



Project Gallery

The Late Bronze Age harbour of Pefkakia: evidence from transport containers suggests site's role

Bartłomiej Lis^{1,*}  & Anthi Batziou² 

¹ Institute of Archaeology and Ethnology, Polish Academy of Sciences, Warsaw, Poland

² Ministry of Culture, Ephorate of Antiquities of Magnesia, Volos, Greece

* Author for correspondence ✉ blis@iaepan.edu.pl

Numerous transport stirrup jars have been found at the site of Pefkakia. Most were manufactured in Crete with some from the Greek mainland. There were also at least two Canaanite jars from the Carmel coast. These finds and the first results of petrographic analysis attest to the site's role as a major Aegean harbour.

Keywords: Mediterranean Europe, Greece, Aegean Bronze Age, petrography, provenance, transport stirrup jars

Introduction

The site of Pefkakia, located on the coast of Gulf of Pagasaí in the central Greek region of Magnesia (Figure 1), was known for years for its artificial mound, the so-called Magoula, where archaeologists D. Theocharis and V. Miložčić excavated settlement remains dating from the Neolithic to the Late Bronze Age (also referred to as the Mycenaean period, c. 1600–1050 BC) and even the Hellenistic period (323–31 BC). But it was only thanks to the investigations in the flat area to the south-east of the mound, started in 1986 as rescue excavations by Anthi Batziou, that Mycenaean habitation was proven to extend beyond the Magoula. Subsequent work over the past 20 years has uncovered several new rooms of a large, multi-phased architectural complex of the palatial Mycenaean period (c. 1400–1200 BC; Batziou-Efstathiou 2015).

The rich variety of finds recovered during these excavations provides a glimpse of the commercial connections of Late Bronze Age Pefkakia, believed to be the main port on the Gulf of Pagasaí. One of the most effective archaeological ways to approach exchange in ancient times is to look at ceramic transport containers (Knapp & Demesticha 2016). A typical transport container of the Late Bronze Age Aegean was the distinctive stirrup jar, most likely used to carry oil, including its perfumed variety, and perhaps wine (Pratt 2016). At Pefkakia, stirrup jars have been found in various sizes, ranging from small examples likely used as perfume flasks, to very large examples called transport stirrup jars (TSJs, Figure 2). While the smaller

Received: 15 March 2024; Revised: 28 August 2024; Accepted: 13 September 2024

© The Author(s), 2025. Published by Cambridge University Press on behalf of Antiquity Publications Ltd. This is an Open Access article, distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives licence (<https://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is unaltered and is properly cited. The written permission of Cambridge University Press must be obtained for commercial re-use or in order to create a derivative work.

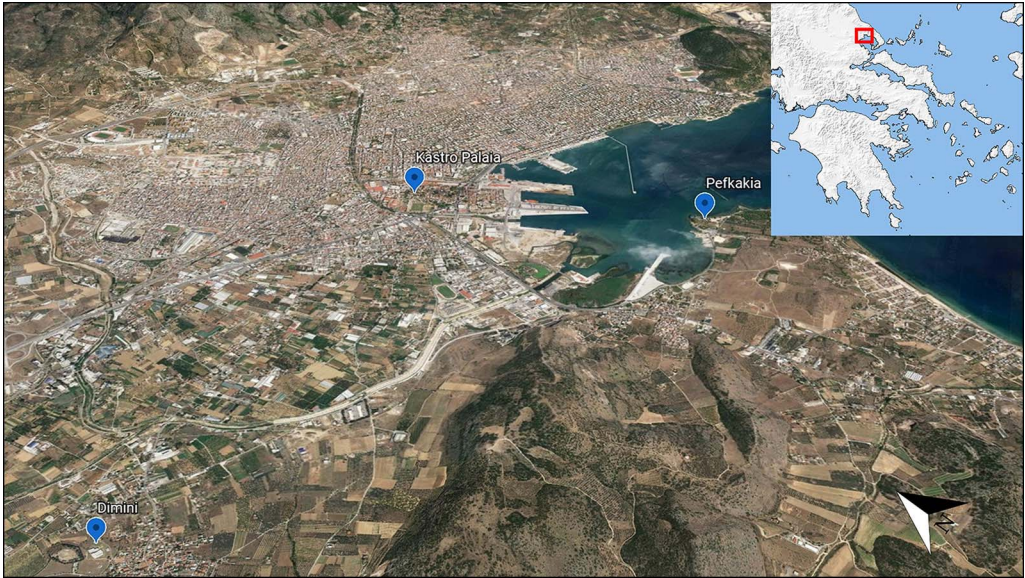


Figure 1. Aerial view of Volos bay showing the locations of Pefkakia, Dimini and Kastro Palaia (base map Google Earth; figure by B. Lis).

variety is widely distributed across the Aegean (and beyond), large TSJs show up in substantial quantities at only a handful of sites, including the palatial centres of Thebes and Mycenae and major Late Bronze Age harbours such as Tiryns and Kommos (Haskell *et al.* 2011). At Pefkakia, fragments of TSJs are very common in all excavated contexts dating to the palatial period (Figure 2C & D & Figure 3), and a few examples could be assembled to form complete profiles. The sheer quantity of TSJs found at Pefkakia distinguishes this site from many others within and beyond the coastal Thessalian region of Magnesia, and indeed qualifies it as one of the main harbours of the Aegean.

Provenance of transport containers

A crucial question regarding any transport container is its provenance—that is, where it was manufactured. Based on our current knowledge regarding places of production and distribution within the Greek mainland, it could be expected that most TSJs found at Pefkakia were made in Crete (Day *et al.* 2011; Haskell *et al.* 2011). To verify this assumption and to check if other extra-Cretan production centres contributed to the assemblage recovered at Pefkakia, a programme of petrographic analysis was initiated. In this article, we report on the first results of the analytical study.

As expected, initial results suggest that most TSJs found so far at Pefkakia derive from Crete. Two production areas, well attested in the literature, seem to have been the main sources: west Crete and south-central Crete (Figure 4A & B). While TSJs from west Crete are also frequently found at the palatial centres of Mycenae and Thebes (Haskell *et al.* 2011), a significant quantity of TSJs from central Cretan sources render Pefkakia closely comparable to Tiryns, another major harbour of the Aegean Late Bronze Age (Kardamaki *et al.*

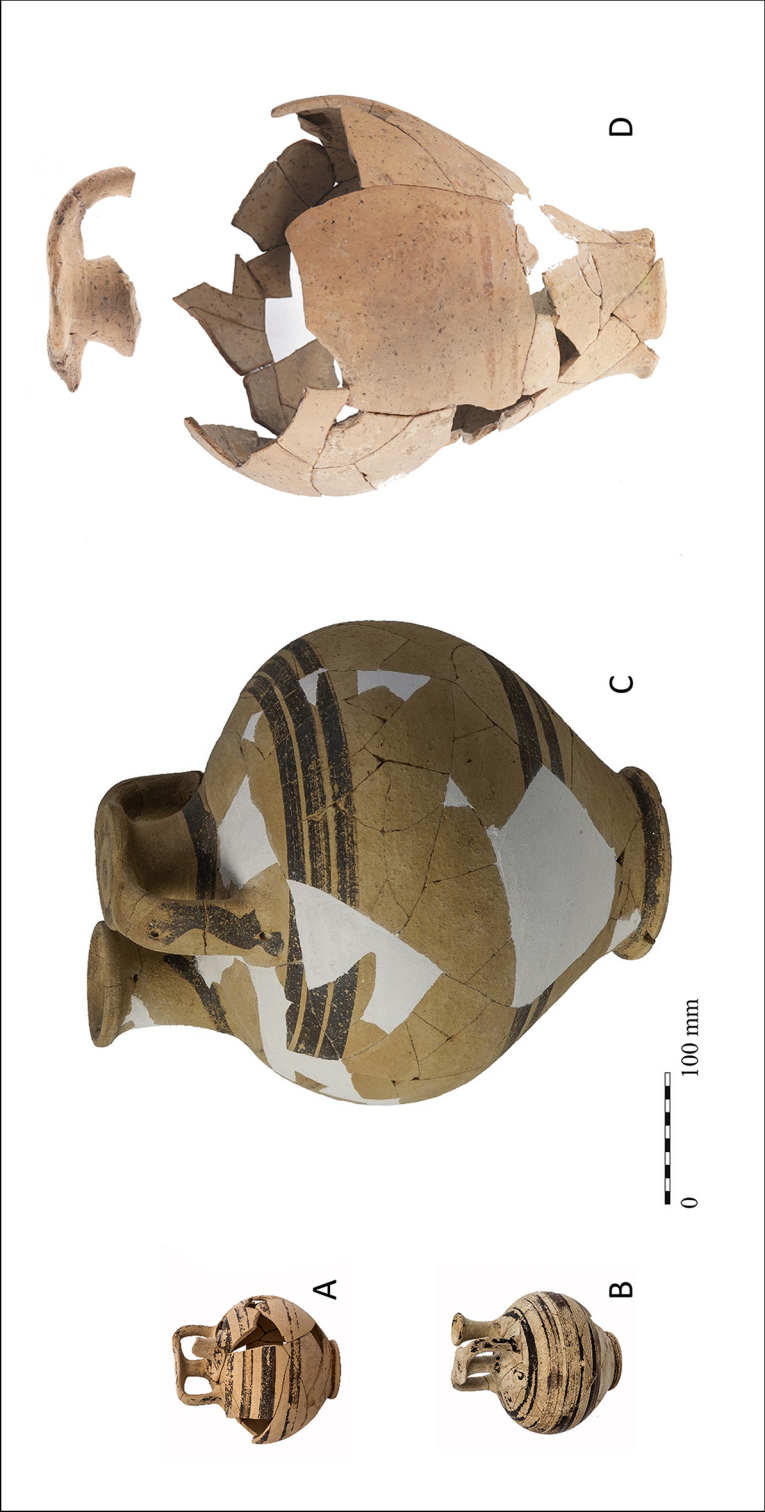


Figure 2. Varieties of stirrup jars found at Peſkakia (figure by authors).



Figure 3. Examples of transport stirrup jars found at Pefkakia (figure by authors).

2016). A few examples associated with sources on the Greek mainland were also identified. Petrographic analysis points to the presence of medium-coarse TSJs from Boeotia (Figure 4C), while first results of Neutron Activation Analysis—a method of chemical analysis of pottery that is particularly suitable to establishing provenance—provide evidence for fine-ware imports from the Argolid (Tiryns) and Attica.

Though we recognise that many of these jars were made in various parts of Crete, this does not necessarily constitute evidence for a direct connection between Pefkakia and this island. TSJs might have reached the harbour via the palatial centres of Boeotia and the Argolid, as could be suggested by the presence at Pefkakia of TSJs deriving from both of these areas. TSJs could also have been re-used (i.e. filled with new contents after being emptied), so one cannot be certain that Cretan-origin TSJs carried Cretan produce (such as oil) when reaching Pefkakia.

Stirrup jars are not the only transport containers of the Late Bronze Age found at Pefkakia. Another type is the Canaanite jar—a popular transport vessel produced in the Levant with a slim elongated body ending in a narrow base, two handles on the shoulder and a short vertical

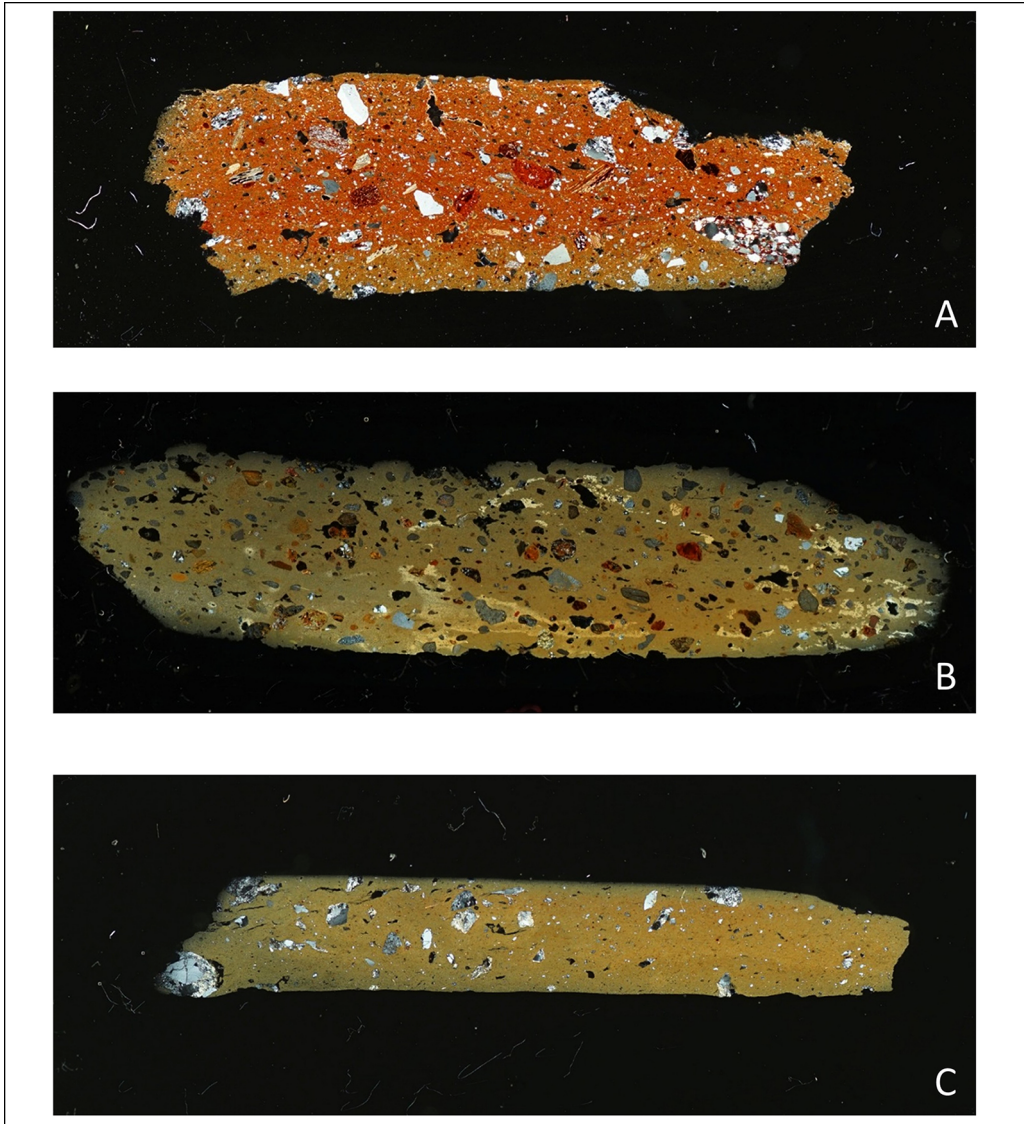


Figure 4. Fabrics of transport stirrup jars at Pefkakia representing west (A) and south-central Crete (B) and Boeotia (C). Field of view: 30mm (figure by B. Lis).

neck, precursor of the later transport amphorae. A number of these distinctive vessels reached Mycenaean Greece, including Dimini and Kastro Palaia in Volos (Figure 1) in the region of Magnesia (Rutter 2014), but now we can add Pefkakia to the list, with at least two examples. The better-preserved example has an incised mark on the handle (Figure 5A), a sign that is believed to indicate the involvement of Cypriot traders in their circulation. It likely dates to the fourteenth century BC (Late Helladic IIIA2) and thus represents one of the earliest marked Canaanite jars found in the Aegean (Rutter 2014).

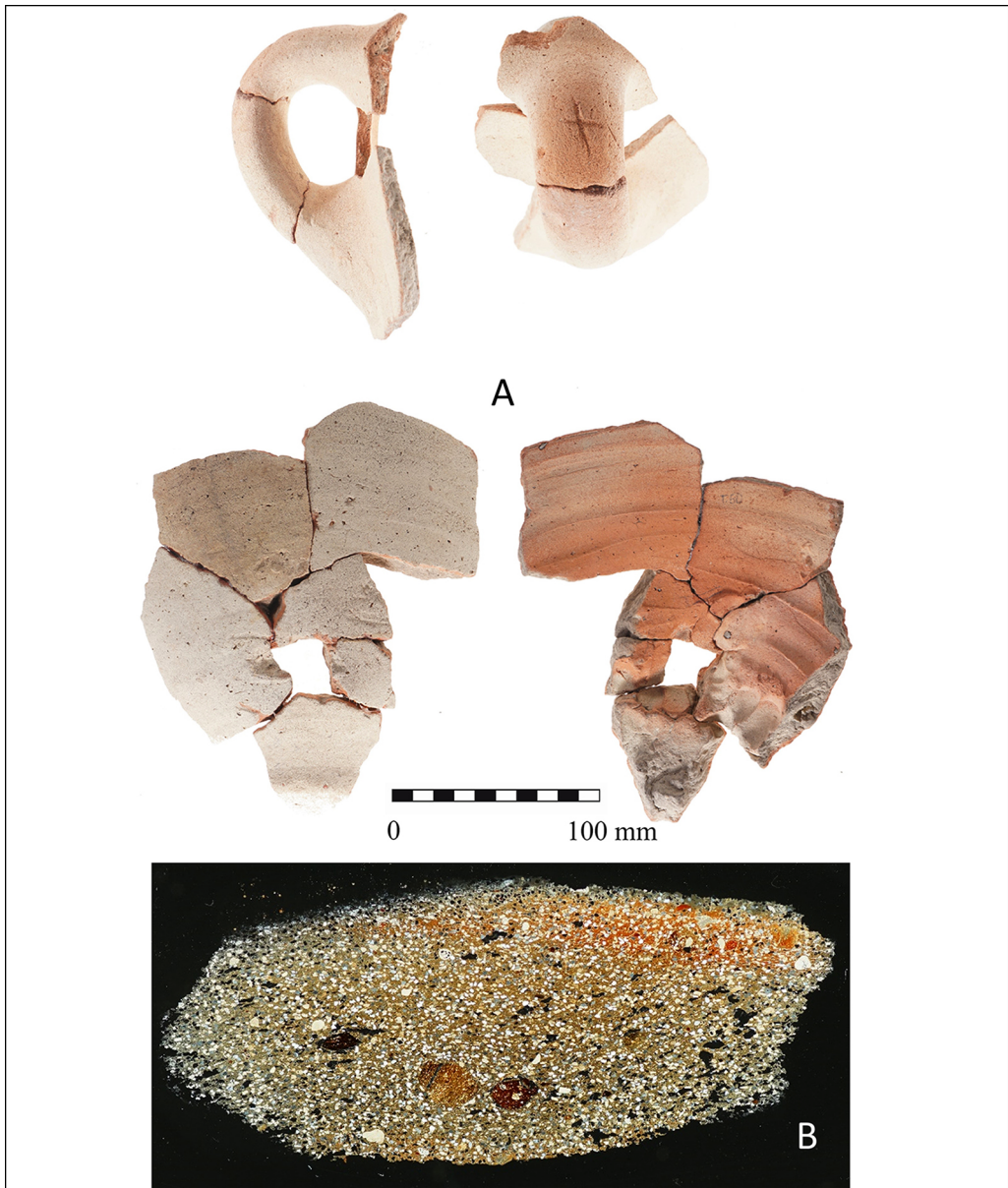


Figure 5. Example of a Canaanite jar's handle and lower body (A) from Pefkakia and its fabric (B). Field of view: 30mm (figure by B. Lis).

The two Canaanite jars are made from a similar fabric (Figure 5B) containing densely packed, rounded quartz and frequent calcite and microfossils—characteristics that point to an origin on the Carmel coast. The fabric is similar to the main fabric group among the cargo of the Uluburun shipwreck (Goren 2013). Furthermore, the date of the better preserved example from Pefkakia coincides with the time when ships such as the one that sank at Uluburun were crossing the Eastern Mediterranean.

Conclusions

These new findings highlight the importance of Pefkakia in the later part of the Late Bronze Age as the northern-most Mycenaean harbour town. Although this site was already an important settlement prior to the fourteenth century BC, it had never before been so well connected with the rest of the Aegean and even beyond. This incorporation into the trade networks that were most likely operated and controlled by the palatial Mycenaean centres is a testimony to a strong economic, but perhaps also political, relationship with these political entities. The exact form of these relationships will be investigated as the project continues. Regarding the transport containers themselves, future study will further clarify aspects of provenance, including chronological patterns present in the material, and focus on technology. Excavations that began in the summer of 2023 may further expand the material evidence for commercial contacts and the activities of the harbour.

Acknowledgements

Results of Neutron Activation Analysis are mentioned with the permission of Dr Johannes Sterba.

Funding statement

This study was funded by the Polish National Science Centre (grant No. 2020/38/E/HS3/00512).

References

- BATZIOU-EFSTATHIOU, A. 2015. The Mycenaean Settlement at Pefkakia: The Harbour of Iolkos?, in J. Weilharter & F. Ruppenstein (ed.) *Tradition and Innovation in the Mycenaean Palatial Polities* (Mykenische Studien 34): 51–85. Vienna: Austrian Academy of Sciences.
- DAY, P.M., P.S. QUINN, J.B. RUTTER & V. KILIKOGLU. 2011. A world of goods: transport jars and commodity exchange at the Late Bronze Age Harbor of Kommos, Crete. *Hesperia* 80: 511–58.
<https://doi.org/10.2972/hesperia.80.4.0511>
- GOREN, Y. 2013. International exchange during the late second millennium BC: microarchaeological study of finds from the Uluburun ship, in J. Aruz, S.B. Graff & Y. Rakic (ed.) *Cultures in contact: from Mesopotamia to the Mediterranean in the second millennium BC*: 54–61. New York: The Metropolitan Museum of Art.
- HASKELL, H.W., R.E. JONES, P.M. DAY & J.T. KILLEN. 2011. *Transport stirrup jars of the Bronze Age Aegean and east Mediterranean* (Prehistory Monographs 33). Philadelphia (PA): Institute for Aegean Prehistory Academic Press.
- KARDAMAKI, E., P.M. DAY, M. TENCONI, J. MARAN & A. PAPADIMITRIOU. 2016. Transport stirrup jars in Late Mycenaean Tiryns: maritime transport containers and commodity movement in political context, in S. Demesticha & A.B. Knapp (ed.) *Maritime transport containers in the Bronze–Iron Age Aegean and Eastern Mediterranean* (Studies in Mediterranean Archaeology–pocket books 183): 145–67. Uppsala: Åström.
- KNAPP, A.B. & S. DEMESTICHA. 2016. *Mediterranean connections: maritime transport containers and seaborne trade in the Bronze and Early Iron Ages*. New York: Routledge.
<https://doi.org/10.4324/9781315537009>
- PRATT, C.E. 2016. The rise and fall of the transport stirrup jar in the Late Bronze Age Aegean. *American Journal of Archaeology* 120: 27–66.
<https://doi.org/10.3764/aja.120.1.0027>
- RUTTER, J.B. 2014. The Canaanite transport amphora within the Late Bronze Age Aegean: a 2013 perspective on a frequently changing

picture, in D. Nakassis, J. Gulizio & S.A. James
(ed.) *KE-RA-ME-JA: Studies presented to Cynthia*
W. Shelmerdine (Prehistory Monographs 46):

53–70. Philadelphia: Institute for Aegean
Prehistory Academic Press.
<https://doi.org/10.2307/j.ctt1287gx6>