

Pottery Technologies in the Aegean and Anatolia During the 3rd Millennium BC: An Introduction

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After several decades of archaeometric investigations on Early Bronze Age pottery, now is the time to bring these manifold results and experts together for a holistic approach of a broader region through socio-cultural interpretations. The archaeometric approach to pottery in the (Greek) Aegean is based on a long tradition and nowadays forms a well-established scientific field in Bronze Age archaeology in that region. Thanks to various research groups and their long-term engagement in developing the methodological and theoretical background – such as the Fitch Laboratory of the British School and the Demokritos lab in Athens, the University of Bonn, and Sheffield University – pottery experts in the Aegean are now able to use various scientific methods based on a well-established scientific framework and comparable data. This state-of-the-art interdisciplinary approach for Aegean ceramics not only produces a large amount of new and complex data, which are mainly used by specialists in this field, but also leads to a multifaceted picture hardly manageable by non-experts for their socio-cultural follow-up interpretations. Our main aim is focused on combining the archaeometric experts and their scientific questions and data to gain a broader archaeological-cultural contextualisation within one particular time horizon.

Chronological and Geographical Framework

Due to current scientific requirements, projects and available data, the Aegean and western Anatolia during the periods of Early Helladic I–II / Early Bronze Age 1–2 (c. 3000–2300 BC) have been selected as the general chronological and geographical frameworks. Ongoing research in petrographic³ and chemical analyses, specifically X-ray fluorescence (XRF)⁴ and Neutron Activation Analysis (NAA),⁵ were brought together with archaeological contextualisation to discuss potential social and economic patterns in the production and distribution of pottery within a trans-Aegean perspective. This volume represents the outcome of the conference “Pottery Technologies and Sociocultural Connections between the Aegean and Anatolia during the 3rd Millennium BC”, which took place from 21.10. to 23.10.2015 at the Institute for Oriental and European Archaeology of the Austrian Academy of Sciences in Vienna.

The selected focus is closely related to the OREA research group *Anatolian Aegean Prehistoric Phenomena*, which generally connects Greek and Turkish parts of the Aegean in a holistic approach. Both regions are starting and intermediary points of formative cultural processes, which are studied by archaeological and interdisciplinary basic research methods – conducted in detail with highly specialised analyses as well as supra-regional studies. This research strategy includes

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³ Whitbread 2001.

⁴ Gait et al., this volume.

⁵ Mommsen et al. 1991; Mommsen 2007; Horejs et al., this volume.



Fig. 1 Archaeological sites in Turkey and Greece mentioned in this volume. Sites presented in detail are indicated in capital letters (design: M. Börner)

excavations, archaeological and environmental surveys, material studies and analyses of all types of artefacts. A further approach deals with chronology and periodisation, climate, subsistence, resources, technologies, rituals, networks, socio-cultural impact and theoretical issues. Recently generated data from our own fieldwork form the scientific fundament and are linked with old data. One of our current research foci concerns Early Bronze Age settlements, economies and technologies dating to Early Helladic (EH) I–II / Early Bronze (EB) 1–2 (3000–2300 BC) on both sides of the Aegean. The research group's ongoing studies of pottery with conventional archaeological methods combined with petrographic and chemical analyses in micro-regional and trans-regional comparisons brought an abundance of new data to light. Their contextualisation within a broader archaeological perspective offers the opportunity to analyse potential patterns that might reflect trans-Aegean phenomena beyond their local or regional impact. These studies are conducted in various projects financed by the European Research Council, the Austrian Science Fund and the OREA institute. To them belong the Çukuriçi Höyük excavations, the Prehistoric Pergamon Region Survey (Kaykos/Bakırçay valley)⁶, the Midea project (Argolid) based on the Greek excavations by Katie Demakopoulou⁷ as well as the Romanos-Navarino project⁸. Altogether, they put into practice cooperation with archaeometric experts from the Fitch Laboratory of the British School at Athens, the Department of Archaeology of the University of Sheffield, the University of Bonn and the Austrian Archaeological Institute.

⁶ ERC project 263339; Austrian Science Fund (FWF) projects no. Y 528 and P 25825.

⁷ Austrian Science Fund (FWF) stand-alone project no. P 24798.

⁸ Austrian Science Fund (FWF) Lise Meitner program no. M 1468.

The 18 papers presented in the conference, of which 13 were submitted to this volume, include manifold new results and data (Fig. 1).⁹ Additionally, the intense and fruitful discussions between the authors during the conference formulated new local, regional and interregional aspects – which will be summarised in the introduction. Thanks to the very engaged chairmen and chairwomen, the discussions mostly led to some crucial outcomes, which are represented in the following overview of this volume.

Production, Function and *Chaîne Opératoire*

Questions concerning the production of pottery and its *chaîne opératoire* require not only detailed scientific analyses of the ceramics themselves but also their environmental contextualisation should be considered – as pointed out in several papers. The clay composition used for the production of pottery is examined by petrographers, who – through microscopic analysis of the mineral composition of the fabric's inclusions in combination with chemical analysis – can offer knowledge of the choice of raw materials. In general, this approach concerns the exploitation of specific raw material sources that are shared by a group of people of a potential centre of production, and therefore local production is identifiable in ceramic analyses. A selection of similar clay compositions is reflected in the use of a specific temper – such as calcite, marble or grog – in the production of pots with a special use, i.e. cooking or storage; this temper choice could have been shared by people in larger areas.¹⁰ Such behaviour would enable us to argue for a pattern in pottery production that could have been shared by people of a wider area. Moreover, the various techniques of pot building are recognisable through macroscopic examination of the pottery, such as using coils, plaques or a throwing table. According to ethnographic studies, these building techniques and their distribution are connected to special groups of people and offer information on potential communication networks, which are likely built upon kin affiliations.¹¹ Furthermore, the degree of specialisation may broadly be assessed on the basis of firing temperatures as well as the controlling mechanisms over the oxidation process, respectively pointing to open fire or a kiln-like construction.¹² Experimental studies in refiring sherds have been presented as a successful method for determining firing temperatures. Insight into the possible functions of pots is provided by residue and use-wear analyses.¹³ Additionally, an analysis of pottery fabrics and forms indicates that pots with certain characteristics were probably used for special purposes.¹⁴

Connectivity

An important topic is how pottery of a particular region can give us indications of connectivity between the areas under study. Conventional archaeological research in this respect is based on identification and statistical recording of wares, forms and decoration, which are closely connected with value and the potential use of items. Ethnographic studies have shown that decorative techniques

⁹ The important papers regarding the relations between Crete and Anatolia at the beginning of the Bronze Age (FN–EB I), on the Chios-Çesme Strait, on Anatolianising types and Aegean traditions in the ceramics of the Late EB II, and on local and Anatolianising traditions across Boeotia during the Late EH II were not submitted by the authors and are therefore not included in this volume.

¹⁰ Rice 1987; Peloschek, this volume; Gait et al., this volume; Papadatos – Nodarou, this volume; Pentedeka et al., this volume.

¹¹ Gosselain 2000, 201–208, 210.

¹² Daszkiewicz – Schneider 2001.

¹³ Tzedakis et al. 2008.

¹⁴ Riemer 1997; a function analysis of the pottery from Çukuriçi Höyük according to form and fabric is given by Röcklinger – Horejs, this volume.

are distributed “by loose and situational networks of interaction in which the geographic propinquity of sites and local processes of imitation and conformity play a leading role”.¹⁵ In contrast, investigations of pottery based on archaeometric analyses of clay composition can give an indication of the provenance of the clay and, therefore, of the circulation of the pots. These studies presuppose that potters used local clay deposits, and suggest that their local production centres can be identified and characterised. At the same time, large-scale macroscopic identification of fabrics, harmonised with petrographic analyses, can help to detect distribution patterns of pottery in large archaeological assemblages. Thus, both methods can help to define local use and middle- to long-distance circulation of pots. As mentioned above, the papers of this conference cover the periods EB/EH I and II as well as its transition to the final phase EB III, which is to be understood as a predecessor of the Middle Bronze Age (see chronological chart Fig. 2). It goes without saying that each period has to be characterised against the background of its specific cultural development. Therefore, it can be shown that local pottery production in all its aspects differs from period to period and, consequently, reveals change over time. At the same time, it is worthwhile to investigate if technological and stylistic innovations were passed on through circulation or imitation of pottery. On a broader scale, changes through time in the circulation of pottery over large distances can give indications for changing contacts between regions in general.

In summary, this conference volume aims to add important aspects to our picture of human agency,¹⁶ and also shed light on the changing social organisation, economy and identity of the agents who are the producers of pottery, as well as their consumers.¹⁷ Pottery analyses are able to illustrate how behaviour of production and distribution changes, and therefore demonstrate aspects of cultural-ecological development in the 3rd millennium BC.

Regional Patterns

Early Bronze Age I

Papers dealing with EB I create an interesting picture for sites of inland and coastal western Anatolia: The area around Pergamon is characterised by production and circulation of pottery within the region although the pottery is integrated into the pottery style of the northeastern Aegean and the Troad. At the same time, pottery production centres show no specialisation. The very few imports from outside the region indicate that the region was more or less excluded from the main routes of eastern Aegean and western Anatolian exchange networks.¹⁸ The coastal site of Çukuriçi Höyük situated in central western Anatolia is also characterised by local production,¹⁹ and the marble-tempered fabric – although reminiscent of the fabric common in the Cyclades – most probably followed a local tradition mainly used for functional reasons.²⁰ However, the picture of specialised production and use of pots at the coastal site of Çukuriçi Höyük is supported by the contexts connected with on-site metal processing.²¹ Evidence in the Konya plain show that Early Bronze Age pottery production has a long tradition dating back to the Late Chalcolithic/Final Neolithic period; this is especially evident from the habit of grog-tempering.²² A similar tradition is known from eastern Crete²³ as well as in other areas of the Aegean.²⁴ If we look at the western side

¹⁵ Gosselin 2000, 193–200, 209.

¹⁶ Lemonnier 1993; Dobres – Hoffman 1994.

¹⁷ For a further discussion see Papadatos – Nodarou, this volume.

¹⁸ Horejs et al., this volume.

¹⁹ Röcklinger – Horejs, this volume.

²⁰ Peloschek, this volume.

²¹ Röcklinger – Horejs, this volume.

²² Gait et al., this volume.

²³ Papadatos – Nodarou, this volume.

²⁴ Pentedeka et al., this volume.

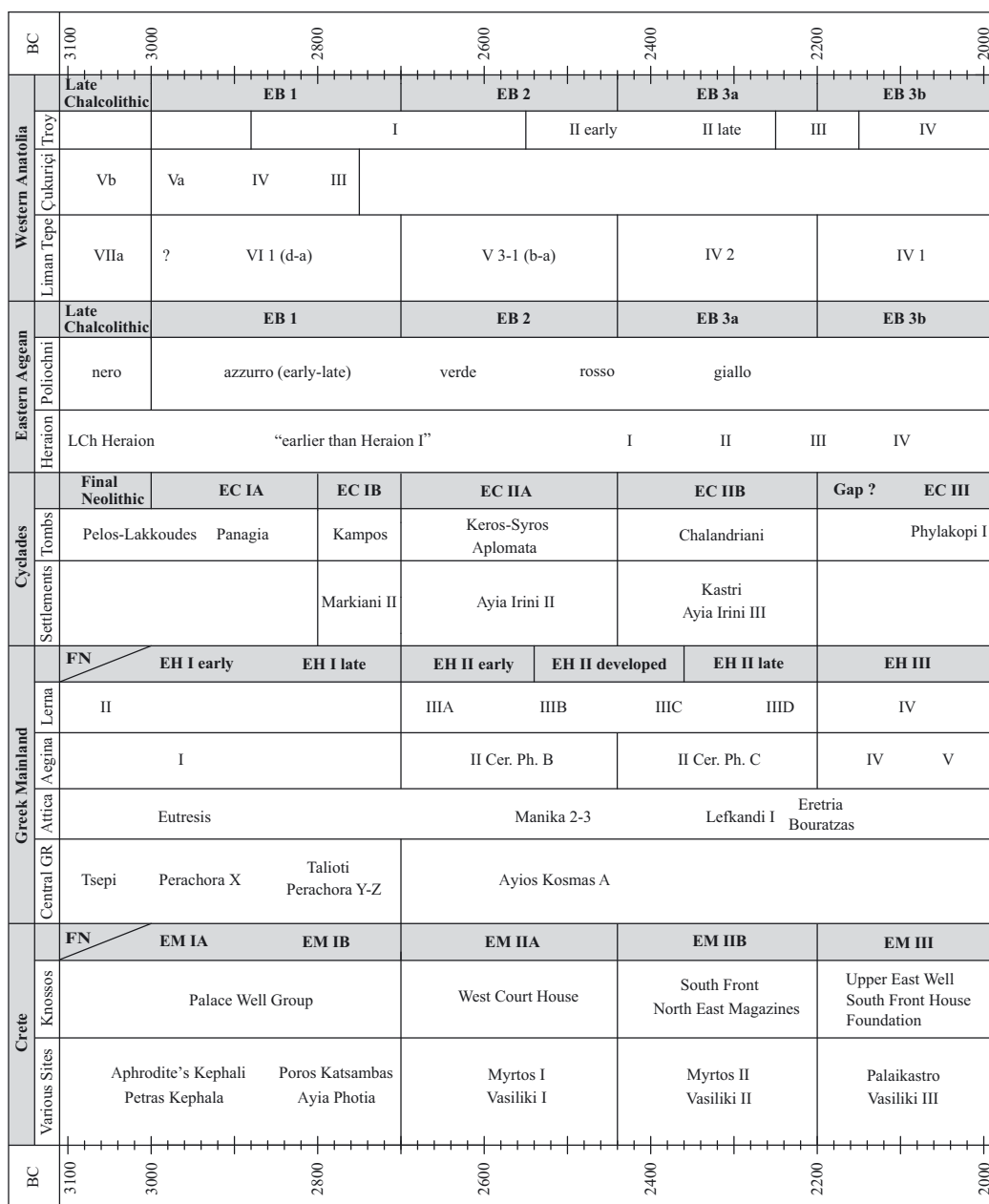


Fig. 2 Chronological chart including assemblages discussed in this conference (E. Alram-Stern – Ch. Schwall; absolute dates according to Manning 1995, Manning 2008, and Weninger – Easton 2014)

of the Aegean, local production and consumption also characterises the EM I period of Crete as well as the EH I period of the northeastern Peloponnese. This is also seen in the emergence of regional pottery styles. Furthermore, aside from firing at low temperatures, firing temperatures were higher than in the previous period and the firing atmosphere was more controlled.²⁵ In summary,

²⁵ Burke et al., this volume; Papadatos – Nodarou, this volume.

all over the Aegean EB I seems to have been a period of local production and regional networks with an indication of the first trends in production specialisation. In the later part of EB I, exterior contacts with more distant regions are attested. On Crete during EM IB Cycladic-style pottery of the Kampos group is attested at several sites, and especially on the northern coast of Crete. These assemblages differ from site to site, each context showing different percentages of Cycladic-style pottery. Furthermore, although form and surface treatment are of Cycladic character, the pottery was most probably produced locally on Crete, and followed the typical Cycladic technological tradition of using calcite, along with the grog-tempering characteristic of Cretan pottery.²⁶ In this way, EB I pottery of late EB I demonstrates interconnectivity not seen during the previous phase. This is mainly evident by the Cycladic Kampos Group on Crete, probably the material expression of intensified contacts with the Aegean. A similar picture arises in Attica and Euboea.²⁷ However, EH I fruitstands, made of a fabric characteristically produced in the area close to Talioi in the Argolid, were circulated as far as Nemea in the Corinthia, indicating regular intensive interaction between these areas and also special use, which can already be argued for this period.²⁸

Early Bronze Age II

For the EB/EM/EH II all over the Aegean, local production continued to dominate imports from other regions. The majority of sites produced pottery locally and followed their own common potting traditions while participating in the same regional exchange network.²⁹ Regional pottery styles with characteristic tablewares such as saucers and sauceboats are common all over mainland Greece, the Peloponnese and the Cyclades.³⁰ They indicate an intensification of social activities, especially feasting based on the same eating/drinking rituals.³¹ In the northeastern Peloponnese, certain fabric recipes common in the entire area point to the possibility that larger groups shared a certain tradition of pottery making.³² However, during EB/EM/EH II, imports of tablewares from neighbouring regions demonstrate higher interconnectivity than has been seen before. In the Konya plain, the non-local “Metallic Ware” with serpentine inclusions was most probably imported from Cappadocia.³³ On Samos, imports from Amorgos/Cyclades are known from Heraion II, in the developed phase of EB II. In the northeastern Peloponnese, dark-slipped green-brown tableware – easily distinguishable from the Argive products³⁴ – had been imported from the Corinthia to the Argolid.³⁵ In Crete, high-quality tablewares were exchanged between south-central and north-central Crete, suggesting these regions were host to specialised potting centres. Furthermore, fine, high-quality tablewares and transport jars were imported from the Cyclades, while western Crete shows imports from Kythera and the Peloponnese.³⁶ Consequently, EB/EH/EM II is characterised as a period of prosperity and interaction characterised by the circulation of prestigious pottery, which indicates an increase in connectivity.

²⁶ Day et al. 2012; Papadatos – Nodarou, this volume.

²⁷ Pantelidou Gofa 2008; see also Alram-Stern forthcoming (a) und (b).

²⁸ Burke et al., this volume.

²⁹ Burke et al., this volume; Kouka – Menelaou, this volume. For the local traditions of Kephallonia and Ithaca see Pentedeka et al., this volume.

³⁰ Alram-Stern, this volume; Berger, this volume; Rambach, this volume.

³¹ Pullen 2011, 190–192.

³² ‘Mudstone-breccia fabric’: Burke et al., this volume.

³³ Gait et al., this volume. For characterisation and date of the metallic ware see Tuba Ökse 2011, 265, 269–270; Friedman 2001.

³⁴ Alram-Stern, this volume.

³⁵ Burke et al., this volume.

³⁶ Papadatos – Nodarou, this volume.

Early Bronze Age II Late – III

With EB/EH II Late, pottery shows clear changes in form and technology as seen in the Anatolianising Lefkandi I/Kastri pottery group in the Aegean and the eastern Greek mainland. This development already started in EB II developed (Heraion II) on Samos and was interrupted with EB III (Heraion IV) when new pottery forms and decoration appeared. While all Anatolianising forms are already present in EB II developed (Heraion II), the *depas amphikypellon* only appears in EB II Late (Heraion III). The Lefkandi I/Kastri complex is not only connected with a change in form, but also the use of the potter's wheel. However, on Samos these changes in technology and style are not connected with an augmentation of imports, which become common only with EB III Late (Samos V).³⁷ In Eretria on Euboea during EH IIB, the “Helladic” shapes such as the sauceboat and saucer are used alongside the Anatolianising forms; however, the *depas amphikypellon* is not present. As on Samos, the Anatolianising forms were produced locally; in contrast, some pottery with Helladic shapes were imported so that it can be argued that, as in the Argolid, imports of pottery indicate contacts. In addition, a significant group of coarse ware, among them a pithos, was imported from the Cyclades. This shows that during EH IIB the circulation of pots is a reflection of an intensification of mobility especially in coastal areas. Also, the use of Anatolianising forms for eating/drinking in specific social contexts highlights potential changes in eating/drinking rituals during this period.³⁸ During EH III, pottery forms and surface treatment changed in Eretria, perhaps reflecting reproduction and adaption of external influences. Local clay sources continued to be exploited, but the potter's wheel fell out of use.³⁹ Similarly to coastal Euboea, at the site of Aegina-Kolonna the EH II pottery shows various imports from the Cyclades, Attica and the Peloponnese, which demonstrates the important role of Aegina in the exchange systems of the wider Aegean. In EH IIB, typological and technological changes also appear in Kolonna. In contrast to other sites, they produced tankards and hybrid forms of the “Helladic” pottery repertoire such as sauceboats and askoi.⁴⁰ Another pottery complex dating to the end of EH II, synchronous with the House of Tiles at Lerna,⁴¹ comes from Romanos near Pylos in Messenia. This assemblage comes from the fill of a well and consists of mostly entire vessels, some of them extraordinary in size and shape; it is interpreted as the remnant of a special consumption practice, namely the deposition of pottery in the frame of communal feasting.⁴² This pottery shows a high degree of standardisation and specialisation, is almost exclusively made from local clay resources, and stands in the local potting traditions; although some pots have strong affinities to the Attic-Cycladic and northeastern Peloponnesian pottery traditions. Interestingly, even at Romanos, which is situated far away from the areas characterised by Anatolianising pottery, a rotating device was used for the production of shallow conical saucers.⁴³ In contrast to the Aegean islands and the eastern Greek mainland, EM IIB Crete is not part of the Anatolianising pottery exchange network. It appears that only the Cretan Vasiliki Ware found in Akrotiri indicates a continuous contact of Crete with the southern Aegean.⁴⁴ On Crete itself, the dense network of pottery exchange continues, although there is a shift towards products from eastern Crete, indicating a change in the mechanisms of interaction.⁴⁵

³⁷ Kouka – Menelaou, this volume.

³⁸ Maran 1998.

³⁹ Müller Celka et al., this volume.

⁴⁰ Berger, this volume.

⁴¹ Wiencke 2000, 596.

⁴² Rambach, this volume.

⁴³ Kordatzaki et al., this volume.

⁴⁴ Nikolakopoulou et al. 2008, 313.

⁴⁵ See Papadatos – Nodarou, this volume.

Embedding the Conference Outcome into the Early Bronze Age

Based on our current knowledge of the organisation of cemeteries and settlements⁴⁶, small to medium scale community groups, probably connected to family groups, formed the foundations of Early Bronze Age societies around 3000 BC.⁴⁷ As seen generally in the results of ceramic petrographic analyses, production from the very beginning of the Bronze Age ceramic onwards was widespread and located close to sites. However, production strategies varied from small-scale to less common extensive production.⁴⁸

According to typological studies, networks of interaction between the villages produced regional pottery styles.⁴⁹ In addition, production areas had a range of distribution patterns, some of which were based on local consumption whilst others had products circulating in a larger area. Generally speaking, imports of pottery are rare between 3000 and 2600 BC (EB I/1) in western Anatolia and the Aegean, and most probably found their way via communication networks built upon affiliations of communities.⁵⁰ Furthermore, the exchange of goods in ceramic containers appears only rarely during these centuries. These exchange patterns changed during EB II, when imports of transport jars became more common,⁵¹ pointing to an intensified exchange of goods most probably based on a more stratified and economically differentiated society.

In Cycladic cemeteries, specific sets of pottery vessels are connected to graves as burial goods from EB I onwards.⁵² The Kampos group in particular allows us to observe an expansion of these standardised sets of burial goods in graves as far away as Crete. Locally produced pottery was probably linked with the high mobility of distinct groups within the larger Aegean, and suggests ties of communities creating specific burial rituals and sharing perceived value of certain pottery vessels.⁵³ The situation in western Anatolia during the 3rd millennium BC was different, and standardisation in pottery burial goods can be seen, for example, in the Yortan graveyard.⁵⁴ Patterns within the various western Anatolian regions seem to have differed in terms of scales of connectivity. Whereas the central sites such as Troy or Liman Tepe are highly connected with the Aegean as well as inland Anatolia and beyond, the Bakırçay Valley (Pergamon) appears mostly isolated in this aspect.

From the later EB I (2900–2700 BC) onwards a collective consumption of drinks and food becomes common, and is visible in standardised serving, eating and drinking sets in western Anatolia and the Aegean. This process is observable by the emergence of uniform vessel shapes and related technological features, such as surface treatment. The EB I chalices or pedestalled bowls, which are common in the northern and central Aegean as well as on Crete, contained liquid for more than one person and point to their importance in social events.⁵⁵ In contrast to the local production and consumption of chalices in the Aegean, the large, red-fired chalices, so-called fruitstands (i.e. pedestalled bowls) common in the northeastern Peloponnese, were produced in the Argolid, and also circulated in neighbouring regions, such as the Corinthia.⁵⁶ Therefore their

⁴⁶ Pullen 1985, 145–146, 370–371; Maran 1998, 226–227; Triantaphyllou 2001, 22–25.

⁴⁷ Pullen 1985, 259–263; Harrison 1995; For a more recent review of Cretan Early Bronze Age society see Schoep – Tomkins 2012, 12–16; for social structures in EBA I western Anatolia including potential transformations see for example Kouka 2002; Ivanova 2013; Horejs – Mehofer 2014; Horejs 2016; Horejs – Schwall 2018; Schwall 2018.

⁴⁸ Burke et al., this volume.

⁴⁹ Gosselin 2000, 193–210.

⁵⁰ For a possible kinship organisation of settlements, comprising several islands, in the Cyclades see Broodbank 2000, 86–87.

⁵¹ Wilson 1994, 40, 42–43; Papadatos – Nodarou, this volume; Burke et al., this volume.

⁵² Doulas 1977; Rambach 2000.

⁵³ Papadatos – Nodarou, this volume; for the connection of pottery to burial rituals see Soles 1992, 247–251.

⁵⁴ Bittel 1939–1941; Orthmann 1966; Kâmil 1982; Seeher 1991.

⁵⁵ Day – Wilson 2004, 55, 59.

⁵⁶ Pullen 2011, 95.

use in both regions underlines the shared dining practices of the emerging elites of this period.⁵⁷ Comparable patterns are probably detectable in western Anatolia as well, but require further detailed analyses. The evidence of huge shallow bowls with highly polished surfaces across the region from at least 3000 BC onwards might represent a similar pattern.⁵⁸

The typological evidence in EB II demonstrates a shared dining repertoire between communities all over the Aegean, based on individual eating and drinking vessels. Saucers and sauceboats were common in the entire area of the Greek mainland and the Aegean (including the western Anatolian coastal zones), and are rarely found on Crete.⁵⁹ In late EB II, the appearance of an Anatolianising dining set partly replaces these and indicates an intensification of mobility from western Anatolia and the eastern Aegean islands and spreading over the coastal Aegean.⁶⁰ On Crete, individual dining vessel sets consisting of goblets and plates are common.⁶¹ Use contexts including storage⁶² and deposition⁶³ of standardised dining sets indicate shared dining practices and an intensification of social activities. Furthermore, such shared dining practices should be interpreted as part of the social language of emerging elite groups within a hierarchical system, as also seen in settlement architecture.⁶⁴ Imports of eating and drinking vessels point to the importance of such communal meetings for inter-settlement communication.⁶⁵

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References

Afram-Stern forthcoming (a)

E. Afram-Stern, The network of the Kampos group. Crete in context, in: 11^o Διεθνές Κρητολογικό Συνέδριο, Πέθυμνο, 21/27 Οκτωβρίου 2011 (forthcoming).

Afram-Stern forthcoming (b)

E. Afram-Stern, Social and economic networks. Their emergence at the dawn of the Aegean Early Bronze Age, in: W. Gauß (ed.), *Forschungen zur Frühägäischen Archäologie 2011. Frühbronzezeitliche Handels- und Fernverbindungen* (forthcoming).

Bernabò-Brea 1964

L. Bernabò-Brea, *Poliochni. Città preistorica nell'isola di Lemnos I* (Rome 1964).

Bernabò-Brea 1976

L. Bernabò-Brea, *Poliochni. Città preistorica nell'isola di Lemnos II* (Rome 1976).

⁵⁷ Haggis 1997; Day – Wilson 2004, 55.

⁵⁸ Blegen et al. 1950 (Troy); Sharp Joukowsky 1986 (Aphrodisias); Lloyd – Mellaart 1962 (Beycesultan); Hood 1981; Hood 1982 (Emporio); Bernabò-Brea 1964; Bernabò-Brea 1976; Dumas – Angelopoulou 1997; Cultraro 2004 (Poliochni); Lamb 1936 (Themi); Efe 1988; Seher 1987 (Demircihüyük); Eslick 2009 (Elmalı-Karataş); Kâmil 1982 (Yortan).

⁵⁹ Because of such widespread phenomena, this period has been called 'the time of the International Spirit' by C. Renfrew (Renfrew 1972, 170–185).

⁶⁰ Maran 1998, 432–433.

⁶¹ Day – Wilson 2004, 55.

⁶² Wiencke 2000, 235–236.

⁶³ Rambach, this volume.

⁶⁴ For a chiefdom hierarchy see Pullen 1985, 10–14; Renfrew 1991, 46–48; Wiencke 2000, 503–505, 649–652.

⁶⁵ Afram-Stern, this volume; Burke, this volume.

Bittel 1939–1941

K. Bittel, Ein Gräberfeld der Yortan-Kultur bei Babaköy, *Archiv für Orientforschung* 13, 1939–1941, 1–31.

Blegen et al. 1950

C. W. Blegen – J. L. Caskey – M. Rawson – J. Sperling, Troy I. General Introduction. The First and Second Settlements (Princeton 1950).

Brodie et al. 2008

N. Brodie – J. Doole – G. Gavalas – C. Renfrew (eds.), *Horizon / Ορίζων*. A Colloquium on the Prehistory of the Cyclades, McDonald Institute Monographs (Cambridge 2008).

Broodbank 2000

C. Broodbank, *An Island Archaeology of the Early Cyclades* (Cambridge 2000).

Cultraro 2004

M. Cultraro, Island isolation and cultural interaction in the EBA northern Aegean. A case study from Poliochni (Lemnos), *Mediterranean Archaeology and Archaeometry* 4, 1, 2004, 19–34.

Daszkiewicz – Schneider 2001

M. Daszkiewicz – G. Schneider, Klassifizierung von Keramik durch Nachbrennen von Scherben, *Zeitschrift für Schweizerische Archäologie und Kunstgeschichte* 58, 2001, 25–31.

Day – Wilson 2004

P. Day – D. Wilson, Ceramic change and the practice of eating and drinking in Early Bronze Age Crete, in: P. Halstead – C. J. Barrett (eds.), *Food, Cuisine and Society in Prehistoric Greece*, *Sheffield Studies in Aegean Archaeology* 5 (Oxford 2005) 45–62.

Day et al. 2012

P. M. Day – A. Hein – L. Joyner – V. Kilikoglou – E. Kiriati – A. Tsolakidou – D. E. Wilson, Appendix a. Petrographic and chemical analysis of the pottery, in: C. Davaras – P. P. Betancourt (eds.), *The Hagia Photia Cemetery II. The Pottery*, *Prehistory Monographs* 34 (Philadelphia 2012) 115–138.

Dobres – Hoffman 1994

M.-A. Dobres – C. R. Hoffman, Social agency and the dynamics of prehistoric technology, *Journal of Archaeological Method and Theory* 1, 3, 1994, 211–258.

Doumas 1977

Ch. Doumas, Early Bronze Age Burial Habits in the Cyclades, *Studies in Mediterranean Archaeology* 48 (Göteborg 1977).

Doumas – Angelopoulou 1997

X. Γ. Ντούμας – Α. Αγγελοπούλου, Οι βασικοί κεραμικοί τύποι της Πολιόχνης και η διάδοσή τους στο Αιγαίο κατά την Πρώιμη Εποχή του Χαλκού, in: C. G. Doumas – V. La Rosa (eds.), *Η Πολιόχνη και η Πρώιμη Εποχή του Χαλκού στο Βόρειο Αιγαίο. Διεθνές Συνέδριο Αθήνα, 22–25 Απριλίου 1996 / Poliochni e l'antica età del bronzo nell'Egeo settentrionale. Convegno Internazionale Atene, 22–25 Aprile 1996* (Athens 1997) 543–555.

Efe 1988

T. Efe, Demirciköy III, 2. Die Keramik 2. C. Die frühbronzezeitliche Keramik der jüngeren Phasen (ab Phase H) (Mainz 1988).

Eslick 2009

Ch. Eslick, Elmalı-Karataş V. The Early Bronze Age Pottery of Karataş: Habitation Deposits (Bryn Mawr 2009).

Friedman 2001

E. S. Friedman, Anatolian metallic ware. A third millennium BC ceramic phenomenon, in: I. C. Druc (ed.), *Archaeology and Clays* (Oxford 2001) 17–26.

Gosselain 2000

O. P. Gosselain, Materializing identities. An African perspective, *Journal of Archaeological Method and Theory* 7, 3, 2000, 187–217.

Haggis 1997

D. Haggis, The typology of the Early Minoan I chalice and the cultural implications of form and style in Early Bronze Age ceramics, in: R. Laffineur – P. P. Betancourt (eds.), *TEXNH. Craftsmen, Craftswomen and Craftsmanship in the Aegean Bronze Age. Proceedings of the 6th International Aegean conference / 6^e Rencontre égéenne internationale*, Philadelphia, Temple University, 18–21 April 1996, *Aegaeum* 16 (Liège 1997) 291–299.

Harrison 1995

S. Harrison, Domestic architecture in Early Helladic II. Some observations on the form of non-monumental houses, *Annual of the British School at Athens* 90, 1995, 23–40.

Hood 1981

S. Hood, Excavations in Chios 1938–1955, Prehistoric Emporio and Ayio Gala I, *The British School at Athens, Supplementary* 15 (Athens 1981).

Hood 1982

S. Hood, Excavations in Chios 1938–1955, Prehistoric Emporio and Ayio Gala II, *The British School at Athens, Supplementary* 16 (Athens 1982).

Horejs – Mehofer 2014

B. Horejs – M. Mehofer (eds.), Western Anatolia before Troy. Proto-Urbanisation in the 4th Millennium BC? Proceedings of the International Symposium held at the Kunsthistorisches Museum Wien, Vienna, Austria, 21–24 November, 2012, *Oriental and European Archaeology* 1 (Vienna 2014).

Horejs – Schwall 2018

B. Horejs – Ch. Schwall, Interaction as a stimulus? Çukuriçi Höyük and the transition from the Late Chalcolithic period to the Early Bronze Age in western Anatolia, in: S. Dietz – F. Mavridis – Ž. Tankosić – T. Takaoğlu (eds.), *Communities in Transition. The Circum-Aegean Area in the 5th and 4th Millennia BC. Monographs of the Danish Institute at Athens* 20 (Oxford 2018) 530–537.

Horejs 2016

B. Horejs, Neue Gewichtssysteme und metallurgischer Aufschwung im frühen 3. Jahrtausend – ein Zufall?, in: M. Bartelheim – B. Horejs – R. Krauß (eds.), *Von Baden bis Troia. Ressourcennutzung, Metallurgie und Wissenstransfer. Eine Jubiläumsschrift für Ernst Pernicka*, *Oriental and European Archaeology* 3 (Rahden/Westf. 2016) 251–272.

Ivanova 2013

M. Ivanova, Domestic architecture in the Early Bronze Age of western Anatolia. The row-houses of Troy I, *Anatolian Studies* 63, 2013, 17–33.

Kâmil 1982

T. Kâmil, *Yortan Cemetery in the Early Bronze Age of Western Anatolia* (Oxford 1982).

Kouka 2002

O. Kouka, Siedlungsorganisation in der Nord- und Ostägäis während der Frühbronzezeit (3. Jt. v. Chr.), *Internationale Archäologie* 58 (Rahden 2002).

Lamb 1936

W. Lamb, *Excavations at Thermi in Lesbos* (Cambridge 1936).

Lemonnier 1993

P. Lemonnier, *Technological Choices. Transformation in Material Cultures since the Neolithic* (London, New York 1993).

Lloyd – Mellaart 1962

S. Lloyd – J. Mellaart, Beycesultan I. The Chalcolithic and Early Bronze Age Levels, *Occasional Publications of the British Institute of Archaeology at Ankara* 6 (Ankara 1962).

Manning 1995

S. W. Manning, The Absolute Chronology of the Aegean Early Bronze Age. *Archaeology, Radiocarbon and History, Monographs in Mediterranean Archaeology* 1 (Sheffield 1995).

Manning 2008

S. W. Manning, Some initial wobbly steps towards a Late Neolithic to Early Bronze III radiocarbon chronology for the Cyclades, in: Brodie et al. 2008, 55–59.

Maran 1998

J. Maran, Kulturwandel auf dem griechischen Festland und den Kykladen im späten 3. Jahrtausend v. Chr. Studien zu den kulturellen Verhältnissen in Südosteuropa und dem zentralen sowie östlichen Mittelmeerraum in der späten Kupfer- und der frühen Bronzezeit, *Universitätsforschungen zur prähistorischen Archäologie* 53 (Bonn 1998).

Mommsen 2007

H. Mommsen, Tonmasse und Keramik. Herkunftsbestimmung durch Spurenanalyse, in: G. Wagner (ed.), *Einführung in die Archäometrie* (Berlin 2007) 179–192.

Mommsen et al. 1991

H. Mommsen – A. Kreuser – E. Lewandowski – J. Weber, Provenancing of pottery. A status report on neutron activation analysis and classification, in: M. Hughes – M. Cowell – D. Hook (eds.), *Neutron Activation and Plasma Emission Spectrometric Analysis in Archaeology. Techniques and Applications*, British Museum Occasional Paper 82 (London 1991) 57–65.

Nikolakopoulou et al. 2008

I. Nikolakopoulou – F. Georma – A. Moschou – P. Sofianou, Trapped in the middle. New stratigraphic and ceramic evidence from Middle Cycladic Akrotiri, Thera, in: Brodie et al. 2008, 311–324.

Orthmann 1966

W. Orthmann, Keramik der Yortankultur in den Berliner Museen, *Istanbuler Mitteilungen* 16, 1966, 1–29.

Pantelidou Gofa 2008

M. Pantelidou Gofa, The EH I deposit pit at Tsepi, Marathon. Features, formation and the breakage of the finds, in: Brodie et al. 2008, 281–289.

Pullen 1985

D. J. Pullen, *Social Organization in Early Bronze Age Greece. A Multidimensional Approach* (PhD Diss., Indiana University, Bloomington 1985).

Pullen 2011

D. J. Pullen, Redistribution in Aegean palatial societies. Before the palaces. Redistribution and chiefdoms in mainland Greece, *American Journal of Archaeology* 115, 2, 2011, 185–195.

Rambach 2000

J. Rambach, Kykladen II. Die frühe Bronzezeit. Frühbronzezeitliche Beigabensittenkreise auf den Kykladen. Relative Chronologie und Verbreitung, *Beiträge zur Ur- und Frühgeschichtlichen Archäologie des Mittelmeer-Kulturräume* 34 (Bonn 2000).

Renfrew 1972

C. Renfrew, *The Emergence of Civilisation. The Cyclades and the Aegean in the Third Millennium BC* (London 1972).

Renfrew 1991

C. Renfrew, *The Cycladic Spirit. Masterpieces from the Nicholas P. Goulandris Collection* (London 1991).

Rice 1987

P. M. Rice, *Pottery Analysis. A Sourcebook* (Chicago 1987).

Riemer 1997

H. Riemer, Form und Funktion. Zur systematischen Aufnahme und vergleichenden Analyse prähistorischer Gefäßkeramik, *Archäologische Informationen* 20, 1, 1997, 117–131.

Schwall 2018

Ch. Schwall, Çukuriçi Höyük 2. Das 5. und 4. Jahrtausend v. Chr. in Westanatolien und der Ostägäis, *Oriental and European Archaeology* 7 (Vienna 2018).

Seeher 1987

J. Seeher, Demircihüyük III, 1. Die Ergebnisse der Ausgrabungen 1975–1978 (Mainz 1987).

Seeher 1991

J. Seeher, Die Nekropole von Demircihüyük-Sarıket. Grabungskampagne 1990, *Istanbuler Mitteilungen* 41, 1991, 97–119.

Sharp Joukowski 1986

M. Sharp Joukowski, *Prehistoric Aphrodisias. An Account of the Excavations and Artifact Studies. Archaeologia Transatlantica III* (Providence 1986).

Soles 1992

J. S. Soles, *Prepalatial Cemeteries at Mochlos and Gournia and the House Tombs of Bronze Age Crete, Hesperia Supplement 24* (Princeton 1992).

Triantaphyllou 2001

S. Triantaphyllou, *A Bioarchaeological Approach to Prehistoric Cemetery Populations from Central and Western Greek Macedonia, British Archaeological Reports International Series 976* (Oxford 2001).

Tuba Ökse 2011

A. Tuba Ökse, *The Early Bronze Age in southeastern Anatolia*, in: S. R. Steadman – G. McMahon (eds.), *The Oxford Handbook of Ancient Anatolia, 10,000–323 B.C.E.* (Oxford 2011) 260–289.

Tzedakis et al. 2008

Y. Tzedakis – H. Martlew – M. K. Jones, *Archaeology Meets Science. Biomolecular Investigations in Bronze Age Greece. The Primary Scientific Evidence* (Oxford 2008).

Weninger – Easton 2014

B. Weninger – D. Easton, *The Early Bronze Age chronology of Troy (periods I–III). Pottery seriation, radiocarbon dating and the gap*, in: B. Horejs – M. Mehofer (eds.), *Western Anatolia Before Troy. Proto-Urbanisation in the 4th Millennium BC? Proceedings of the International Symposium held at the Kunsthistorisches Museum Wien, Vienna, Austria, 21–24 November, 2012* (Vienna 2014) 157–202.

Wilson 1994

D. Wilson, *Knossos before the palaces. An overview of the Early Bronze Age (EM I–III)*, in: D. Evely – H. Hughes-Brock – N. Momigliano (eds.), *Knossos. A Labyrinth of History. Papers Presented in Honour of Sinclair Hood* (Oxford, Bloomington 1994) 23–44.

Whitbread 2001

I. K. Whitbread, *Ceramic petrology, clay geochemistry and ceramic production – from technology to the mind of the potter*, in: D. R. Brothwell – A. M. Pollard (eds.), *Handbook of Archaeological Sciences* (Wiley 2001) 449–458.

Wiencke 2000

M. H. Wiencke, *The Architecture, Stratification, and Pottery of Lerna III, Lerna. A Preclassical Site in the Argolid. Results of Excavations conducted by the American School of Classical Studies at Athens IV* (Princeton, New Jersey 2000).

