

The Dating of Arikamedu and its Bearing on the Archaeology of Early Historical South India

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I

As a result of the excavations conducted by Sir Mortimer Wheeler in 1945 (Wheeler et al. 1946), Arikamedu has come to be regarded as the most crucial site for dating of the archaeological finds at early historical sites in South India. The unique character of Arikamedu for dating is primarily due to the discovery of Mediterranean imports in systematic excavations undertaken there by several archaeologists: Wheeler in 1945 (Wheeler et al. 1946), L-M. Casal in 1947-50 (Casal 1949; Casal and Casal 1956) and more recently, in 1990-92 by myself (Begley 1993; Begley et al. 1996).¹

Today, some fifty years after Wheeler's excavations, Arikamedu is still the only site in peninsular India where absolute dates, as well as a relative chronology for its ancient settlement can be attempted. Accordingly, more precise dates for some of the Brahmi and Tamil-Brahmi graffiti on pottery sherds can also be proposed. However, it is not my intention here to discuss the material from all the relevant early historical sites, for the number is large and frequently the material is not published in detail. Only two sites, Karaikadu and Alagankulam, have been chosen for comparison here, because I was able to study some of the material from there and did not have to depend upon published sources alone.²

* [Note (by I. Mahadevan): When I was completing my book on Tamil-Brahmi cave inscriptions, I had also planned a companion volume devoted to the study of Tamil-Brahmi inscriptions on pottery and other inscribed objects like coins and seals. I had requested Dr. Vimala Begley to contribute a chapter for this volume on the importance of Arikamedu pottery in determining the chronology of Early Historical Period in Tamil Nadu. She sent me her contribution in April 1997. However, the proposed volume could not be published due to various adverse circumstances. Before I could return the manuscript to her for publication elsewhere, Dr. Begley had passed away. I am consoled that her important study is being published as a paper in the present volume. I have not edited the paper beyond making a few typographical corrections and adding Fig. 1 (as requested by her), courtesy Tamil Nadu State Department of Archaeology, Chennai.]

¹ For a detailed bibliography on Arikamedu see Begley 1991: 192-193, n.49; Begley et al. 1996: ix-xv. I am grateful to my colleagues on the Arikamedu Excavation Project and to Mr. I. Mahadevan; I relied greatly upon their expertise for dating numerous finds from the site, from amphoras to Tamil-Brahmi graffiti.

² I am grateful to Professor K. V. Raman for introducing me to the site of Karaikadu and for showing me the material from his excavations, which is in the Madras University, Department of Ancient History and Archaeology. The material in the Cuddalore Museum is not from archaeological excavations. It contains selective pottery and other objects which were recovered when the foundations of the present factory complex were being laid. I am also grateful to Mr. Gandhi and Ms. R. D. Thulasi Brinda, curators of the museum, for permitting me to examine the material, especially since none of it is published as yet. Most of the Alagankulam material is not published either. My observations are based upon the pottery and other artifacts seen by me. Dr. R. Nagaswamy was kind enough to show me selective material from his excavations, while Mr. N. Kasinathan, present Director of the Tamilnadu State Department of Archaeology, kindly permitted me to study and photograph materials from the site in storage. My thanks are also due to the

From the material brought to light in his excavations, Wheeler concluded that the site dated from Augustan times, and that it continued to be occupied throughout the first two centuries A.D. and perhaps longer (Wheeler et al. 1946; Wheeler 1954). Wheeler's dating was based upon the discovery of Mediterranean amphoras and terra sigillata (Arretine ware) in his excavations as well as references to Rome's trade with India in Classical literary sources, such as the *Periplus Maris Erythraei*. His dating of Arikamedu dated, for the first time, associated pottery at the site; it also had a very profound impact on the dating of other early historical sites where ceramic parallels with Arikamedu could be established, especially when the so called rouletted ware was found.³

Just on the basis of the discovery of rouletted ware, numerous sites, or specific settlements at a site, have been assigned to the first two centuries A.D. Therefore, it is important, first, to update and re-examine the evidence from Arikamedu itself and only then consider how and to what extent its dates could help date other early historical sites in South India.

Today we can demonstrate fairly conclusively that Arikamedu was occupied for a much longer period of time than the first two centuries A.D. A revised chronological sequence for the different phases of the ancient settlement there was proposed by me in 1983, after collating the data from Wheeler's and Casal's excavations (see Begley 1983: Table on p.466). The sequential phases for the ancient period still remain more or less the same, however, it is now possible to extend the chronology to include medieval and modern times. Moreover, due to advances in classical archaeology, and our own researches at Arikamedu in the last five years, it is also possible, now, to further refine the dates of the imports, and consequently of the different phases of occupation. Therefore, an updated version of the table, as it pertains to this study, is included here (See Appendix: Table 1).

Since the chronology of Arikamedu hinges upon imports, it is important to consider them first and see if any significant changes in their identification and dates have been proposed since Wheeler's time. Obviously, if there is substantial change in the dates of the imports, the dates of Arikamedu, and those of other related sites, would have to be adjusted accordingly.

The most precisely datable of all imports found at Arikamedu are small fragments of cups and plates of terra sigillata, more commonly known as Arretine ware in the literature related to Arikamedu. Some of the sigillata has stamped signatures of the potters. Recently, Howard Comfort (1991) dated the stamped sigillata found at Arikamedu to ca. 10 B.C.-A.D. 30; and the entire range of terra sigillata recovered from the site has been placed by Kathleen Warner Slane (1996: 366-368) between 10 B.C.-A.D. 50. Based upon these

curators of the Department of Archaeology's museums at Ramnad and Rameshwaram for their assistance.

³ For detailed study of rouletted ware at Arikamedu see Wheeler et al. (1946): 45-48; Begley 1988; Begley 1996b: 226-228. Rouletted ware, in all likelihood, is not "rouletted," nor is it, strictly speaking a ware; it is simply a dish made from fine paste with indented decoration. I have, however, retained the expression because it is widely used and understood in the archaeological literature pertaining to South India.

studies, we can date the sigillata import period at Arikamedu (Table 1, Phase D) to ca. the end of the first century B.C. and middle of the first century A.D. In dating of occupational phases from imported artifacts there is always a margin of error at both ends, since it is frequently not possible to postulate when an object arrived at a site, when it was discarded and when and how a fragment from it was deposited at a given location. In the case of the sigillata also, it is not possible as yet to precisely determine when it arrived at Arikamedu and how long it was in use. Therefore, the dates assigned to Phase D, and consequently to other phases as well, should only be considered approximations. Both Comfort and Slane have suggested that all the sigillata at Arikamedu could have arrived in a single consignment (Comfort 1993; Slane 1996: 366). However, we are not able to reconcile this hypothesis with the stratigraphical evidence in hand at the present time, since sigillata sherds are associated with sequentially differently placed strata, some dated earlier than 50 A.D.

Some of the sigillata has been found in disturbed, mixed deposits, thus, in such cases, its value for dating associated finds is mostly lost. For instance, the stamped fragment from Pottery Group A of Wheeler's excavations (Wheeler et al. 1946: 36, no. 18, see also p.52) is dated to ca. 10 B.C. by Comfort, but it cannot date the associated material in the pit, including the Brahmi graffito on a sherd, as precisely. The graffito with a Prakrit inscription is certainly Wheeler et al. (1946) no. 3, although it is not specified as such. But it is the only one on the base of a vessel with a Prakrit inscription (see their pp. 52, 111-112).

The other category of imports is the amphora jar, which was a container for the shipment of wine, olive oil and garum sauce (Will 1991; 1996). Unfortunately, the amphoras also only survive in small fragments. Recent studies of the amphora sherds by Elizabeth Lyding Will (1991; 1996) indicate that the amphora-related trade originated in the Greek islands of Koas, Knidos and Rhodes, and in Italy, Spain, France and the Adriatic Sea. The Koan and Kindian products according to her are datable to the first century B.C. (or even earlier) and most of the others to the first century A.D., a few to the second. Three small fragments appear to be from jars of a later time period, covering the third to the sixth/seventh century time period. The vast majority of amphoras at the site, however, date from the first century B.C./A.D. Of the first century A.D. is also an amphora fragment with a Tamil-Brahmi graffito found in recent excavations at Berenike, Egypt (Mahadevan 1996b). The earliest datable Mediterranean imports at Arikamedu, even prior to the shipment of terra sigillata, are products shipped in Knidian and Koan amphoras.

The other imports, such as glass and faience bowls and ceramic unguentaria, are also believed to be from the first century B.C./A.D. time period (Slane 1996: 367). These dates provide the basis upon which rests the chronology of the ancient period at Arikamedu.

Since the time of Casal's excavations it has been known that prior to the period of imports, or the period of trade with the Mediterranean basin, the site was inhabited. The earliest known settlement was in the Southern Sector of the site. The pottery assemblage associated with this settlement relates to the late Iron Age pottery of South India, on the basis of which Casal termed the

settlement as belonging to the "Megalithic" period (Casal 1949:= Begley 1983: Phase A). In this assemblage was also a sherd of "megalithic" pottery, Coarse Ware 1b of my classification, with a Tamil-Brahmi graffito (Casal 1949: 63, pl. 13D); Mahadevan 1996: 5.17). A. Soundara (1987: 47) has suggested that there was a neolithic habitation located in both the Northern and Southern Sectors, but so far there is no evidence of a neolithic cultural or chronological horizon at the site in either of the two sectors (for discussion see Begley 1996a: 13-14).

As mentioned above, the earliest settlement pre-dates the beginning of any known overseas trade and it also pre-dates the use of rouletted ware at the site. It is identified primarily on the basis of its pottery which is a coarse ware, classified as Coarse Ware 1a by me (Begley 1996b: 119), commonly known as "megalithic" black-and-red ware or all black ware. There is no new evidence for dating this phase. Therefore, the dates suggested earlier, between the third and first centuries B.C., most likely the second, are still the best that can be offered.

Into this "Megalithic" settlement of the Southern Sector brick architecture and new ceramic types, such as the rouletted ware, appear (Phase B), and at some point Mediterranean products shipped in amphoras also arrived (Phase C). No precise date for when rouletted ware or the earliest amphoras (Koan and Knidian) arrived can be determined as yet. As stated earlier, Will considers the earliest amphoras at Arikamedu as datable to the first century B.C., possibly even the second.

We do not know for certain whether the settlement in the pre-overseas trade period extended to the Northern Sector also, for the lowest occupational deposit in the north is below fresh water table and is largely unexcavated. The earliest known settlement there is of people who used a grayish-brown coarse ware (Coarse Ware 2a, Begley 1996b: 121) with white/gray slip as their primary pottery. Associated with their settlement are the rouletted ware and the first Mediterranean imports, brought either by them, or to them by other traders. As stated earlier, no cultural horizon pre-dating the period of overseas trade could be recognized, although the lowest occupational layers are without amphoras, but they do contain rouletted ware. These correspond to Phases B and C (see also Begley 1983: 466). There is no new evidence to separate or combine Phases B and C. But, since the first occurrence of rouletted ware is consistently earlier than the amphora jars, I continue to separate Phases B and C. Phase C should be dated before the end of the first century B.C. Its lifespan can only be estimated, generally, in the first century B.C. The period of sigillata imports (Phase D), as stated earlier, dates from the end of the first century B.C. to the middle of the first century A.D. and Phases E and F would date from the second half of the first century to the third, or even later into the seventh century, but a clear cut division is not possible at this time. Since Arikamedu is a highly disturbed site, sequential ceramic typologies can be worked out only for the early phases, through Phase D. In coarse wares, the most securely datable pottery is Coarse Ware 2a with white/gray slip (Begley 1996b: 121). As far as we know, it occurs only in the Northern Sector and in association with early amphoras and sigillata. It would therefore date from the first century B.C. to early, or the middle, of the first century A.D. More likely between 50 B.C. and A.D. 25/50 or

so. Based upon present dating of the sigillata and our understanding of the stratigraphy, graffiti on this particular ceramic type recovered from the Northern Sector (Mahadevan 1996a: 5.23 and 5.29) could be assigned dates within this time period.

Coarse Ware 1a (Begley 1996b: 119) and the associated Coarse Ware 1b ("megalithic" pottery), on the other hand, have a longer lifespan, from the middle of the third/second century B.C. to the middle of the first century A.D. More precise dates would therefore depend upon the depositional context with which a particular sherd of this ceramic type is associated. Mahadevan (1996a) 5.17 graffito, mentioned earlier as well, is on a sherd of Coarse Ware 1b, found in Casal's excavations from levels of the "megalithic" period (Casal 1949: 63, pl. 13D), before the period of trade with the West and before the first occurrence of rouletted ware. Thus, due to the depositional context in which the sherd was found, it could be dated anywhere before the first century B.C., or rather between the middle of the third and early first century B.C., the time period within which Phase A culture appears to have existed. Other sherds of Coarse Ware 1b with Tamil-Brahmi graffiti (Mahadevan 1996a: 5.9, 5.11, 5.13) found in our excavations, however, date from the time when rouletted ware was in use, therefore they are likely to be of the first century B.C./A.D., but most probably no later than the middle of the first century A.D., for the use of Coarse Ware 1a-b can be documented only up to that time.

In fine wares, the most frequently cited ceramic type for dating of other sites is what is commonly known as the rouletted ware. Rouletted ware is actually a high walled dish with contiguous rim, body and base, a thickened, some times beaked rim and "chattered" decoration on the interior of the base (Wheeler et al. 1946: Type 1; Begley 1996b: Form 1). My study of the rouletted ware at Arikamedu shows that it was made in two fabrics, termed Fine Ware 1 and Fine Ware 2 (Begley 1996b: 121-122=Variety 1 and Variety 2 in Begley 1988: 431-434). It should be stressed that other vessel forms were also produced in the same fabrics: therefore, not all sherds of Fine Wares 1 and 2 are necessarily from the "rouletted" dish. This should be kept in mind when body sherds without decoration are found at other sites. Rouletted ware occurs with amphora jars and sigillata. Thus, it can be securely dated to the first century B.C. and the first century A.D. It may have pre-dated the arrival of amphoras, (in Phase B) and thereby could be even earlier, but the evidence is not conclusive as yet.

Nevertheless, on the basis of the data which were available until recently, the lifespan of rouletted ware at Arikamedu appeared to be more or less the same as the period of most of the imports from the Mediterranean. Therefore, I had dated the Arikamedu rouletted ware to *ca.* first century B.C and first century A.D., with possibilities of both an earlier origin and late survival. However, a graffito in Tamil-Brahmi (Mahadevan 1996a: 5.30) on the exterior surface of a sherd of Fine Ware 2 with "rouletting," Mahadevan considers to be of the third century A.D. There is no other evidence for rouletted ware surviving this late at Arikamedu. Therefore, the date of the graffito poses a problem in dating the vessel which is clearly a dish of rouletted Ware. The sherd has several graffiti on its interior surface (Begley 1996b: 4.254). Since

graffiti are not always of the same time period as the object, one could disregard the date of the Tamil-Brahmi graffito for dating the pottery. But Mahadevan is dating five other graffiti from Arikamedu to the third century (Mahadevan 1996a: 5.6-7, 5.28 and Wheeler et al. 1946: nos. 4 and 15), one of which, Wheeler et al. no. 15, also appears to be a dish of rouletted ware. The dish is from AK IV in the Southern Sector. Of the others, Wheeler et al. no. 4 is from AK I which has mixed material, and the location of the other, Mahadevan (1996a) 5.28, presently in the Pondicherry Museum, is unspecified. Mahadevan (1996a) 5.6 is from a large pit in which mixed pottery, from amphora fragments to medieval vessels, was found. Moreover, a couple of amphora fragments and some other pottery may also be from the third to the sixth/seventh century time period (Will 1996: 320; Begley 1996b: 121). Therefore, artifactual evidence is slowly beginning to surface for continued settlement, or resettlement, of the site past the second century. Because of the disturbed nature of the site we are not able to distinguish any specific architectural or other features of the third-sixth century time period.

However, if the Tamil-Brahmi graffiti on the rouletted ware dish in the Pondicherry Museum and the one from Wheeler's excavation cited above date from the time when the dishes were in use, they would change the dating of rouletted ware at Arikamedu to include the second and at least part of the third century. The lifespan of rouletted ware at Arikamedu would therefore be from the first century B. C. to the third century A.D., with possibilities of extension at both ends. We can, thus, no longer consider other sites, or occupational phases at other sites, with rouletted ware as exclusively datable to the first two centuries A.D.

The inevitable question then is to what extent can the dates of Arikamedu determine the dates of other sites where comparable material is found. Unfortunately, at other early historical sites the most frequently cited find for comparisons with Arikamedu, of course, is the rouletted ware. If we assume that at Arikamedu the dates for rouletted ware range from the first century B.C. to the third century A.D., the dating of other sites where this ceramic type is found would have to be re-examined. But before the dates are revised, other factors should also be taken into account. For instance, as is well known, not all the sites where a fine ware ceramic type is found may be entirely contemporary, nor may they cover the entire range of dates as at the primary site. To pursue the case of rouletted ware as an example, its usage at Arikamedu may cover a period of some four centuries, or more, a fairly long period of time. Certainly not all the sites where it is found could be dated accordingly.

The dating of rouletted ware at other sites would depend upon internal evidence or other considerations. For instance, for a recently published sherd of rouletted ware, with a pictorial graffito representing a ship (fig. 1), a date in the first century B.C. was suggested (Indian Express, Madras, April 6, 1996). It is not clear from the note whether there is some internal evidence for considering the sherd to date from the first century B.C. In January 1997, I was able to examine the sherd. It is a fragment from the rim (with oblique lip) of a dish of rouletted ware. The exterior surface is red (2..5YR 4/8) and the interior bluish

gray (7.5YR 4/1 nearest) and the cross section of the wall gray. Both, the form and the surfaces are common in rouletted ware. If we apply the dates of rouletted ware at Arikamedu to it, it could date anywhere from the first century B.C. to the third century A.D. Moreover, this is also the range of dates, perhaps even longer, for rouletted ware and its variants at Alagankulam. Therefore, on the basis of the pottery alone a more precise date cannot be suggested. The graffito, however, is another matter. Lionel Casson has convincingly reconstructed the form of the vessel, which resembles Roman ships of the first to third century. Therefore a date in the first-third century time period, at least for the graffito, if not the pottery, is more likely.⁴

II

Using Arikamedu, as a base, we now attempt to date two other sites, Karaikadu (Kudikadu) and Alagankulam, and see to what extent the dates of Arikamedu could be applied to them. Both sites are on the Coromandel coast and are likely to have had close contact with it. Moreover, both were on the trade network operating between the Mediterranean region and the Bay of Bengal.

The site of Karaikadu lies some 40 km south of Arikamedu, on a water inlet along the coast. Brief excavations were undertaken by K. V. Raman for the Archaeological Survey of India and for the Madras University before the site was built over by a factory complex (Raman 1991). During the course of the construction of the factory several additional objects were found, some of which are presently in the Cuddalore museum. Artifacts from the collections presently in the Madras University and the Cuddalore Museum include a fragment of a Mediterranean amphora handle, datable to the first century A.D. The collections also contain sherds of rouletted ware, tapered bowls with stamped decorative motifs (Wheeler et al. 1946: Type 10; Begley 1996: Form 5 at Arikamedu), and a sherd from a small dish with stamped and incised decoration (Wheeler et al. 1946: Type 141).⁵

In short, in the limited material seen by me there are sherds of the three most distinctive decorated fine ware forms of Arikamedu. A fluted impressed decoration found on a couple of sherds at Arikamedu (Begley 1996b: 4.238) also has parallels, and there were three sherds of Arikamedu Fine Ware 3, two with impressed decoration, in the Cuddalore Museum. While rouletted ware has a wide spatial distribution, the others occur at fewer sites and thus suggest that the two settlements were on the same trade network. In addition, and more importantly, at Karaikadu there are very close ceramic parallels to Arikamedu in coarse wares as well, including some fairly specialized forms. Lug-handles,

⁴ A photograph was kindly provided by Mr. N. Kasinathan, who indicates that the sherd was recovered from Trench 7, layer 2, at a depth of 1.12 m. I am extremely grateful to him for showing the sherd to me and to Professor Lionel Casson for identifying the graffito for me in a letter dated November 1, 1996; see also "Unearthing the Roman Connection." In *Indian Express*, Feb. 10, 1997.

⁵ Sherds of rouletted ware are in the Madras University collection. Two fragments of stamped bowls, one each in Arikamedu Fine Wares 1 and 2, were seen by me in the Cuddalore Museum in 1995. The sherd in Fine Ware 1 has a stamped bird motif on fairly lustrous interior surface.

for instance, are diagnostic of Arikamedu and rarely found at other sites in the area, but there is an example from Karaikadu (fig. 2; also Begley 1996: fig. 4.351). Ledged cylindrical stems (Wheeler et al. 1946: Type 143; Begley 1996 Form 15) are also reported from very few sites in South India other than Arikamedu. But at least two examples from Karaikadu (fig. 3) are in the Cuddalore Museum. Conical vessels (Wheeler et al. 1946 Type 75; Begley 1996b: Form 12), distinctive of Arikamedu, are also distributed over a limited area in Pondicherry and Tamilnadu, but do occur in substantial quantity (we assume) at Karaikadu.⁶ In addition, there are sherds with perforations, as at Arikamedu. Although vessel forms cannot be compared because of the small size of the sherds, there is an unusual example of a knob with several perforations (fig. 4) from Karaikadu in the Cuddalore Museum. Its date is undetermined as yet. However, parallels in coarse wares, more than in fine wares, suggest close communication between the two sites.

But there are differences as well, the significance of which we should try to assess. In none of the collections from Karaikadu seen by me is there Arikamedu Coarse Ware 1a or the white/gray slipped Coarse Ware 2a.⁷ Among other features, Arikamedu Coarse Ware 1a has black-and-red or all black surfaces, like the "megalithic" pottery. A black-and-red surfaced pottery from Karaikadu is reported by Raman (1991), but the sherds seen by me are in a coarser and thicker fabric than the Arikamedu Coarse Ware 1a. The coarser and thicker variety occurs at Arikamedu also, but in a later context. Coarse Ware 2a with white slip is diagnostic of Arikamedu. It occurs only in the Northern Sector and can be dated to ca. 50 B.C.-A.D. 50, and as far as I know, it does not occur at other sites in South India. When we consider the entire ceramic evidence available thus far, including all the fine and coarse wares, Karaikadu would appear to be contemporary with Arikamedu during the red Coarse Ware 2a phase, that is, first century A.D. on, but, most probably, not earlier. New discoveries may change our perception, but at present it seems that the Karaikadu settlement came into existence later than Arikamedu.

The other artifactual evidence also supports this premise, for at Karaikadu there is also evidence for the making of beads and other small artifacts of glass and semi-precious stones, as at Arikamedu. Finished products and wasters were reported by Raman (1991) and they also exist in the Cuddalore Museum collection. Because of comparable finds and close spatial proximity to Arikamedu, Karaikadu would appear to be more or less an extension of Arikamedu, but, it seems, only during Arikamedu Phases D and E. There is medieval material at both sites, but that is beyond the scope of this study.

The dating of the material from Alagankulam, and the site in general, is more complex because of the variety in finds and the nature of the excavations.

⁶ Three fairly large fragments of the lower portion of the vessel were on display in the Cuddalore Museum and two in storage in 1995. The Cuddalore Museum collection contains only distinctive finds. For distribution of the form see Begley 1996: 233-234.

⁷ For descriptions of Arikamedu Coarse Ware 1a and Coarse Ware 2a with white slip see Begley 1996: 119-121.

The site has been excavated by the Tamilnadu State Department of Archaeology, under the direction of R. Nagaswamy in 1986-87 and N. Kasinathan from 1990-91 on. The results of the 1986-87 excavations were briefly published by Nagaswamy (1991), and the more recent excavations, also briefly, by Kasinathan (1992, 1994a, 1994b, 1996). Both Nagaswamy and Kasinathan have assigned a fairly long period of occupation to the site and have built chronological sequences on the basis of coins, radiocarbon dates and ceramic types, such as NBP (Northern Black Polished ware) and "rouletted ware." Nagaswamy, after his excavations, stated that the occupation was continuous, dating from ca. 300 B.C. to 500 A.D. (1991: 250). In the upper deposit, at a depth of 0.95 m, was found a copper coin of Valentinian issued from the mint at Antioch (Nagaswamy 1991: 250, fig. 1), and at depth of 2.90 to 6 m more than ten sherds of NBP were recovered (Ibid.: 249). Kasinathan has also dated the site as early as the fourth century B.C. (1994: 70-71). He states: "The black and red ware sherds are datable to the fourth-third century B.C. They were of fine fabric, occurred in the lowermost level datable to 400 B.C. on the basis of carbon C14 analysis." (Ibid.) And he assigns the square copper coins of the Pandyas also to the fourth century, one of which was found at a depth of 2 m.

Attribution of dates to objects, and consequently the settlement, on the basis of depth at which they were found has no meaning, unless the finds come from strictly defined strata. Therefore dating of the objects and the settlement of Alagankulam depends upon how securely the objects can be dated on the basis of other criteria. The upper dates in the fourth-fifth centuries are valid because of the coin of Valentinian, mentioned earlier, and one of Arcadius (A.D. 395-408) reported by Kasinathan (1994a: 33); and, as at Arikamedu and Karikadu, there is medieval material as well. The lower dates for Alagankulam are based upon radiocarbon determinations⁸ and the discovery of some ten sherds of NBP (fig. 5). Of the sherds seen by me, two appear to be metallic brownish gold NBP, the identification of the others is not as certain. However, it is well known that NBP has a very wide range of dates in North India. It could have very well reached Alagankulam at a later date than the fourth/third century. The same uncertainty applies to black-and-red surfaced pottery also, which has even a wider range of dates. In short, further research is needed to determine the lower dates of Alagankulam. But *if* the settlement is as early as the excavators suggest, it would predate Arikamedu.

When we compare the available data for Alagankulam with those from Arikamedu, there are noticeable parallels and differences. In imports from the Mediterranean region, there are fragments of amphora jars of the first-second century A.D.,⁹ but no terra sigillata or Mediterranean glass and other products,

⁸ Three dates were published in *Indian Archaeology, A Review 1987-88* (p. 149) for charcoal from AGM 2, layers 2-3: 2150 ± 110 BP; 2210 ± 110 BP; 2310 ± 130 BP. The determinations do not necessarily imply a fourth century date for the NW, or the earliest deposit. A limited number of Radiocarbon dates for early historical times should be viewed cautiously, unless they are supported by other evidence.

⁹ Six or so fragments were seen by members of the Arikamedu excavation project at the State Department of Archaeology, Madras. Professor E. L. Will considers them to be of the first-second

as at Arikamedu, have been reported as yet. What Nagaswamy considered to be imported African red slipped ware appears to be red "rouletted ware" (for discussion see Begley 1994). Therefore, present evidence indicates that the imports from the Mediterranean region at Alagankulam were limited to products shipped in amphora jars and coins. Moreover, if the amphora jars are no earlier than the first century A.D., then the Mediterranean trade here would appear to begin later than at Arikamedu.

In other ceramics, many of the fine ware forms of Arikamedu occur at Alagankulam also. Statistical comparisons are not possible because the excavated area at Alagankulam is far less and only selective pottery, mostly the preserved pottery from Nagaswamy's excavations, was seen by me. However, there is rouletted ware, to which we will return in a moment, and fragments of Wheeler et al. (1946) Types 6, 10, 18, and 141 forms. Except for rouletted ware, the others are found in small numbers — a pattern more or less similar to Arikamedu. Thus, we may assume that the production, or availability, and usage of the forms at the two sites were similar.

But, we should briefly consider how similar or different are these fine ware forms from the two sites. Rouletted ware at Alagankulam does have close parallels to Arikamedu in fabrics and forms. Both Arikamedu Fine Ware 1 and Fine Ware 2 fabrics are found at Alagankulam, including examples with lustrous black interior surfaces; and both rim profiles, the thickened and the simple inverted, are present. The indented ("rouletted") decoration also closely parallels that from Arikamedu. Even more exclusive features, such as a grooved circle on the exterior center of the base, found on some sherds at Arikamedu (Begley 1988: Fig. 12; 1996: Fig.4.258), are present on the rouletted ware at Alagankulam also (fig. 6).

But at Alagankulam a variant of the pottery, which is fired red, occurs in large quantity. A few red sherds of rouletted ware occur at Arikamedu also (Begley 1996: fig. 4.259 from the Northern Sector, and a few rims from the Southern Sector), but they were either accidentally misfired or imports from Alagankulam. In the collection from the excavations at Alagankulam seen by me, the red variant far outnumbered the others. The red variant is also made from fine clay/paste. Only analysis of the components of the clay/paste would determine the source, or sources, of the raw material. The best examples are evenly fired red (10R 4/8); there are also sherds with yellowish red discolored surfaces. Two fairly large decorated fragments from the base with dot-like indentations, common in rouletted ware at Arikamedu, have brown (7.5YR 5/4) surfaces. The completely brown surface of the base does not occur at Arikamedu; it is distinctive at Alagankulam. The rim profiles are identical to the Arikamedu forms and probably the sizes also, although very few rims were measured by us. The decoration (figs. 7-8) also has the same range as at

century A.D. A few body sherds with black resin coating on the interior were in the storage collection in the Ramnad Museum in 1995. A fragment of a jar handle is in the collection of Mr. P. Ravitchandrainne, Tagore Arts College, Pondicherry.

Arikamedu, and even the grooved circle on the exterior center of the base, mentioned above, occurs on some sherds (fig. 9).

The major difference between the rouletted ware of Arikamedu and the red variant (and some gray/black also) at Alagankulam is in the manufacturing process, and thus a very major difference, suggesting, perhaps, more than one production center. Several of the rim sherds of the red variant seen by me, and some of the standard black/gray as well, had internally folded rims, often very poorly joined with uneven edges visible on the interior (figs. 10-11). Such poor workmanship was not noticed at Arikamedu. Folded rims, but with neater edges, are known there on vessels in Arikamedu Fine Ware 3 and Coarse Ware la-b; but the method of production is perceptible only in the break, not from the finished surface.¹⁰

Moreover, several of the fragments from the base have impressions indicating that the dishes were dried on mats or other textured surfaces and the surface was not smoothed subsequently. The crude finish of the rim and exterior of the base suggests poor potting standards when compared to Arikamedu.

It seemed earlier, from Nagaswamy's publications, that the red variant of rouletted ware is later in origin, but after examining the sherds in storage from his excavations it seems that the Arikamedu types and the Alagankulam red variant overlap and were in use concurrently. If this is substantiated from material from subsequent excavations as well, it would further support the premise that the products of two different workshops were in use simultaneously at Alagankulam.

The tapered bowl with impressed decorative motifs, (Wheeler et al. 1946: Type 10; Begley 1996: Form 5 at Arikamedu) was also in use at Alagankulam. Six sherds were seen by me and there are likely to be more from later excavations. Here, once again, there is the standard Arikamedu type of bowl with stamped figures in single rows, but there are also other variants of the motif, as in fig. 12, where the decoration extends to another row, a feature which does not occur at Arikamedu (see Begley 1996: 229-231 and figs. 4.293-294 for more details). Moreover, at Alagankulam the form occurs in the variant of fine ware which is fired red.

In addition, as mentioned earlier, in fine wares there are other parallels as well. A couple of sherds seen by me, such as the grooved fragment in fig. 13, appear to be from bowls of Wheeler et al. (1946) Type 18 (Begley 1996: Form 6). There were also a couple of sherds (fig. 14) with decorative motifs, as on Wheeler et al. (1946) Type 141, and several sherds with grooved concentric circles (figs. 15-16) which occur on dishes (Wheeler et al. 1946: Type 6) and jars of Arikamedu Fine Ware 3 (Begley 1996). A single fragment from a fine ware bowl with a central protrusion, or boss (fig. 17), also has parallels at Arikamedu (see Begley 1991: Fig. 10.27). In all the sherds of these bowls and jars seen by me there were no sherds in the red fine ware of Alagankulam—a major difference between these and the “rouletted ware” and bowls with stamped motifs, which

¹⁰ Illustrations of the Arikamedu rims are forthcoming in volume 2 of the Arikamedu excavations.

were made in red fine ware also. If the pattern holds true for material from subsequent excavations as well, it would imply that only two of the many fine ware forms of Arikamedu were produced in the red fine ware of Alagankulam.

The coarse wares at Alagankulam, from the material seen by me, do not have close parallels to Arikamedu in distinctive diagnostic forms, as at Karaikadu. There was one sherd of a stem/finial with ledged body (fig. 18), similar to Wheeler et al. (1946) Type 146 (Begley 1996: Form 15). There are parallels in decoration, especially impressed patterns, as in fig. 19. A distinctive paddle-impressed decoration found at Arikamedu (Begley 1996: Figs. 4.216-220) also occurs at Alagankulam (Begley 1996: Fig. 4.221), but it was probably brought from elsewhere at both sites.

Our perception of Alagankulam may change with new discoveries. But as of now, from the material known to me, it appears that Arikamedu and Alagankulam no doubt overlap partially; they may even have been mostly contemporary. However, if the earliest settlement at Alagankulam is as early as the excavators suggest, then it predates Arikamedu's early settlement. The dates of the period when rouletted ware was in use at Arikamedu also appear to be applicable to Alagankulam, assuming that rouletted ware survived as late as the third century at Arikamedu. But the source of manufacture of most of the ceramics at the two sites appears to have been different. Ceramic typologies for the period after the second/third century are not well defined at either site; both, however, have medieval material.

These observations on the dating of the pottery from Alagankulam may have relevance to the dating of the graffiti from the site; likewise dating of the graffiti on the basis of the style of the characters may help date the context with which the sherds with graffiti were associated. Careful analysis of all the data from Alagankulam, and from other sites as well, may refine the dates of inscriptions and other material remains of the early historical period in South India.

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Appendix 1:

Table 1: Chronological Sequence of Early Historical Phases at Arikamedu (revised 1997)

	[200 B.C._150__]	[__100__]	[__50__]	[_BC/AD__]	[50__]	[100__150__]	[200__250__300]
Phases	A	B	C	D	E	F	G
Structures:	post-holes	brick enclosures bricks, ring-wells post-holes	reservoir, ring-wells, walls, floors, lined-pits, brick-enclosures	continued from phase C	ware house, tanks, floors, ring-wells, etc.	corbelled drains, walls, floors, ring wells	stray structures
Ceramics: Local	coarse ware 1a-b ("megalithic pottery")	coarse ware 1a-b coarse ware 2a (gray, red) rouletted ware	coarse ware 1a-b coarse ware 2a (gray, red)	some coarse ware 1a-b coarse ware 2a (gray, red) rouletted ware	coarse ware 2a (red) rouletted ware	coarse ware 2a (red) rouletted ware	coarse ware 2a (red) rouletted ware
Graffiti: Brahmi + Tamil-Brahmi	M-5.17		M-5.9, 5.11, 5.13 M-5.23, 5.29				M-5.6-5, 5.28, 5.30; W-nos.4, 15
Imported:		"rouletting" and stamping	amphora	amphora terra sigillata	amphora	amphora	amphora (one)
Other artifacts: Local	beads?	beads?	worked ivory; terracotta; ear ornaments; beads; bone stylus; stone cells	terracotta, beads	terracotta; grinding stone; beads	beads	beads
Imported			glass beads, terracotta lamps				

Legend:
M=Mahadevan, 1996a
W=Wheeler et al. 1946

Appendix 2: List of Illustrations

- Fig. 1. Graffito of a ship on a sherd of rouletted ware from Alagankulam, Trench 7, layer 2, depth 1.12 m. Information and photo courtesy Mr. N. Kasinathan.
- Fig. 2. Lug-handle from Karaikadu in coarse ware. Brown (7.5YR 5/4) surfaces and cross section. Cuddalore Museum.
- Fig. 3. Stem with luted ledge from Karaikadu. Vessel form undetermined. Coarse ware. Exterior surface reddish brown (5YR 5/4). Reddish brown to pale brown (10YR 6/3) in wall section. Date undetermined. Cuddalore Museum.
- Fig. 4. Knob with perforations from Karaikadu. Coarse ware. Exterior surface light reddish brown (5YR 6/4). Reddish brown (5YR 5/4) in wall section. Date undetermined. Cuddalore Museum.
- Fig. 5. Fragments of Northern Black Polished ware from Alagankulam. Black slip flaking in places. Tamilnadu State Department of Archaeology Museum, Rameshwaram.
- Fig. 6. Sherds of rouletted ware from Alagankulam. Exterior center of the base with grooved circles. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 7. Fragments of red rouletted ware from Alagankulam. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 8. Interior surface of a sherd of red rouletted ware from Alagankulam. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 9. Exterior surface of the above with grooved circle. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 10. Folded rims of red rouletted ware from Alagankulam. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 11. Folded rim of red rouletted ware from Alagankulam. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 12. Rim of bowl with stamped decoration from Alagankulam. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 13. Fragment of a bowl/jar with deep grooves from Alagankulam. Thin body fine ware; partially discolored exterior surface. Tamilnadu State Department of Archaeology, Rameshwaram Museum.
- Fig. 14. Decorated sherd of small dish from Alagankulam. Interior with stamped ribbed leaf motif; ring foot on exterior; cf. Wheeler et al. 1946: Type 141. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 15. Sherds with grooved concentric circles from Alagankulam. Fine ware; fabric comparable to Begley (1996) Fine Ware 3 at Arikamedu. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 16. Grooved and incised decoration on a sherd from Alagankulam. Decorative pattern distinctive; fabric comparable to Begley (1996) Fine Ware 3 at Arikamedu. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 17. Sherd with a boss from Alagankulam. Thin body fine gray ware; traces of black slip on the protrusion; mottled gray to red exterior surface. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 18. Fragment from a cylindrical form with luted ledges from Alagankulam. Tamilnadu State Department of Archaeology, Ramnad Museum.
- Fig. 19. Impressed and painted decoration on sherds from Alagankulam. Tamilnadu State Department of Archaeology, Ramnad Museum.