

# Tree-Rings, Kings, and Old World Archaeology and Environment:

*Papers Presented in Honor of  
Peter Ian Kuniholm*

Edited by

Sturt W. Manning & Mary Jaye Bruce



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# Third Millennium BC Aegean Chronology: Old and New Data from the Perspective of the Third Millennium AD

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**Abstract:** *The foundations for a relative chronology of the third millennium BC in the Aegean, namely for the Early Bronze Age (EB), were set already in the last century. However, the synchronization of cultural sequences in the various landscapes of the Aegean as well as their absolute dating was not successful until the late 1980s due to problematic stratification and to the limited evidence of radiocarbon data respectively. Sturt Manning's important contribution to the latter problem shed new light (Manning 1995). Archaeological evidence has furthermore demonstrated how regionalism and local traditions in material culture can create problems regarding the correlation even of neighboring landscapes within the Aegean. This paper discusses the necessity for archaeologists working in the third millennium AD to develop a new chronological frame beyond the tripartite system (EB I, II, III) and the definition of cultures (e.g. Keros-Syros). Based on the seminal works on Aegean chronology and particularly on data from recent, very well stratified excavations and their absolute datings, a new chronological code based on the centuries within the third millennium BC may now be defined.*

## Introduction

The third millennium BC in the eastern Mediterranean and particularly in the Aegean is, in fact, synonymous with the period called by archaeologists the “Early Bronze Age.” In current terminology, the EB in the Aegean starts toward the end of the fourth millennium BC. Its end may occur at the end of the third or at the beginning of the second millennium BC, depending on the geographic area (Warren and Hankey 1989: Table 2.1; Manning 1995: Figs. 1–2). Therefore, in this paper I will refer to select data and problems of the EB. I will also include some data of the preceding phase, namely the Final Neolithic (FN), that are important for establishing the beginning of the EB and the synchronisms within the Aegean in relative and absolute sense. Concerning the term Aegean let me underline in advance that in the code of Aegean prehistorians the Aegean includes the modern state of Greece, as well as the western coast of Asia Minor (modern Turkey). In this paper I will refer briefly to: I. The history of research on relative EB chronology until 2000; II. The research on absolute EB chronology before and after 2000; and III. The results of some new excavations in the central and the east Aegean that are

important for the relative and absolute chronology in the fourth and third millennia BC; and IV. Closing remarks and suggestions for future work.

## I. The Relative Chronology Until 2000

The foundations for a relative chronology of the Aegean Bronze Age were already set in the first two decades of the 20th century. More specifically, the relative chronological division of the Aegean Bronze Age was based on the tripartite chronological system introduced by Evans for Minoan Crete, which was also applied by Wace and Blegen for mainland Greece and the Cyclades in 1918 (Wace and Blegen 1916–1918, 186–189). The tripartite system was not used simply for dividing the Bronze Age of Crete, the Cyclades, and mainland Greece into Early, Middle, and Late periods, called respectively Early Minoan (EM), Early Cycladic (EC), Early Helladic (EH) etc. It was also used to distinguish three subphases in each of the above mentioned cultural periods, based exclusively on typological criteria for ceramics. Thus, the EH was divided into EH I, EH II, and EH III; the EC into EC I, II, and EC III; and the EM into EM I, EM II, and EM III. As archaeological research was expand-

ing to Thessaly, Macedonia, the East Aegean islands, and Troy the chronological landscape of the EB was enriched particularly after the 1950s, when many of the previously excavated sites were published. Thus, the designation Early Thessalian I, II, and III (ETh) was introduced for Thessaly in 1959 by V. Miložčić, and the term EB I–III or EB 1–3 for northern Greece and the islands of the East Aegean. At some important sites, such as Troy, Poliochni, and Sitagroi, cultural layers with the names I, II, etc., were introduced to refine the chronological sequences even more. All these chronological systems were based almost exclusively on pottery typologies (Renfrew 1972: 116–134; Maran 1998: 37–53, Tafel 80–82; Alram-Stern 2004: 151–193).

In 1972 Renfrew broke away from this naming tradition. Taking into consideration all aspects of cultural life, he introduced a new system particularly for the EH, the EC, and the EB in the East Aegean focusing on the successive “cultural entities” with geographical and chronological meaning. Hence, he used the terms Grotta-Pelos for the EC I; Keros-Syros for the EC II; and Phylakopi I for the EC III (Renfrew 1972: 135–195, Table 9.II; 196–221, Tables 13.II, 13.III, 13.IV). This system was evolved furthermore by Doumas in 1977, who replaced the term “culture” with the term “group” and recognized eight successive groups in the EC (Doumas 1977: 25). Doumas renamed the Grotta-Pelos culture as the Pelos-Lakkoudes culture and proposed four chronological groups before Renfrew’s Keros-Syros culture. He named each group after the site where the subordinate assemblage in question was best represented, namely Lakkoudes, Pelos, Plastiras, and Kampos. The last was considered to represent a transitional phase to the Keros-Syros culture of EC II. In 2000, the EC sequence was further modified by Rambach with new groups based on the study of graves, like the Panagia Complex, that precede the Kampos group and the Aplomata group that follows it (Rambach 2000b: 103–111: 186, 203–220, Abb. 22, Beil. 3; 265–268, 363, Abb.23, Beil. 4–5) (Table 1).

For mainland Greece Renfrew designated the EH I as the Eutresis culture and the EH II as the Korakou culture. For the EH III, he suggested two terms: Tiryns culture for the northwestern Peloponnese (equal to Lerna IV) and Lefkandi I assemblage for the northern areas of mainland Greece (Aegina, Attica, Boeotia, Euboea, and Thessaly) (Renfrew 1972: 99–116, esp. 103–105). In 1979, Rutter underlined that the culture represented by the finds from Lefkandi I was contemporary with the last phases of the Korakou culture of EH II and not with the later Tiryns culture of the EH III period. He further specified that the Lefkandi I assemblage was contemporary

with Renfrew’s Kastri assemblage of the EC II Keros-Syros culture (Renfrew 1972: 180–183, Table 13.III; Rutter 1979: Table 3). These cultures belonged to a broader phenomenon of the presence of distinctive red and black-burnished ceramics which had clear derivations from Anatolian prototypes (Rutter 1979).

From the 1980s until 2000 the critical study of old archaeological evidence as well as recently excavated material in mainland Greece and the Cyclades contributed enormously to the finer division of both Wace and Blegen’s and Renfrew’s chronological systems. Barber and MacGillivray (1980: 150–152 Table II, Ill. 2) subdivided the EC III into EC IIIA corresponding to Renfrew’s Kastri assemblage, and EC IIIB, corresponding to Renfrew’s Phylakopi I culture. In 1983 Rutter demonstrated that a major cultural hiatus separated Barber and MacGillivray’s periods EC IIIA and EC IIIB (Rutter 1983, 6971, 75). In Rutter’s view, this hiatus involved not simply a significant cultural discontinuity, but also a substantial gap in the EC period. And because the EC IIIA, namely the Kastri Group, was contemporary with the Lefkandi I assemblage on mainland Greece, he proposed that the Kastri group demonstrated an EC IIB phase (the EB IIA would then be the Keros-Syros culture), whereas the EC IIIA would represent an “EC III gap,” and the EC IIIB of Barber and MacGillivray would be contemporary with Middle Helladic (MH) and Middle Minoan IA (MM). Therefore, he renamed the EC IIIB as MC I (Table 1).

The relative chronology of the EB in western Anatolia has been included in a tripartite system referring to the entire Anatolian peninsula in EB I, EB II, and EB III. Within this system two sites with rich stratigraphical sequences played the protagonist roles: Troy in northwestern Anatolia with a much discussed stratigraphy (Korfmann and Kromer 1993: Abb. 1; Korfmann 2000: Abb. 6) and Tarsus in the southeast, located in Cilicia. Renfrew (1972: 127–132) synchronized the EB 1 in northwestern Anatolia with Troy I culture, the EB 2 with Troy II culture, and the EB 3 with Troy III–V. Korfmann included later Troy I–III in his “Maritime Troia-Kultur” (Korfmann 1996: 2, 22, Abb. 18). After the 1980s two versions of the tripartite system in Anatolia were developed; their main differences lie, though, in the subdivision of the three main subphases. Thus, the one proposed in 1988 by Efe based on the rich stratigraphy of Demircihüyük distinguishes the subphases as follows: EB 1, EB 2a, EB 2b, EB 3a, EB 3b (Efe 1988: Abb. 98). The other one, published in 1992 by Mellink, discerns the following subphases: EB IA, EB IB, EB II, EB IIIA, and EB IIIB (Mellink 1992: 213–219, Table 2–3). The latter subdivision was based on the comparative stratigraphy of major Anatolian

<i>Settlement stratigraphy</i>	<i>Barber and MacGillivray 1980</i>	<i>Rutter 1983</i>	<i>Renfrew 1972</i>	<i>Renfrew 1972 Cultures</i>	<i>Doumas 1977 Cultures</i>	<i>Doumas 1977 Groups</i>
Phylakopi A I	<i>EC I</i>	<i>EC I</i>	Kampos	Grotta-Pelos	Pelos-Lakkoudes	Lakkoudes Pelos Plastiras Kampos
Phylakopi I-I (A2) Agia Irini II	<i>EC II</i>	<i>ECII A</i> Keros-Syros		Keros-Syros		
Agia Irini III Kastri	<i>EC IIIA</i>	<i>EC IIB</i> Kastri Group- Lefkandi I	Kastri assemblage	Phylakopi I	Phylakopi I	Kastri
Phylakopi I-ii I-iii	<i>EC IIIB</i>	<i>EC III</i> <i>MC I</i> (Chalandriani, Amorgos Phylakopi I)	Amorgos			Amorgos
Phylakopi II	<i>MC</i>					Phylakopi I

**Table 1:** Periodization of the EC period (Based on Barber and MacGillivray 1980: 143 Tab. 1; Rutter 1983: 75).

sites and in particular on the main cultural phases excavated at Tarsus and Troy. A first remark on these chronological schemes would be that they cannot be generalized for Anatolia in its entirety, which is a huge geographical area with a wide cultural diversity since the Pre-Pottery Neolithic (PPN). And for our study a question arising through these systems would be: Why should we base the chronology of coastal western Anatolia, which is located in the Aegean (Kouka 2002: 295–302, Tab. 1), on the sequences of the far away Tarsus?

The above remarks, as well as comments on the chronology of further geographical parts of the EB Aegean, were critically presented in 1995 together with the first published absolute datings of these sites in the seminal book of Manning, a reference book for archaeologists working on the Aegean EB (Manning 1995: 40–73, Fig. 1–2). In addition, Maran, having taken into consideration Manning’s results on absolute chronology, undertook in 1998 the most detailed and critical presentation so far on the relative chronology of the Aegean FN/CH and EB sites (Maran 1998: 7–159, Taf. 80–81). Of importance for our further discussion are his special and extremely useful references on the FN and on the Lefkandi I–Kastri phases.

Regarding the Aegean FN two subphases are defined: the earlier phase (second half of the fifth millennium BC) is known in Thessaly as the Rachmani culture and in the middle and south Greek mainland and the Cyclades as the Attica–Kephala culture; the later one (fourth millennium BC) is known in Thessaly from Petromagoula, in the middle and southern Greek mainland from the North Slope of the Akropolis and Eutresis II, while in the Cyclades this later subphase can at least partially be synchronized with the Pelos-

Lakkoudes phase (Maran 1998: 7–8, 25, 30–31, 152–153, Taf. 80–81) (Figure 1). Regarding the Lefkandi I assemblage or the Kastri group the studies of Manning and Maran clarified that the earlier defined cultural “assemblage” or “group” of Anatolian influence in the Cyclades and the East Greek Mainland littoral is in fact a long phase of about 300 years (26th–22nd centuries BC/2550–2200 BC), which started in the middle EH II (Lerna IIIC) and lasted until the beginning of the EH III (Lerna IV.1) (Maran 1998: 140–146, 153–159, Taf. 11–13, 80–81; Kouka 2002, 300–301, Tab. 1). This fact can also be understood if one takes into consideration the long presence of these “Anatolianizing” pottery types in their motherland, namely in western Anatolia.

In Anatolia there is also a discussion whether the horizon of this pottery is dating in the EB IIB or in the EB IIIA (Mellink 1986: pl. 16; 1992; Efe 2006). In fact, in all mentioned areas one can define an earlier and a later phase through the gradual appearance of the typical shapes of the Lefkandi I–Kastri phase: in the earlier phase the bell-shaped cups and the one-handed tankards were appearing, whereas in a later phase the assemblage has been enriched with the depas cups, the shallow bowls, the first wheelmade plates and the cut-away spouted jugs with globular bodies (Mellink 1986: pl. 16; Şahoğlu 2005b: 343–350, Table 1, 4–8). Maran called this phase “Wendezeit” (Time of change), meaning a cultural change (Maran 1998: 450–457). Thus, a while before 2000, besides the hitherto simply chronological and cultural labels, terms describing general cultural phenomena are making their appearance.

From the above comments, we recognize the confusion that such polyglot terminology has borne upon



Figure 1: Map with Aegean sites of the LN/CH and the EB.



the relative Aegean and Anatolian EB chronology at the end of the 20th century. The attempt to fit together all the old and the new subphases in the traditional tripartite system is obvious. As Oliver Dickinson noted in his book on the Aegean Bronze Age about the tripartite system: “The system has in fact become a bed of Procrustes, to which the material must be fitted willy-nilly” (Dickinson 1994: 9–22, Fig. 1.1–1.3) (Table 2).

## II. The Absolute Chronology Before and After 2000

The synchronization of cultural sequences in the various landscapes of the Aegean as well as their absolute dating was problematic until the late 1980s due to the problematic stratification, as well as due to the limited amount of radiocarbon data respectively. According to the published calibrated dates from various landscapes of the Aegean before 2000, the EB should have started between 4000 and 3100, while the end should be put between 2100 and 1800 BC (Table 3)!

The problems of the beginning, of the end, and of the duration of each subphase of the EB were thoroughly discussed by Manning in 1995, shedding new light on old problems. After having discussed the old radiocarbon dates from Troy (published in 1981 by Quitta) the new ones published by Korfmann and Kromer in 1993, the very few dates published by Warren and Hankey in 1989, the nine thermoluminescence dates from Beşik-Yassı Tepe as well as the results of the Aegean Dendrochronology Project directed by Peter Kuniholm since 1973 (Manning 1997: 154–160, 165–166, 177–179), Manning concluded that the absolute dates for the Aegean Bronze Age were as follows: EB 1 = 3100–2650 BC; EB 2 = 2650–2200/2150 BC; and EB 3 = 2200/2150–2000 BC (Manning 1995: 141–153, Table 2) (Table 4).

Regarding the beginning of the EB in western Anatolia, this has been set up by Mellink (EB IA, EB IB, EB II, EB IIIA, EB IIIB) in 1992 at around 3400 BC and the end at about 2200 BC (Mellink 1992: Table 2–3) (Table 5).

The Troy Project set the beginning of Troy I at 2900 BC (Korfmann and Kromer 1993: Abb. 23), while in 2004 the TAY Project (the Turkish Archaeological Atlas) published calibrated dates from western Anatolia that put the beginning of Troy and Beşik-Yassı Tepe also before 3000 BC, at about 3100 BC (Erdoğan, Tanındı and Uygun 2003: Ek 2) (Table 6).

The most discussed calibrated dates during the 1990s were those of Troy published in 1993 by Korfmann and Kromer, since they were important for both the chronology of western Anatolia and the synchronization with the Cyclades and the Greek main-

land. These were also discussed by Manning in 1997 together with the dates from Beşik-Yassı Tepe, Poliochni azzurro (2910–2672 BC), and Thermi I (3943–3195 BC, 2910–2780 BC). According to this data the EB I seems to have started on the East Aegean islands of Lemnos and Lesbos at around 3000 BC (Table 4). However, problems for the comparative chronology have been raised from the arguments of Korfmann and Kromer through the synchronization of mid-late Troy (Id-k) with the early Troy II (Manning 1997, 501–505, Table 2; Cf. Korfmann 2000, Abb. 6).

Apart from the comments of Manning on the radiocarbon and dendrodates, one should take into consideration the pottery evidence from Troy I–V that was unearthed in Troy after 1987 (*Studia Troica* 1991–1996), the study of which is currently in progress (Korfmann 2006). At this point we should not forget, on the one hand that there are differences indeed in the pottery of Troy Ia–k and Troy IIa–g as defined by Blegen et al. in 1950. Furthermore, these differences can stratigraphically be followed in western Anatolia in the rich EB strata at Liman Tepe/Klazomenae, in the Izmir Region (Şahoğlu 2002). Besides, six calibrated radiocarbon dates taken from an old profile at Tarsus have been published recently and have been compared with the ones from Troy (Aslı Özyar et al. 2005: Table 17–18). According to these dates Troy Ia–d can be dated in the time between 2824–2659 BC (Sample 1) while Troy Ie–l between 2625–2401 BC (Samples 2–6) (Aslı Özyar et al. 2005: 23, Fig. 21; 23–25, Fig. 22).

The absolute dates from the FN or CH and the EB Aegean and Anatolia have been enriched in the late 1980s and after 2000 through samples from new excavations from both the Aegean (Kastri on Thasos, Mikro Vouni on Samothrace, Palamari on Skyros, Grotta and Zas Cave on Naxos, Markiani on Amorgos, Skarkos on Ios, Proskynas in Lokris) and western Anatolia (Liman Tepe, Bakla Tepe, Çeşme-Bağlararası, Ulucak). Based upon the published dates we have a time span for the FN between 4700/4500–3300/3100 (Andreou, Fotiadis and Kotsakis 2001: 260, Table 1). Another one from Doliana in Epirus gives a dating of the site in the FN and the beginning of the EB: 3770–2925 (Alram-Stern 2004: 194) (Figure 1). Extremely important data for the absolute chronology of the FN and the EB in the Cyclades and therefore for the entire Aegean are coming from Daskaleio-Kavos, Markiani on Amorgos, Zas Cave on Naxos, and Akrotiri on Thera (Renfrew, Housley, and Manning 2006; Manning 2008). Their verification led Manning to the following results (Figure 1, Table 7).

<i>Periods</i>	<i>Middle &amp; South Mainland Greece</i>	<i>Cyclades</i>	<i>Northern Greece</i>
<b>Final Neolithic / Early Chalcolithic</b> <i>2nd half 5th mill. BC</i>	Attica – Kephala	Attica – Kephala Strophilas	Rachmani Palioskala Sitagroi III Dikili Tash II
<b>Final Neolithic / Late Chalcolithic</b> <i>4th mill. BC</i>	Akropolis – North Slope Eutersis II	Pelos – Lakkoudes	Petromagoula Magoula Miktothivon
<b>EH I</b> <i>3100/3000-2700/2650 BC</i>	Eutresis III-V Manika 1 Perachora-Vouliagmeni Talioti-Kephalari	Kampos Group ( <i>bigger part</i> )	ETH I-Argissa I Servia 8 Kritsana I/II (part) Pentapolis I Sitagroi IV-Va (part) Dikili Tash IIIA
<b>EH II early</b> <i>2700/2650 –2550 BC</i>	Lerna IIIA-B Tiryns FH II-früh Tsoungiza Lithares 6-7 Eutresis VI-VII Manika 2-3 Agios Kosmas A Tsepi	Kampos Group ( <i>later part</i> )  Keros – Syros  Agia Irini II	Pefkasia 1-5 Kritsana I/II Sitagroi Va Pentapolis I
<b>EH II middle</b> <i>2550/2500 BC</i>	Lerna IIIC Lefkandi I Leukas-R-Gräber	Agia Irini II Kastri	Pefkasia 6 Sitagroi Vb=EH II  <i>ANATOLIAN EB2b</i>
<b>EH II late</b> <u><i>WENDEZEIT</i></u> <i>2500/2450 BC</i> <i>NO SECURE DIVISION</i> <i>REGIONALISM</i> <u><i>WENDEZEIT</i></u>	Lerna IIID Lefkandi I Thebes Group B Aghios Kosmas B Raphina House A Rouf Agios Dimitrios IIb	Agia Irini III Kastri	Pefkasia 7
<b>EH II/ EH III Transition</b> <i>Some EH III shapes</i> <u><i>WENDEZEIT</i></u> <i>23rd cent. BC</i>	Lerna IV.1 Lefkandi I Thebes Group B Aegina-Kolonna III	Kastri	Pefkasia 7 late
<b>EH III</b> <i>2200/2150 BC</i>	Lerna IV Phase 1-3 Aegina-Kolonna IV-VI Olympia-Altis (Apsis houses) Olympia-New Museum (early EH III) Lefkandi 3	EC IIIB	Pefkasia MB Phase 2 Palamari House G

**Table 2:** The Aegean EB relative and absolute chronology (based on Maran 1998: Taf. 80-81, modified by the author).

<i>REFERENCE</i>	<i>Beginning of EB Years BC</i>	<i>End of EB Years BC</i>
Treuil 1983: Fig. 30	4000/3800	1900
Coleman 1992: Table 2, 4	3700/3500	2100
Warren & Hankey 1989: Table 2.1	3650/3600	1800
Pullen 1985: Table 3.5, 3.8	3200	2050
Manning 1995: 144 f., 168, Table 2	3200/3100	2000

**Table 3:** Calibrated datings for the beginning and the end of the Aegean EB until 1995.

<i>EB periodization</i>	<i>Coleman 1992 Calibrated BC</i>	<i>Manning 1995 Calibrated BC</i>	<i>Manning 1995 EB periodization</i>
EB I	3700-2900	3100/3000-2650	EB 1
EB II early (Lerna IIIA-B, Thebes Group A)	2900-2400 EC II: 3100-2400	2650-2450/2350	EB 2
EB II late (Lerna IIIC-D, Lefkandi I, Thebes Group B)	2400-2100	2450/2350-2200/2150	
EB III	2100-2000	2200/2150-2050/2000	EB 3
MB	2000-1900	2050/2000-1950/1900	MB

**Table 4:** Absolute datings of the Aegean EB (after Coleman 1992: Table 2, and Manning 1995: Fig. 2).

<i>Mellink 1992 EB periodization</i>	<i>West and South Anatolia</i>	<i>Begin Calibrated BC</i>
EB IA	Kumtepe Tarsus EB I	3400
EB IB	Troy I early Tarsus EB I	
EB II	Troy I Besiktepe Yortan Iasos Tarsus EB II	2700?
EB IIIA	Troy IIb-IIg Tarsus EB IIIA	2400?
EB IIIB	Troy III-V Tarsus EB IIIB	2200?

**Table 5:** Relative and absolute chronology of the Anatolian EB (Mellink 1992: Table 2-3).

<i>Western Anatolia</i>	<i>Beginning of the period Calibrated BC</i>
Kumtepe IB Beycesultan XVII	3500-2900
Demircihöyük C	3300-2900
Troy I	3100-2500
Troy II	2500-
Troy III	2300
Troy IV	2200
Troy V	2100

**Table 6:** Calibrated dates of Western Anatolia (based on Erdoğan, Tanındı and Uygun 2003: Ek 2).

<i>Manning (2008) Cultural phase</i>	<i>Proposed time range Calibrated BC</i>
EC I – Grotta Pelos-Lakkoudes phase	3100(+) to 2950
EC I/II – Kampos phase	c. 2950-2650
EC II – Keros-Syros phase	c. 2650-2500
EC III – Kastri phase	c. 2500-2250

**Table 7:** Absolute chronology of the EC (Manning 2008: 59).

### III. New Results and New Aspects of the Third Millennium AD

Archaeological research in the Aegean during the last three decades as well as final publications of older excavations offer to archaeologists of the third millennium AD abundant data for relative chronology and comparative stratigraphy as well as an absolute chronology of the FN/CH and the subphases of the EB from sites whose stratifications vary in richness (Aram-Stern 2004).

Important for the FN or Late Neolithic II (LN) or CH are records from Makri on Thrace, Mikro Vouni on Samothrace, Myrina on Lemnos, Doliana in Epirus; Palioskala in the Karla Lake and Magoula at the Junction Mikrothivon in Thessaly; Zagani and Lambrika in Attica; the Euripides Cave on Salamis; Strophilas on Andros and the Zas Cave on Naxos; Chrysokamino and Kefala Petra in East Crete; Bakla Tepe and Liman Tepe in the Izmir Region (Aram-Stern 2004; Kouka 2008: 272–278, Fig. 27.1) (Figure 1). Regarding the EB the following sites offered good evidence for a comparative stratigraphy and absolute dates in the Aegean: Archondiko, Mandalo, and Xeropigado Koiladas in Macedonia; Proskynas in Lokris, Thebes, Tsepi at Marathon, Kolonna on Aegina, Petri and Tzoungiza in Nemea, Geraki in Laconia, Aigio-Helike, Olympia, and Nydri in Levkas in mainland Greece; Zas Cave and Grotta on Naxos, Skarkos on Ios and Akrotiri on Thera in the Cyclades; Cha-

nia, Poros Irakleiou, Kefala Petra, Petras in Crete; Mikro Vouni on Samothrace, Palamari on Skyros, Myrina and Koukonisi on Lemnos in the North and East Aegean (Kouka 2002; Aram-Stern 2004; Kouka 2008: 272–274, Figs. 27.2, 27.3, 27.4). Finally in western Asia Minor: Troy (*Studia Troica* 1991–1996; Korfmann 2006), Liman Tepe (Erkanal and Günel 1996; Erkanal, Artzy, and Kouka 2003; 2004), Bakla Tepe (Erkanal and Özkan 1999; Tuncel 2005), Çeşme-Bağlararası (Erkanal and Karaturgut 2004), Ulucak and Kulaksızlar in the Izmir region and Küllioba (Efe 2006; 2007) in the Eskişehir Region (Kouka 2002; Harmankaya and Erdoğan 2002; ARKEOATLAS 2003; Schoop 2005) (Figure 1).

Keeping in mind the short discussion on relative and absolute chronology as presented above, let us focus on some new data that lead us to rethink some important moments of the current Aegean EB chronology.

#### Select evidence from the FN/CH and the EB

Firstly I will refer to the comparative chronology of the FN and the EB I on mainland Greece and the Cyclades. Regarding this I will focus on the pottery type of a lid with incised spiral decoration with white incrustation (Aram-Stern 2004: 752–753, Taf. 52). This pottery type is well known in the Baden cul-

ture of the southwest Balkans (Macedonia, Albania) as “Bratislava-type” and is dating in the period of Maliq IIIa, in absolute datings between 3600–3100 BC (Maran 1998: Taf. 1–4). Pots of this type were found so far in Doliana in Epirus, dating between 3770–2925 BC, in Petromagoula of Volos (Maran 1998: 344–346, Abb. 1, Taf. 1, 1–3, 73) and in Raxi at the lake of Xynias. The finds from Petromagoula led Maran in 1998 to designate a later stage of the FN in Thessaly, later than the Rachmani period. Recent finds from Palioskala at the Lake of Karla, as well as from Magoula at the Junction Mikrothivon, underline the existence of a phase later than Rachmani (Figure 1). This phase is in the Cyclades at least partially synchronous with the Pelos-Lakkoudes Phase (Table 1). Similar lids with spiral and star or sun motives were recently published by Pantelidou from the cemetery of Tsepi at Marathon (Pantelidou-Gofa 2005: Pl. 6, 18, 27, 29). This cemetery was in use particularly in the EB I and shows a Cycladic character. After Pantelidou, the majority of the material belongs to the Kampos phase. One of the most distinctive features of the Kampos phase, a cultural stage that Doumas set up as the transitional period from the EC I to the EC II, is the frying pan with straight sides and a II-shaped handle (Doumas 1977: 25; Pantelidou-Gofa 2005: Pl. 9, 13, 16). The decoration of the Kampos frying pans with incised running spirals around a central star or sun resembles one of the lids known from Epirus and Thessaly. Tsepi is the only site where both types were found together and Pantelidou postulates that the frying pans almost coexisted with the simple lids (Pantelidou-Gofa 2005: 314–316). Therefore, one could assume, that the frying pan of the Kampos phase may represent the successor or the handleless lids of the final stage of the FN on mainland Greece. The existence of both types in Tsepi indicates that the Kampos phase should represent a much longer phase within the EC I, and that at least in Attica, followed the Akropolis North-Slope and Eutresis II period. In this respect one should not forget that a major interaction between the Cyclades, Attica, Boeotia, Euboea, Lokris (Proskynas) and the Argosaronic Gulf has been established since the Attica-Kephala cultural phase (Kouka 2008: 275–276). This was based on the exchange of metals and metal technologies and was expressed through more or less stronger affinities in the material culture. The Kampos phase dates according to Manning’s latest absolute dates (2008: 58–59) between 3040–2630 or 2950–2650 BC (Table 7). The Kampos phase is followed by the Aplomata group, which precedes the Chalandriani group, namely the EC II Keros-Syros culture. Indicative features of this group are footed bowls, pyxides, and jugs with dark-on-light painted decoration as well as frying pans with

incised and stamped running spirals or star/sun motives within frames with Kerbschnitt (a progressive type of the frying pan of the Kampos phase). Within this group the first sauceboats of EH inspiration have appeared (Rambach 2000b: 265–268, 363, Abb.23, Beil. 4–5).

## The evidence at Liman Tepe

Let us move now to the Izmir region in order to investigate the archaeological records from the fourth and third millennia BC. The extensive survey and large excavations in Panaztepe, Liman Tepe, Bakla Tepe, Kocabas Tepe and Çeşme-Bağlararası undertaken within the framework of the Izmir Region Excavations and Research Project (IRERP) since 1992, under the direction of Prof. Hayat Erkanal, Ankara University, opened new perspectives in Aegean prehistory. The fertile peninsula of Urla is located in the middle of the western Anatolian coastline. The area was rich in metal ores (copper, silver, lead, and gold) and was an ideal field for habitation since the Neolithic. Large-scale excavations in the IRERP region offer important data for an intra- and inter-site analysis of settlement history from the Neolithic (Araptepe, Barbaros) through the Bronze Age as well as for studying early urbanism in western Anatolia and its cultural interaction to the Aegean and the chronological sequence of western Anatolia (Figure 1). For the purposes of this paper we will focus on Liman Tepe. Liman Tepe (Klazomenae) (LMT) is located in the peninsula of Urla and has direct access to both the Anatolian plateau and the Aegean. Architectural remains revealed the following stratified levels (Şahoğlu 2005b, Figs. 1–2) (Tables 8–9).

Excavations at Liman Tepe revealed a flourishing urban harbor-settlement since EB I. Settlement planning, monumental fortification walls, massive house architecture, craft specialization, prestige objects, numerous imports from the Cyclades and the Greek mainland found in the rich levels of the EB I-late EB II settlements, all testify to the economic and political complexity and importance of Liman Tepe as an early urban center in this landscape (Figure 2). The site also contributed to the development of trade networks between Anatolia and the Aegean as well as to the establishment of the cultural *koine* in the North and East Aegean from the EB I through the EB II Periods. This *koine* reached its peak in the advanced EB II, when Liman Tepe became one of the biggest and richest urban cities in western Anatolia and the Aegean with a monumental fortification, a fortified harbor, a lower town, an administrative complex, and craft specialization (Kouka 2002: 6–7, 295–302).

<i>Liman Tepe</i>	<i>Periodization</i>
<b>LMT VII</b> (VII.4-VII.1)	Late Ch
<b>LMT VI</b> (1d-1c-1b-1a) VI 1d VI 1c-VI 1b VI 1b-VI 1a	EB I early-middle EBI middle EB I late
<b>LMT V</b> (3b-3a-2b-2a-1) V 3b-V 3a V 2b-V 2a-V 1b V 1a	EB II-early EB II-late EB II-final
<b>LMT IV</b> (2-1) IV 2 IV 1	EB IIIa EB IIIb
<b>LMT III</b> (4, 3, 2/1)	MB
<b>LMT II</b>	LB

Table 8: The stratigraphical sequence at prehistoric Liman Tepe/Klazomenae.

DATE	ANATOLIA Kültepe Tarsus Beyce Sultan			CRETE	GREEK MAINLAND	CYCLADES	EASTERN AEGEAN ISLANDS	TROIA	LİMAN TEPE AREA - A	LİMAN TEPE AREA - B	PERIOD	
2000 BC.			Via		Early Helladic III Aegina V	Middle Cycladic Early Cycladic III (Phylakopi I)	Heraion V Poliochni Brown Heraion IV	V	?	LMT B IV-1	EBA IIIb	
			VIII		Lerna IV Aegina IV			IV (?)				
2500 BC.	11b			Early Minoan IIB	Early Helladic II Late	Early Cycladic IIB (Kastri Group) Aya Irini III Palamari III Syros-Kastri Zas IV Mt. Kynthos	Heraion III Poliochni Yellow Emborio I	Late	LMT A V-1	LMT B V-1a	End of EBA II	
	12	EBA III	XII c		Lerna IIID Aegina III						LMT B V-1b	EBA II Late
	13			Lefkandi I / Manika Pevkakia VII					LMT A V-2a	LMT B V-2		
	14			XIII a	Lerna IIIC Pevkakia VI		Heraion II Emborio II					
3000 BC.		EBA II		Early Minoan IIA Knossos Poros	Early Helladic II Early	Early Cycladic IIA  Aya Irini II Palamari II Chalandriani Mt. Kynthos	Poliochni Red Heraion I Thermi V	Early	LMT A V-2b			
	15				Lerna IIIB						Late	LMT A V-3a
	16			Lerna IIIA			Emborio III Poliochni Green					
	17						Thermi IV			LMT A V-3b		
	18			XVII	Early Minoan I	Aegina I	(Aplomata Group)	Polio. Blue evoluta Emborio IV Polio. Blue Archaic Thermi III	I	LMT A VI-1a	LMT B VI-1	EBA I Late
			EBA I	XIX		Early Helladic I						Middle
3000 BC.						Early Cycladic I (?)	Emborio V	Early (?) End of Kultepe 1b (?)	LMT A VI-1c	?	EBA I Middle / Late	
			XX				Thermi II Thermi I				LMT A VI-1d	
									LMT A VII			

Table 9: Comparative chronology of Liman Tepe, Anatolia and the Aegean (after Şahoğlu 2005b, Fig. 2).

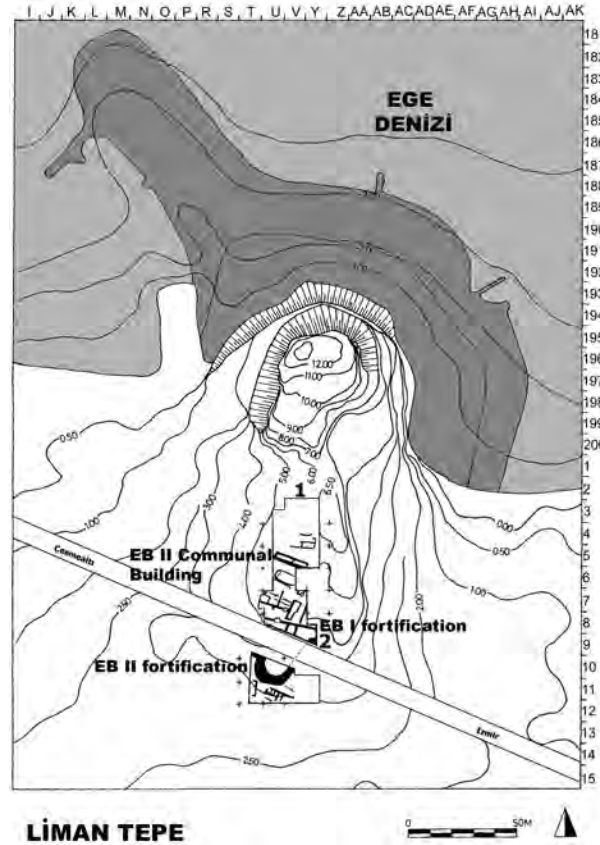


Figure 2: Liman Tepe. Topographical map.

### The Late CH settlement—LMT VII

The Late CH settlement included four successive architectural levels (LMT VII. 4-VII.1), that were investigated recently in the northern part of the peninsula. The architecture of the earliest phase (LMT VII.4) revealed in particular round silos with narrow, white plastered mudbrick walls. The pottery included bowls with rims thickened on the interior and with pattern burnished decoration (Figure 4—missed Fig 3a; should renumber), cheese-pots as well as closed pots. Noteworthy among the small finds was the abundance of long blades and scrapers made with Melian obsidian. Similar obsidian blades, among them leaf-shaped obsidian arrow-heads, and fragments of a marble conical cup were found in the obsidian workshop of the site. The obsidian arrow-heads and the marble conical cups are typical for the Attica-Kephala culture in the central Aegean (Figure 5), but also known in the wider Izmir region in the marble workshop at Kulaksızlar (NE of Izmir) (Takaoglu 2005). The finds of the third CH Phase (VII.3) included pattern burnished pottery, cheese pots, and closed pots with knobs at the upper part of their handles, a clay stamp seal and a clay figurine, but no important architecture.

The later phases (LMT VII.2-1) included a destroyed apsidal house with wattle-and daub walls, and rectangular constructions with pisé walls used for storage. Similar architecture is known from Emporio IX-VIII, Poliochni Black, Myrina, Bakla Tepe, and Kum Tepe. The most characteristic pottery of these phases included conical bowls with rolled rims and closed pots with white painted decoration (Figure 6), or fine incised decoration with white incrustation, bowls with carinated bodies and symmetric lugs, and a biconical rhyton. This pottery is typical for the Late CH in western Anatolia and the southeast Aegean and dates the latter two phases of LMT VII in a later stage than the Attica-Kephala culture, namely at around 3100 BC following Manning's (2008: 58–59) dates from the Cyclades (Tables 8–9). From Liman Tepe itself the analysis of radiocarbon samples is still in progress. Finally, in the latest phase (VII.1) an evolved agricultural economy and in situ metalworking of copper were also attested.

The late CH finds from Liman Tepe indicate the economic and social structures of the CH LMT, since they indicate the participation of western Anatolia in the common cultural and symbolic code within the Aegean as early as the fourth millennium BC. This

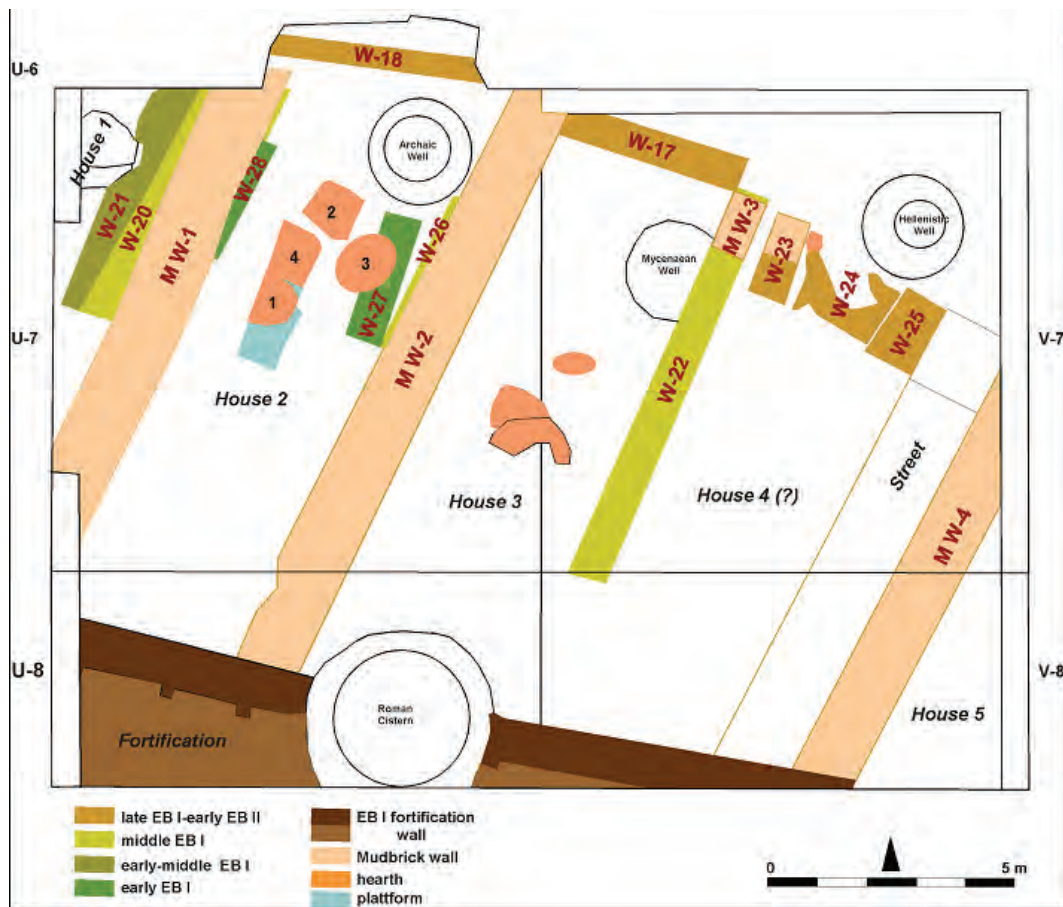


Figure 3: Liman Tepe VI. Plan of the EB I settlement.

code included metal jewellery and tools, leaf-shaped arrowheads of obsidian, jewellery made of *Spondylus gaederopus* (Kouka 2008: 58–59).

### The EB I settlement—LMT VI

The Late CH settlement was destroyed by fire, and Liman Tepe was rebuilt in the EB I with totally new concepts in building materials, methods of construction, house types, and intra-site organization. Due to the geomorphology, the architectural organization of the EB I was not the same in the north and south parts of the settlement (Figures 2–3).

The southern part of the settlement included a freestanding, 3m high and 90cm wide and very well built defensive system strengthened with rectangular buttresses and a sloping supporting wall, a gate flanked by two trapezoidal bastions, and blocks of long-room rectangular houses in a radiating arrangement, typical for this period (Erkanal and Günel 1996, Çiz. 5, Res. 11–12). The fortification wall displays three main construction phases, dating from the early EB I (LMT VI d) to the very early EB II (LMT V3b).

The houses were in use longer, namely from the early EB I (VI d–VI a) until the late early EB II (LMT V3a) (Figure 3). The successive floors (3–6) examined so far in Houses 1–3 date to the early/middle (Troy Ib) and late EB I–early EB II (late Troy I, Ih) (Erkanal, Artzy, and Kouka 2003: 424–425, Res. 1; 2004: 165–168, Res. 1–3). The earliest levels of the EB I in these houses have not yet been investigated. These levels were fortunately reached in the north part of Liman Tepe.

The architectural concept in the northern part of the site was different. A stone terrace wall and high stone-built house walls belonging to rectangular houses indicate three architectural phases that succeeded the four LCH layers. They provide data for the earliest phases of the EB I that are lacking from the southern part. The construction of such a terrace wall must have acted as a protecting belt against erosion, surrounding the built area of an “upper settlement.” This interpretation also suggests that the EB II topography of the site was being shaped much earlier. The city to the north of the buildings within the monumental fortifications was constructed on ter-



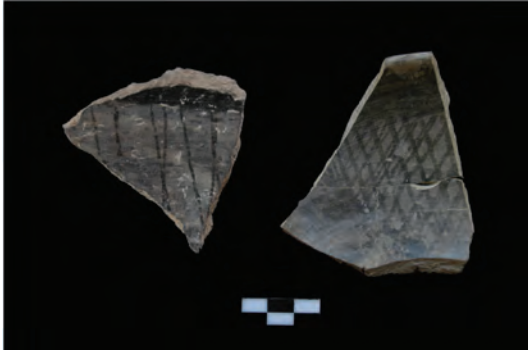


Figure 4: Liman Tepe VII.4. Pattern burnished pottery.



Figure 6: Liman Tepe VII. 2. Jugs with white painted decoration and rhyton.



Figure 5: Liman Tepe VII.3. Obsidian arrowheads, fragments of a marble conical cup and “cheese-pots.”



Figure 7: Liman Tepe VI. EC frying pans.



**Figure 8:** Liman Tepe VI. Characteristic pottery shapes of the EB I.



**Figure 9:** Liman Tepe VI. Imported EH and EC pottery.

paces in keeping with the topography of the site. The earliest EB I architectural phase included rolled-rim bowls, and bowls with inverted rims as the most characteristic pottery shapes. Unlike examples from the later EB I periods, these bowls are thin-walled and quite delicate. The inverted part of the rim is also narrower than those of later periods. On other sites (e.g. Emporio), this shape has been mostly observed in Late CH or the transition between the Late CH/EB I periods. Rolled-rim or “S”-profile bowls are very rare, whereas the inverted rim bowls with string-hole lugs are quite abundant. Among this, pottery fragments of two different EC frying pans of the Kampos phase were discovered; the rims have incised, linear decoration of parallel lines, whereas the base is decorated with diagonally-hatched triangles (Figure 7). These finds suggest that the earliest EB I architectural phase at Liman Tepe is contemporary with the Kampos phase in the Cyclades.

On the house floors of the southern part of the settlement, particularly in Houses 2 and 3, the pottery included numerous pots typical for the EBI in the north and east Aegean (Figure 8) and many ceramic imports from the Cyclades and the Greek mainland (Erkanal, Artzy, and Kouka 2003: 424–425, Res. 1; 2004: 165–168, Res. 4), namely: EH sauceboats in Urfinis ware, the earliest found to date in western

Anatolia EC I/early EC II imports, such as dark-on-light painted pots similar to those known from the Aplomata Group, pyxides and small pithoi with incised, stamped and plastic decoration (Figure 9). These finds as well as the remarkable presence of cores and blades of Melian obsidian and of Naxian emery demonstrate the intensive trade contacts between Liman Tepe and the Central and South Aegean. Moreover, they are a reliable indicator of the economic activities and the social status of the inhabitants of Houses 2 and 3, houses associated with industrial activities, such as working of metal, bone, and flintstone (House 2) and textile production (House 3).

Social differentiation within EB I Liman Tepe is suggested by a clay stamp seal and a schematic stone figurine from the south part, as well as a clay figurine and the EC frying pans of the Kampos phase from the north part of the settlement and a golden band with slightly curved ends and incised decoration found in House 1 and dating to the middle EB I (Troy Ib-c), the earliest golden artefact so far in the eastern Aegean and in western Anatolia, much earlier than the “treasures” from Poliochni giallo and Troy IIg (EB II) (Erkanal, Artzy, and Kouka 2003: Res. 3). The existence of such a valuable artifact in one of the earliest phases of the EB I settlement is one of the most indicative features of the social stratification and the economic prosperity of Liman Tepe at the beginning of the EB. If we adopt the relative chronology—since there are so far no results from the radiocarbon samples from Liman Tepe—the EB I levels at Liman Tepe will be contemporary with the Kampos and with the Aplomata groups and at any case will be earlier than the Keros-Syros phase. Following Manning’s new dates from the Cyclades, this would mean the EB I at Liman Tepe should be dated between 2950 until some time after 2650 BC. This would furthermore mean that the EB I at Liman Tepe corresponds very well with Poliochni azzurro and Thermi I as well as with Troy I early–middle (EB 1 of Efe 1988 and EB I B of Mellink 1992) (Tables 7–8).

### The EB II settlement—LMT V

During the earlier phases of the EB II, of the period that Renfrew defined as the Keros-Syros culture and later as the period of an “international spirit” in the Aegean, the contacts of Liman Tepe with the central Aegean become more intensive (Kouka 2002: 299–301): Urfinis sauceboats, fragments of marble vessels, marble figurines, a bronze pin with amphoriskos head, and Melian obsidian demonstrate these contacts (Şahoğlu 2005a: Fig. 3, 5, 8–11, 14). These earlier phases should be dated according to Manning (2008: 59) between 2650–2500 BC (Tables 7–8). The later EB

II at Liman Tepe, namely Rutter's Lefkandi I-Kastri Phase (EC IIB), called in Anatolian terms EB IIIA, could be studied very well in the deposits of the communal storage at Liman Tepe, the previously called "corridor house" (Erkanal and Günel 1996: 312–313, Res. 16–18) (Figure 2). This building belongs to the administrative complex of Liman Tepe during the EB II. The study of this material by Şahoğlu in 2002 demonstrated the existence of two phases: a) an earlier phase with the one-handled cups, the bell-shaped cups and the one-handled tankards; and b) a later phase, during which the late EB II service set has been enriched furthermore with depas cups, shallow bowls, the first wheelmade plates and the cut-away spouted jugs with globular bodies. In his recent study on trade networks between Anatolia and the Aegean Şahoğlu defines this late EB II period as "Anatolian Trade Network" phase (Şahoğlu 2005), which is contemporary with Maran's "Wendezeit." According to the new dates from the Cyclades this period should be dated between 2500–2250 BC (Tables 7–8).

The EB III period at Liman Tepe is also well-defined with gray and red burnished wares, the shapes of them indicating on the one hand the continuation from the preceding phase and on the other hand the first signs of the wheelmade red and gray wares of the MB (Şahoğlu 2002).

From the above presentation it becomes clear that the large-scale excavations at Liman Tepe offer a tight stratigraphical sequence and define a clear chronological frame for the EB in the western Anatolia littoral. The evidence here may also help clear the misunderstandings of the 1990s—in both relative and absolute sense—caused by the new evidence from Troy (the dates were recovered from the excavations of the "pinacles" left unexcavated by Schliemann, Dörpfeld, and Blegen). Due to its location in the center of the East Aegean and its participation to limited or extended trade networks, the stratigraphy of Liman Tepe contributes significantly to the comparative chronology of western Anatolia, with the North and East Aegean islands, the Cyclades, and mainland Greece from the fourth through the second millennia BC.

## Conclusions

Discussing chronological problems that cover over a millennium within 20 minutes is quite difficult, and certainly not always pleasant for an audience. Rather, it is a matter worthy of causing a headache, particularly since the study focuses on more than one chronological horizon, all possessing many different names, as does, for example, the late EB II. This horizon is known as the Lefkandi I assemblage, or the Kastri group, or the Lefkandi I-Kastri Phase, or the "Wen-

dezeit," or the "Anatolian trade network" phase, that belongs either to the EB IIB or to the EB IIIA in Aegean terms, or to the EB IIIA in Anatolian terms. What all these conventional labels refer to is the same period: that is c. 2500–2250 BC. What then is the need for this plurality of terms for the same matter? This can cause only misinterpretations.

I think that the study of Aegean prehistory from its beginnings in 1870 to now has showed us that using the tripartite system and trying to fit cultures and groups in it causes more problems than it solves. Furthermore, archaeological evidence has demonstrated how regionalism and local traditions in material culture can create problems regarding the correlation of different landscapes (e.g. Macedonia with Crete) within the Aegean, even in cases of close neighboring landscapes (e.g. Troy with Samos). I think that in the third millennium AD the abundance of archaeological evidence as outlined very briefly above allows us to develop a new, simpler chronological code, beyond labels based on numbers (EB I, II, III), cultures, and groups. Absolute dates from various sites of the Aegean will soon allow us to define a chronological frame based on centuries within the third millennium BC. Published data and forthcoming dates are indeed very promising. Thus, we will be able to speak of what happened for example in western Anatolia and Crete in the 26th or in the 23rd century BC and so on.

The establishment of a new and flexible chronological frame anchored both in the relative and the absolute chronology requires hard work and involves the following steps:

1. To study the internal/local stratigraphical sequences of well excavated and well published sites.
2. To undertake a comparative stratigraphy based on the most characteristic local artefact types as well as on imports.
3. And finally, to combine the comparative stratigraphy with the calibrated dates of the studied sites.

By adopting these steps we will be able to rethink the third millennium BC and the Aegean prehistory in general terms and go ahead with the writing of the prehistory of the Aegean as a part of the prehistory of the East Mediterranean, beyond the Babel of chronological labels, which is currently the situation for the Aegean, Anatolia, Cyprus, the Levant etc.

Reassessing the complicated division and the traditional chronological schemes is not meant to show lack of respect to the pioneers of Aegean archaeology. On the contrary. It is a sign that the science is alive and is not becoming fossilized! Collaboration with colleagues working in the Aegean and western Anatolia is going to be essential for this new direction in research. The upcoming international conference entitled "The Early Bronze Age in the Aegean: New Evidence" that

will be held in Athens in 2008 may provide the suitable forum for these intellectual exchanges.

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## References

- Alram-Stern, E. 2004. Die Ägäische Frühzeit 2. Band—Teil 1 and 2. *Die Frühbronzezeit in Griechenland*. Wien: Österreichischen Akademie der Wissenschaften.
- Andreou, S., Fotiadis, M., and Kotsakis, K. 2001. Review of Aegean Prehistory V: The Neolithic and Bronze Age of Northern Greece. In T. Cullen (ed.), *Aegean prehistory: a review*: 259–327. Boston: Archaeological Institute of America.
2003. Son Kalkolitik ve İlk Tunç Çağı. *ARKEOATLAS 2*.
- Barber, R.L.N., and MacGillivray, J.A. 1980. The Early Cycladic period: matters of definition and terminology. *American Journal of Archaeology* 84: 141–157.
- Barber, R.L.N., and MacGillivray, J.A. 1984. The prehistoric Cyclades: a summary. In J.A. MacGillivray and R.L.N. Barber (eds.), *The prehistoric Cyclades: contributions to a workshop on Cycladic chronology (dedicated to J.L. Caskey)*: 296–302. Edinburgh: University of Edinburgh.
- Blegen, C.W., Caskey, J.L., Rawson, M., and Sperling, J. 1950. *Troy. General Introduction. The First and Second Settlements*. Vol. I. Part 1: Text, I. Part 2: Plates. Princeton: Princeton University Press.
- Broodbank, C. 2000. *An island archaeology of the early Cyclades*. Cambridge: Cambridge University Press.
- Coleman, J.E. 1992. Greece, the Aegean and Cyprus. In R.W. Ehrlich (ed.), *Chronologies in Old World Archaeology* Vol. 1: 247–288; Vol. 2: 203–229. Chicago: The University of Chicago Press.
- Dickinson, O. 1994. *The Aegean Bronze Age*. Cambridge: Cambridge University Press.
- Doumas, C.G., and La Rosa, V. (eds.) 1997. Η Πολιόχνη και η Πρώιμη Εποχή του Χαλκού στο Βόρειο Αιγαίο, Διεθνές Συνέδριο, Αθήνα 22–25 Απριλίου 1996. Athens: Scuola Archeologica Italiana di Atene – Πανεπιστήμιο Αθηνών, Τομέας Αρχαιολογίας και Ιστορίας της Τέχνης.
- Efe, T. 1988. *Demircihüyük. Die Ergebnisse der Ausgrabungen 1975–1978. Bd. III, 2. Die Keramik 2 C. Die frühbronzezeitliche Keramik der jüngeren Phasen (ab Phase H)*. Mainz: Philipp von Zabern.
- Efe, T. 2006. Anatolische Wurzeln—Troia und die frühe Bronzezeit im Westen Kleinasien. In M.O. Korfmann (ed.), *Troia—Archäologie eines Siedlungshügels und seiner Landschaft*: 15–28. Mainz: Philipp von Zabern.
- Efe, T. 2007. The Külliöba excavations and the cultural/political development of Western Anatolia before the second millennium B.C. In M. Doğan-Alparslan, M. Alparslan, and H. Peker (eds.), *VİTA. Festschrift in Honor of Belkis Dinçol and Ali Dinçol*: 251–267. Istanbul: Ege Yayınları.
- Erdoğan, B., Tamındı, O., and Uygun, D. 2003. TAY: Türkiye Arkeolojik Yerleşmeleri 14C veri tabanı. Istanbul: Ege Yayınları.
- Erkanal, H., and Günel S. 1996. 1994 Liman Tepe Kazısı, *XVII. Kazı Sonuçları Toplantısı I*: 305–328.
- Erkanal, H., and Özkan, T. 1997. 1995 Bakla Tepe Kazıları, *XVIII. Kazı Sonuçları Toplantısı I*: 261–279.
- Erkanal, H., and Özkan T. 1999. Excavations at Bakla Tepe. In T. Özkan and H. Erkanal (eds.), *Tahtalı Barajı Kurtarma Kazısı Projesi (Tahtalı Dam Area Salvage Project)*: 108–138. Izmir: Simedya.
- Erkanal, H., Artzy, M., and Kouka, O. 2003. 2001 Yılı Liman Tepe Kazıları, *XXIV. Kazı Sonuçları Toplantısı*. Vol. 1: 423–436.
- Erkanal, H., Artzy, M., and Kouka, O. 2004. 2002 Yılı Liman Tepe Kazıları. *XXV. Kazı Sonuçları Toplantısı 2*: 165–178.
- Erkanal, H., and Karaturgut, E. 2004. 2002 Yılı Çeşme Bağlararası Kazıları. *XXV. Kazı Sonuçları Toplantısı 2*: 153–164.
- Harmankaya, S., and Erdoğan, B. 2002. TAY: Türkiye Arkeolojik Yerleşmeleri-4a/4b: İlk Tunç Çağı. Istanbul: TASK Vakfı Yayınları.
- Korfmann, M., and Kromer, B. 1993. Demircihüyük, Beşiktepe, Troia—Eine Zwischenbilanz zur Chronologie dreier Orte in Westanatolien. *Studia Troica* 3: 135–171.
- Korfmann, M. 1996. Troia—Ausgrabungen 1995. *Studia Troica* 6: 1–63.
- Korfmann, M. 2000. Troia—Ausgrabungen 1999. *Studia Troica* 10: 1–34.
- Korfmann, M.O. (ed.) 2006. *Troia—Archäologie eines Siedlungshügels und seiner Landschaft*. Mainz: Philipp von Zabern.
- Kouka, O. 2002. *Siedlungsorganisation in der Nord- und Ostägäis während der Frühbronzezeit (3. Jt. v. Chr.)*. *Internationale Archäologie* 58. Rahden-Westfalen.: VML Verlag.
- Kouka, O. 2008. Diaspora, presence, or interaction? The Cyclades and the Greek Mainland from the Final Neolithic to Early Bronze Age II. In N.J. Brodie, J. Doole, G. Gavalas, and C. Renfrew (eds.), *Όρίζων: A colloquium on the prehistory of the Cyclades, Cambridge, 25th–28th March 2004*: 271–279. McDonald Institute Monograph Series. Cambridge: McDonald Institute for Archaeological Research.
- Manning, S.W. 1995. *The absolute chronology of the Aegean Early Bronze Age. Archaeology, radiocarbon and history*. Monographs in Mediterranean Archaeology 1. Sheffield: Sheffield Academic Press.
- Manning, S.W. 1997. Troy, radiocarbon and the chronology of the northeast Aegean. In C.G. Doumas and V. La Rosa (eds.), *Η Πολιόχνη και η Πρώιμη Εποχή του Χαλκού στο Βόρειο Αιγαίο, Διεθνές Συνέδριο, Αθήνα 22–25 Απριλίου 1996*: 498–521, Athens: Scuola Archeologica Italiana di Atene – Πανεπιστήμιο Αθηνών, Τομέας Αρχαιολογίας και Ιστορίας της Τέχνης.
- Manning, S. 2008. Some initial wobbly steps towards a Late Neolithic to Early Bronze III radiocarbon chronology for the Cyclades. In N.J. Brodie, J. Doole, G. Gavalas, and C. Renfrew (eds.), *Όρίζων: A colloquium on the prehistory of the Cyclades, Cambridge, 25th–28th March 2004*: 55–59. McDonald Institute Monograph Series. Cambridge: McDonald Institute for Archaeological Research.
- Maran, J. 1998. Kulturwandel auf dem griechischen Festland und auf den Kykladen im späten 3. Jahrtausend v. Chr., Teil

- I-II. *Universitätsforschungen zur Prähistorischen Archäologie* Bd. 53. Bonn: Habelt.
- Mellink, M. 1986. The Early Bronze Age in West Anatolia: Aegean and Asiatic Correlations. In G. Cadogan (ed.), *The End of the Early Bronze Age in the Aegean, Festschrift for J.L. Caskey*: 139–152. Cincinnati: Cincinnati Classical Studies N.S. 7.
- Mellink, M. 1992. Anatolia. In R.W. Ehrich (ed.), *Chronologies in Old World Archaeology* Vol. 1: 207–220; Vol. 2: 171–184. Chicago: The University of Chicago Press.
- Özyar, A., Danişman, G., and Özbal, H. 2005. Fieldseasons 2001-2003 Tarsus-Gözlükule interdisciplinary research project. In A. Özyar (ed.), *Fieldseasons 2001-2003 Tarsus-Gözlükule interdisciplinary research project*: 8–47. Istanbul: Ege Yayınları.
- Pantelidou-Gofa, M. 2005. Τσέπι Μαραθώνος. Το Πρωτοελλαδικό νεκροταφείο, Βιβλιοθήκη της εν Αθήναις Αρχαιολογικής Εταιρείας Αρ. 235. Αθήναι: Η εν Αθήναις Αρχαιολογική Εταιρεία.
- Pullen, D.J. 1985. Social organization in the Early Bronze Age Greece: a multidimensional approach. Ph.D. Dissertation, Indiana University, University Microfilms International. Michigan: Ann Arbor.
- Rambach, J. 2000a. Kykladen I. Die Frühe Bronzezeit—Grab- und Siedlungsbefunde. *Beiträge zur ur- und frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes (BAM)* 33. Bonn: Habelt.
- Rambach, J. 2000b. Kykladen II. Die Frühe Bronzezeit—Frühbronzezeitliche Beigabensittenkreise auf den Kykladen: Relative Chronologie und Verbreitung, *Beiträge zur ur- und frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes (BAM)* 34. Bonn: Habelt.
- Renfrew, C. 1972. *The Emergence of Civilisation. The Cyclades and the Aegean in the Third Millennium B.C.* London: Methuen and Co Ltd.
- Renfrew, C., Housley, R., and Manning, S. 2006. The absolute dating of the settlement. In L. Marangou, C. Renfrew, C. Doumas, and G. Gavalas (eds.), *Markiani, Amorogos. An Early Bronze Age fortified settlement. Overview of the 1985–1991 investigations*, The British School at Athens Supplementary Volume NO. 40: 71–76. Athens: The British School at Athens.
- Rutter, J.B. 1979. Ceramic change in the Aegean Early Bronze Age. The Kastri Group, Lefkandi I and Lerna IV: a theory concerning the origin of EH III ceramics. *UCLA Institute of Archeology Occasional Papers* 5. Los Angeles: UCLA Institute of Archeology.
- Rutter, J.B. 1983. Some observations on the Cyclades in the later third and early second millennia. *AJA* 87: 69–75.
- Şahoğlu, V. 2002. Liman Tepe Erken Tunç Çağı seramiğinin Ege arkeolojisindeki yeri ve önemi. Ph.D. Dissertation, Ankara University.
- Şahoğlu, V. 2005a. Interregional contacts around the Aegean during the Early Bronze Age: new evidence from the Izmir region. *Anadolu/Anatolia* 27: 97–120.
- Şahoğlu, V. 2005b. The anatolian trade network and the Izmir region during the Early Bronze Age. *American Journal of Archaeology* 24: 339–360.
- Schoop, U.-D. 2005. *Das anatolische Chalkolithikum. Eine chronologische Untersuchung zur vorbronzezeitlichen Kultursequenz im nördlichen Zentralanatolien und den angrenzenden Gebieten.* Remshalden: Verlag Albert Greiner.
- Studia Troica* 1–16, 1991–2006. Mainz am Rhein: P. von Zabern.
- Takaoğlu, T. 2005. *A Chalcolithic marble workshop at Kulaksızlar in Western Anatolia: an analysis of production and craft specialization.* *BAR International Series*, 1358. Oxford: Archaeopress.
- Treuil, R. 1983. *Le Néolithique et le Bronze Ancien égéens. Les problèmes stratigraphiques et chronologiques, les techniques, les hommes.* Athens: Bibliothèque des Écoles françaises d’Athènes et de Rome, 248.
- Tuncel, R. 2005. Bakla Tepe Geç Kalkolitik Çağ seramiği. Ph.D. Dissertation, Hacettepe University, Ankara.
- Wace, A.J.B., and Blegen, C.W. 1916-1918. The pre-Mycenaean pottery of the mainland. *BSA* 22: 175-189.
- Warren, P., and Hankey, V. 1989. *Aegean Bronze Age chronology.* Bristol: Bristol Classical Press.

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