains of forts, palaces, and other structures that the Sangam literature mentions have not been fully discovered until lately. Nonetheless, the discovery of a fort in Porpanaikkottai of the Pudukkottai district in

the state of Tamil Nadu reveals the ancient Tamil people's way of life and infrastructure.

Well-known historians, archaeologists, and other enthusiasts have conducted a great deal of fieldwork in and around the fort, with the intention of discovering the historical wealth of the Tamil land. There has been no shortage of expeditions, and the tireless work of these people has resulted in excavations of an immense quantity of materials, such as hearths, terracotta tubes used to extract iron from furnace fires, hero stones, potteries etc.

The author was inspired by these identifications and findings, to carry out an extensive investigation at this site, which culminated in the identification and discovery of a bunch of archaeological remnants. This led the author to the conclusion that this site has the potential to reveal archaeological evidence that would substantiate the cultural sequences as well as the way of life of the Tamil people, their infrastructure, economics, environment, and other elements during the ancient Sangam period. Hence a preliminary excavation work was conducted at Porpanaikkottai in 2021 during July-September, to find out the extension of the settlement and its pattern, which would help in tracing the urbanization process in this region.

Pudukkottai:

One of Tamil Nadu's former princely realms, Pudukkottai district is home to numerous historical sites, including castles, palaces, temples, and cave paintings. The area is also rich in cultural history. The area was among the prehistoric human dwelling places. Pudukkottai district is rich in natural resources, both on land and in water. To the east is Bay of Bengal's marine barrier, and to the south are the districts of Trichy, Sivaganga, Ramanathapuram, and Thanjavur. The geological formation of Pudukkottai District is composed of Quaternary sedimentary deposits and hard rocks that date back to the Archean era (eon).

Our study area's hard rocks are found on the western side, while sedimentary formations can be found on the eastern side. A little over half (55%) of the study region is covered by sedimentary formation dating from the Pre-Cambrian to the Quaternary period, while roughly 45% of the study area is under hard massive rock of the Archean age. The study area located in the Alangudi taluk comes under the Sedimentary rock formation in which arenaceous (sand), argillaceous (clay), and lateritious (brick) sediments are predominant - that were created during the Tertiary epoch of the Early to Middle Pleistocene age of Cenozoic Era.

The Pudukkottai district has an undulating topography with remnant hills containing Archaean rock formation in its northern, western, and southern regions, while its eastern region has a flat landscape made up of alluvial plains. The ancient rocky outcrop aided the development of rock shelters for Jain Monks. In the Sangam literary works, references to various horizons of land formation surrounding the Vellar river basin are evident. The upper Vellar river basin was called as “Ollaiyur Kurram” and lower

part was called as “Mutturru Kurram”. The changing resilience of geomorphological formations in the district has largely influenced the evolution of different landforms and subsequently the formation of different cultural horizons. Porpanaikkottai (10.3823° N, 78.8718° E) is a small hamlet located in Veppankudi panchayat of Alangudi Taluk, 7 kms west of Pudukkottai town, towards the road leading to Alangudi. The site is surrounded by Porpanaikkottai Muneeswarar temple, Kaliyamman temple, Karuppar temple and Keelakkottai Muneeswaran temple on all the four sides.

Evidence of the Fort:

It is pertinent to mention here that the Porpanaikkottai Fort site still stands as a living evidence without any demolition, and the construction made out of mud bricks are present even today. The fort covers an area of about 50 acres with four entrances. The diameter of the fort seems to be 1.63 kilometers. The basement of the mud-wall in the northern entrance measures 50 ft. in breadth and 40 ft. in height. Also, a moat with 40 ft. width exists, which is presently used as a road to reach the fort. On the outer side of fort, a wall made out of Sangam Age construction material is seen. In line with the ancient Tamil poetry Thirukkural (Verse 743) mentioning about the weapons - both inside and outside of a fort, this Porpanaikkottai Palace boasts of a similar construction. Bastions, also known as bulwark, are defensive features protruding from the wall, and they are found at regular intervals on the top of this fort wall.

Sangam Age Hero Stone:

A team of students from the Tamil University, Thanjavur has identified a hero stone in Porpanaikkottai belonging to the Sangam Age. This finding was published in the 2013 Yavanam Journal. The script inscribed on the Hero stone runs as follows:

1st line – Kovenkattir Nethira (கோவெனகட்டிற் நெதிர)

2nd line – Naaru Ponkongar Vinna Kon (ணாறு பொன்கொங்கர் விண்ண கோன்)

3rd line – Aaeriitthu Eva Athavvanaaru (ஆ ஏறி இத்து ஏவ அதவ்வனாரு)

4th line – Angappadai Thaanath Thanayan Kanang (அங்கப்படை தாணைத் தணயன் கணங்)

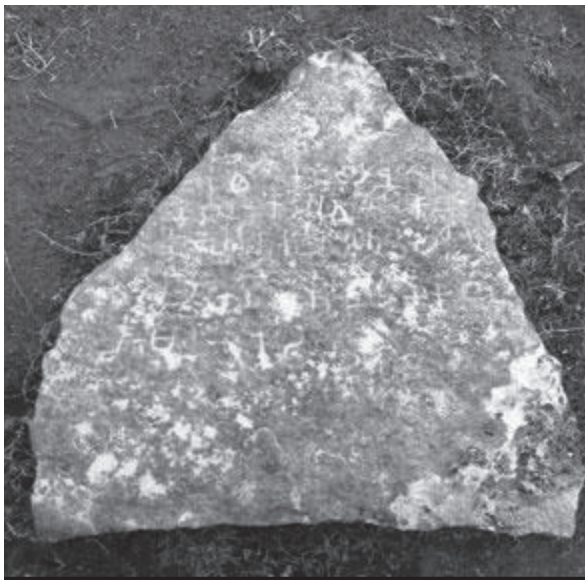
5th line – Kumaarn Kal (குமாரன் கல்)

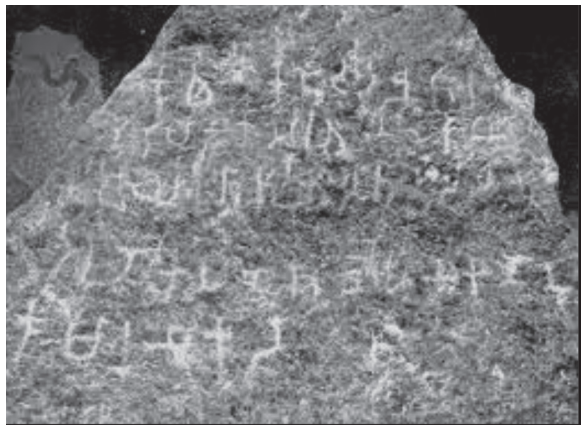
This stone was planted during the reign of Ko Venkatti, in memory of "Angapadai Thanaiyan Ganakumaran" - the Captain of the fort and Athavvan’s bodyguard, during the capture of herds (cows) of ponkongar vinnakOn.

கோவென்கட்டி என்பவர் காலத்தில் பொன்கொங்கர் விண்ணகோன் பசுக்கூட்டத்தைக் கவர அதவ்வன் என்பவருடைய மெய்க்காவல் படைத் தலைவனும் கோட்டையின் காவலருமாகிய “அங்கப்படை தாணையன் கணங்குமரன்” இறந்து பட்டமைக்காக இந்த நடுகல் நட்டுவிக்கப்பட்டதைக் குறிப்பதாக 2013இல் வெளிவந்துள்ள ஆவணம் இதழில் கண்டுபிடிப்புச் செய்தியில் தெரிவிக்கப்பட்டு உள்ளது.

Prior Excavations & Studies:

It is evident that Pudukkottai district has been a storehouse of many archaeological





sites from the Megalithic period, attested by the presence of habitational and burial sites that are scattered throughout the district. The researcher Mr. Venkatarangam Raju in 1934-35 has excavated many sites like Sittannavasal, Aranipatti, Kurantampatti, Thachchanpatti etc., and in 1938 sites like Muttukaadu, Kaliyapatti and Kalakudipatti that contained cist burials. Thiru. Srinivasa (Iyengar) had also excavated a few sites in 1917 and 1938. Later in 2008-2010, the Temple Survey Section, Archaeological Survey of India, Southern Region under the able guidance of Dr. D. Dayalan has conducted excavation at a site called Sengalur in Kulathur taluk, and this exercise has exposed many burial grave goods and other notable archaeological samples. Also in 2003 – 2005, Prof. K. Rajan, former Professor at Tamil University, Thanjavur and Pondicherry University, has conducted extensive survey in the district. Later in 2020, an extensive survey was undertaken by Dr. E. Iniyan as a part of his exploration. A village to village survey has been conducted - by which nearly 21 sites were identified proving the antiquity of the district.

Archaeological Sites in and Around Porpanaikkottai:

The most important aspect to consider in the Porpanaikkottai area is the adjoining domain of archaeological sites. The site called Kalasakaadu - located just 5 kms west of Porpanaikkottai and 2 kms east of Pudukkottai town, with more than 100 burial monuments shows that this site might have been a burial complex for the well-settled families in the fortification area. Apart from Kalasakaadu, there are many other sites revealing burial monuments and most of them are in a dilapidated condition.

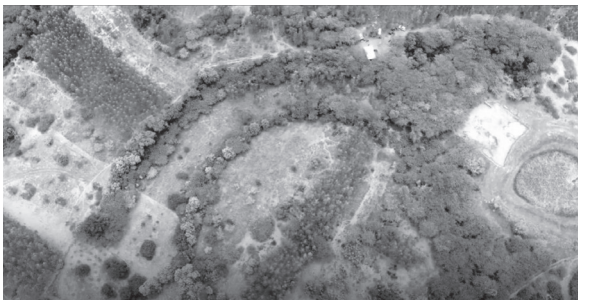
Ground Penetrating Radar Survey (GPR):

Sampling and excavation can be time-consuming and expensive, when it comes to archaeology. Before any digging begins, the archaeologist must gather subsurface data. The ability of GPR and other geophysical technologies to remotely and non-destructively scan sensitive archaeological

sites has been obvious in the recent decades. GPR can help with examinations comparing the natural soils of the site with archaeological elements.

GPR operates by periodically sending an electromagnetic pulse into the ground. A receiver antenna then picks up these pulses, as they reflect off the ground objects. It is feasible to determine the depth of underground features, by monitoring the strength and time delay of the responses. By gathering GPR data across a region, it is also possible to map below-ground features and estimate their size, shape, and depth.

With the intention to identify the subsurface relics in Porpanaikkottai, it was decided to conduct GPR survey before excavation. A detailed survey was conducted at multiple locations in the site. Finally, the location where presently the trenches were laid was surveyed with the GPR. Survey was conducted in blocks of 1m each in X and Y axis, with the total area of survey of about 8m x 8m. Transects were collected in both X and



Y axis with 1m spacing. For time efficiency, field data was gathered with transect 0 beginning in the southwest corner of the grid and further transects progressing northward.

Layout of the Trench:

Totally two trenches were laid down at Porpanaikkottai on the slop of the mound called Porpanaikkottai lake. These trenches brought to light, different cultural deposits. The trenches were named; PPK-1 and PPK-2.

The PPK-1 was laid on the main mound and the PPK-2 is a small trench laid on the eastern direction of the mound. PPK – 1 was marked with 8m x 8m measurements - with GPS to the Latitude and Longitude of N 10º22’ 52.00”; E 78º52’ 28.42”. PPK – 2 was laid on the west direction of the foothill and the measurement is marked as 3m x 3m.

PPK 1 yielded 6 layers which resulted in uncovering of materials like pottery, bone tools, bones of various domestic animals, beads made out of various raw materials, perforated pottery, hopscotches, conches, bangles of various raw materials, charcoal pieces, iron pieces, pottery with graffiti etc. The sediments in these layers seems to be varied in nature with soil like sand clay, reddish brown, pale yellow, pale brown in

colour. Texture seems to be the mixture of gravel, sand and brickbats at certain sections.

Brick and Clay Made Canals:

A brick canal, which was 89 cm in length and 27 cm in breadth, was exposed in the middle of the trench PPK – 1. A single brick in the canal ranges nearly 39 cm in length and 21 cm in breadth. Two vertical bricks are seen on both sides of canal. Another brick canal made out of clay in a partially broken condition was also exposed whose length was 90 cm and breadth in 32 cm. Mud plaster is used to bond the bricks. The continuity of both the canals seems to be absent. The presence of these bricks shows that they could have been used as an outlet to dispose kitchen waste. This can be inferred from the presence of charcoal pieces near the canals.

Ceramics from Porpanaikkottai Excavation:

During the excavation at Porpanaikkottai various pottery like Red ware, Red slipped ware, Black and Red Ware, All-Black Ware, Red and Black ware, Brown slipped ware, Coarse Red ware, Perforated ware, Painted ware, and Chocolate Brown ware were unearthed. Details below.

Black - and - Red ware: Black-and-Red ware is a well-known ceramic type of south India. This pottery belongs to Iron Age settlements and early historic sites of south India like Uraiyur, Sanur, Kaveripatttinam etc. This pottery is found in the lower most strata, found along with all-black ware and painted ware. The Black and Red ware is generally a wheel made pottery - made by using the inverted fire technique. Black and Red wares were found as fragments in lowermost level and in the mixed deposit. The general objects of these black and red ware were: pots, bowls, dishes, miniature vessels, etc.

Black Ware: Black ware found in this site is of high quality. In this type of pottery both the interior and exterior sides are in black colour. Generally, the slip is found on the outer side, and rarely on both sides. The pottery is made of well-levigated clay and has a thin fabric. It is found to be of wheel made pottery (If it is a handmade pottery, then it has a thick fabric). PPK - 1 yielded more number of all-black ware pot sherds.

Red Ware: Red ware is a common type of pottery. The surface colour is normally red to reddish brown. At the Porpanaikkottai excavation, Red Ware was the most predominant pottery, which was found in all the layers of the PPK-1, and it was predominant in the medieval days. The main objects of red ware at this site were pots and bowls.

Red Slipped Ware: Red slipped ware is the pottery found at later periods of the Black-and-Red ware. This pottery is wheel made, and named after the red slip applied on the exterior, interior or on both sides. The slip is a thick clay mixed with red ochre. The red slip is applied after the pot attains a suitable condition. After firing, the smoothness of the surface is gotten by rubbing of the pot, after the applying of slip. This pottery type is dated from 4th century CE to 9th century CE.

During the excavation at Porpanaikkottai. Many Red slipped ware potsherds were found.

Chocolate Brown Ware: This pottery is found in early historic and iron age sites of South India. During our excavation at Porpanaikkottai, we found a few sherds of chocolate brown ware made out of well levigated clay and it has a thin fabric.

Coarse Red Ware: It is a dull red ware made of impure clay - mixed with husk, grass and sand. The section is ill-fired and has a rough surface. In our excavation, few shreds were found in the middle and later levels.

Perforated Ware: Perforated ware found here is of red ware. The perforated ware probably was used for draining of starch and water from the cooked rice. A pot made out of coarse red ware was identified - which might have been used for household purpose. A Rim portion of an Urn was also recovered from the PPK-1, with huge amount of broken potsherds that have been dumped all around the rim.

Graffiti:

Another important feature of this excavation was the finding of potteries with graffiti symbols of different kinds. They have been identified at different depths, and their actual date should be concluded based on the associated remains. A Black and Red ware pottery seems to bear the ladder symbol, red ware pottery having oblique lines, a black ware having a wavy line superimposed over the extreme oblique of the second sign. Apart from this, few more symbols that cannot be completely identified due to their unfinished condition were also recovered. Some of the symbols have similarities with graffiti found at Keezhadi and Indus sites.

Pottery with Tamili Script:

The most noteworthy and extremely important finding of this excavation is the finding of a pottery piece - with Tamili script on the exterior of the pottery. The script in the pottery was read as "**குன ஊரன்**". On the basis of palaeographical evidences the letter is being dated to 2nd century BCE. This particular sherd has been retrieved from layer 3 at the depth of about 89 cm from PPK-I.

Other Findings:

A Thin antimony metalloid with a thickness of 0.4 cm was excavated in a weathered and corroded condition. Such a type of object has also been exposed at Keezhadi. Enormous amount of animal bone pieces - like foot, jaw and other portions of body - were identified in various digs of excavation at different levels of stratigraphic layers. The presence of bone tools like arrow heads found in this excavation shows that the people at Porpanaikkottai had enjoyed hunting as a hobby. They were used for domestic work as well as out-door activities like hunting and butchering wild animals. The tool working seems to be extremely intricate with fine endings. Such types of tools were also identified from Vallam, Uraiyur and Kanchipuram excavations.

Few pieces of bangles made out of glass, paste and terracotta were also identified. Some

iron pieces which are in a rusted condition were identified too. A small hook-like material was also exposed in the excavation. It could have been used for connecting two roof tiles. This could be understood by the presence of roof tiles in the nearby locations.

Porpanaikkottai excavation exposed nearly 100 beads which are of various types identified from different layers. The raw materials used for making the beads include glass, soapstone, bone, stone, steatite, quartz, crystal, paste and terracotta. The colours of beads include white, black, red, green, etc. A quartz bead in bi-conical shape with a hole in the centre weighing 4.6 gm has been identified with spiral lines on the exterior. A crystal bead with designs on the exterior was also identified.

Simple gaming objects were also exposed in this excavation, having a flat circular base with pyramidal top edge. They are black in colour made out of terracotta. These objects could have been utilized in games like chess or dice (Thaayam). In Tamil Nadu, various excavation sites like Karur, Korkai, Kaveripattinam, Kanchipuram, Uraiyur etc. have yielded terracotta gamesman objects. Some North Indian sites like Ataranji khera, Nagda, Nevasa, Lothal etc. have also yielded gamesman - not only of terracotta, but also made out of bone and ivory. Interestingly, these objects were made out of well-levigated clay and black polished. Nearly 20 hopscotches (playground games) with well finished edges and few in a broken condition have been exposed from the excavation. Such objects were used to play games and were found in almost all of the excavated sites in Tamil Nadu. Hopscotches from Porpanaikkottai were made out of coarse red ware pottery. Looking from the shape of the object and its availability in abundance, it may also be inferred that these objects could have been used as weights too.

Spindle whorls made out of well-levigated clay were also identified from the excavation. The old craft of manufacturing fabric uses an instrument called a spindle whorl (Thakkali), which is a disk-shaped object with a hole in the centre. The discovery of a spindle whorl is a proof of spinning and textile industry. One of the spindle whorls had a serration line at the base. Also, a terracotta ear ornament with centrally depressed groove around the circumference was identified. A terracotta toy wheel with a hole at the centre was exposed at a depth of about 50 cm in PPK-1. A few pieces of broken conch also was identified from the excavation. The exterior portion shows that it would have been well worked.

Archeological Sample: Iron Content Analysis

Four samples of Iron pieces have been subjected to investigation to expose the microstructure and percentage of Iron content. The magnetic iron is present in the form of magnetite & maghemite. The magnetic particles of samples were subjected to:

(i) HR-SEM (High Resolution-Scanning Electron Microscope) analysis for studying their microstructure using SEM-EDX (Energy Dispersive X-ray)

(ii) Chemical methods of analysis to determine the percentage of iron in the sample

Results: The four samples have similar morphological pattern. Many layered microstructures can be observed in all the samples than pores. (The formation of layers depends on the depth at which the samples were excavated. This may be due to the continuous pressure on samples under the earth for many thousand years.)

Iron content in the samples by Chemical method and EDS analysis:

Iron content measured by absorbance studies was very low compared to those obtained by EDX measurements. The chemical analysis proved that the amount of iron-soluble magnetic content estimated by chemical method is very low in samples A and D, as compared to the total magnetic iron content by EDX analysis. During the estimation of iron content by chemical method, the insoluble iron was filtered off. The reasons for very low solubility could be attributed to the following:

(i) If more amount of concentrated nitric acid is used and heated for longer time, then more amount of samples would have dissolved in the acidic solution.

(ii) Iron which is present in mineral form - as magnetite and maghemite in the samples had become very hard and unreactive towards acids. This may be because of the high pressure that these samples had experienced in the lithosphere.

(iii) The original objects would have been heated to such a high temperature that the samples had become very hard to be decomposed by acids.

Further confirmation from XRD studies is required to find out various iron minerals present in the samples and also to validate the above reasons.

Cultural Sequence:

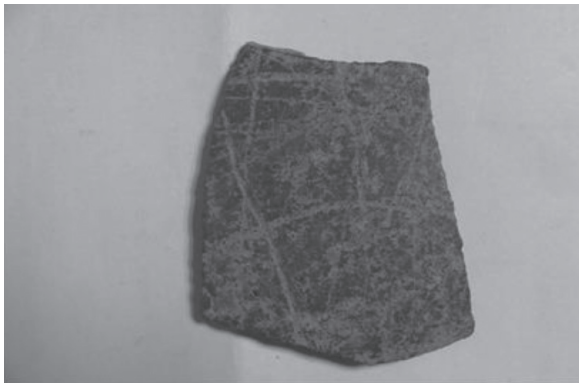
By analysing cultural artefacts like potsherds, beads, and several other samples recovered from excavation, it is possible to determine the cultural sequence of this site. With the help of typo-technological analysis, trenches have yielded two cultural periods namely Period I and Period II.

The artefacts from lower most layers could be assigned to Period I. These layers have exposed potsherds like Black-and-Red Ware, Red Slipped Ware, Black Slipped Ware and Red Ware. Black-and-Red Ware findings were predominant with the presence of fine varieties and objects like bowl, basin, dish and lid. Potsherds with graffiti marks have also been collected. Based on the findings, Period I could be assigned to the Iron Age.

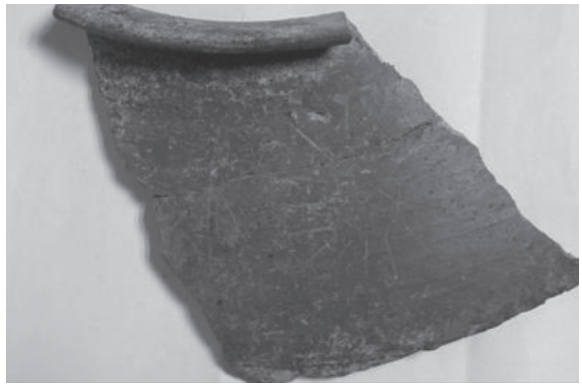
The artefacts from layers 3, 2 and 1 could be assigned to Period II. Presence of Black-and-Red Ware, Black Slipped Ware and Red Slipped Ware diminished, and from Layer 3 at a depth of 89 cm a potsherd with Tamizhi script has been identified. The most predominant pottery was Red Ware, followed by Red Slipped Ware, Black-and-Red Ware and Black Slipped Ware. These material

Brick Canal

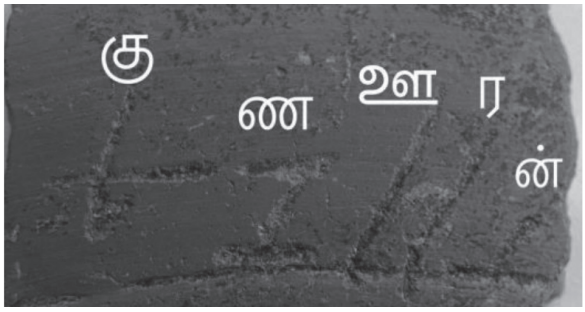
Clay Canal



A Sun sign



Three horizontal lines intersected by two vertical lines.



Tamizhi Script

Bowl

Designed Pottery

evidences suggest that Period II can be dated to Early Historic Period.

Conclusion:

The initial phase of excavations at Porpanaikkottai revealed many material evidence, opening up the possibility to continue the excavations, and research further on the development of infrastructure and way of life of the ancient Tamils. Initial excavations have proven that the ancient Tamils were cosmopolitan, adopting new technologies as they came into being over time. Analysis of iron components reveals that they were heated to extremely high temperatures and hardened as a result of the intense pressure in the lithosphere. Furthermore, it is conceivable that the existence of different minerals in iron objects would have contributed to increased hardness due to ecological and environmental causes. After a variety of scientific analyses, the presence of multiple minerals in iron should be validated.

Furthermore, it can be concluded that by means of methodical excavation and sound scientific analysis, the ongoing excavations at Porpanaikkottai by the Tamil Nadu State Department of Archaeology - will reveal the cultural antiquity, sophisticated lifestyle, trade activities and various industries of the Sangam Age. It's also significant that, in addition to Keezhadi, which came to represent the pinnacle of Tamil cultural achievement, the excavations at Porpanaikkottai would throw more light on the well-established and civilized Tamil society in the southern region of Tamil Nadu.

About the Author:

Dr. Iniyan is an Asst. Professor of Archaeology at the School of Social Sciences – Tamil Nadu Open University. He is experienced in field surveys and excavations conducted throughout Tamil Nadu and has participated in Excavations conducted at Palur (Chengalppatu District), Melchitthamur (Villupuram District) & Arpakkam (Kancheepuram District).

He is also the Director for conducting Explorations in Pudukkottai District (Porpanaikkottai) approved by the Archaeological Survey of India.

He has authored more than a dozen books on Archaeology and is adept in handling modern scientific techniques in archaeological explorations. In fact, his book ‘Computational Archaeology: Collection of Technologies’ is well received in the field. He regularly contributes to course materials in archaeological curriculum and has published more than 30 papers.

He has delivered lectures in Malaysia and has worked as an archaeological advisor in the Gudiyam Cave Documentary film screened at the 2015 Cannes Film Festival, France.