# 1: Background, Sources, and Methods

*Cynthia W. Shelmerdine*

## Background

The scope of this book is the Aegean Bronze Age: the history and material cultures of Crete, the Greek mainland, and the Aegean islands during the period when bronze had replaced stone as the dominant material for tools and weapons, and had not yet been supplanted by iron. The period began around 3100/3000 BCE and continued until about 1070 BCE; during its course different groups of people rose from basic subsistence to cultural prominence, interacted with each other and with civilizations around the Mediterranean basin, and subsided again beyond our reach. Serious study of the Aegean Bronze Age began over 120 years ago, fueled by several early projects, including exploration by the French on Santorini, the British at Phylakopi on Melos, and Heinrich Schliemann at Troy, Mycenae, and Tiryns.[1] Schliemann was motivated by a fascination with mythical accounts of the Trojan War, and Sir Arthur Evans, the excavator of Knossos, by curiosity about the signs, in an unknown script, incised into lumps of clay found on Crete.[2]

None of these pioneers could have imagined the quantities of sites and artifacts that would subsequently be found, the proliferation of new techniques for everything from excavation itself to scientific dating and provenience studies, or the textual information revealed by the decipherment of the Mycenaean script. Early investigators of the Bronze Age tried to characterize and contrast the material culture of different ethnic groups, with special attention to aspects that could be mapped onto a Homeric vision of the Greek past (Ch. 5, pp. 105–6). The history of Minoans and Mycenaeans (there was no convenient

mythical label for the Cycladic islanders) was viewed as linear upward progress toward "civilization," punctuated by the periodic impact of outside influence, invasion, or attack.

Our perspectives, though, have been altered by successive theoretical approaches in archaeological and historical studies.[3] Processual archaeology, dominant from the 1970s to the early 1980s, looked beyond artifacts to the people who made and used them, and introduced the systematic testing of hypotheses about human behavior.[4] General systems theory was also invoked in the 1970s, for example, to find an internal explanation for the rise of Aegean states (Chs. 2, pp. 19–20; 5, pp. 105–7).[5] The postprocessualist reaction starting in the 1980s is a diverse movement, based on skepticism about processualist generalizations, championing an awareness of individual agency and also of the way archaeologists' own cultural biases can shape their views of the past (Ch. 5, pp. 121–2, 125–6).[6] Cognitive archaeology is also applied in various forms to try to reconstruct the belief systems and symbolic behavior of the cultures we study (Chs. 4, pp. 83, 90, 92; 7, pp. 165–70; 13, pp. 338–40, 345).[7]

Today Aegean archaeologists have a rich array of theory to draw on, and elements of many approaches will be found within this volume. We are more careful than the pioneers in this field about framing discussion of cultures in terms of ethnic identity – at least we recognize that the ancients' view of themselves is not recoverable to any meaningful degree (Chs. 2, pp. 38–41; 12, pp. 311–12). We also have much more information to work with than they did. Our understanding of the Mycenaeans, for instance, has been expanded greatly by our ability to read their texts (below, pp. 11–14), and by the growing willingness of archaeologists to look beyond palaces to more mundane settlements (below, pp. 8–10). Despite all this progress, though, we face some of the same questions that Schliemann, Evans, and their contemporaries did. We still do not know who "the Minoans" were (one or more distinct groups? languages?), what happened to all areas of the Aegean in the latter part of the Early Bronze Age, or why the Mycenaean palatial system came to an end ca. 1190 BCE.

This introductory chapter situates the reader in time and space. It is essential to begin by discussing the issues of relative and absolute chronology. It also reviews some of the manifold study techniques applied to Aegean Bronze Age cultures, with illustrative examples drawn from the material in the chapters to come. The reader can thus browse the book and get a taste of what lies ahead.

## Relative and Absolute Chronology

Early scholars divided the Aegean Bronze Age, like Caesar's Gaul, into three parts, with cultural labels for the inhabitants of various regions: Crete ("Minoan," after the legendary King Minos of Knossos), the Greek mainland ("Helladic," from the Greek word for Greece, "Hellas"), and the Cycladic islands ("Cycladic").[8] They also marked off three chronological divisions for each region – Early, Middle, and Late – and three subdivisions – I, II, and III. Thus one could refer conveniently to "Early Minoan III" (abbreviated EM III), or "Late Helladic I" (LH I), though MC could refer to Middle Cypriot (for the island of Cyprus) as well as Middle Cycladic. The system became noticeably less convenient when subsequent discoveries showed that real archaeological, particularly ceramic, distinctions do not always fall neatly at the boundaries between the periods. Aegean specialists today must deal with such niceties as "MH III/LH I" and "LM IIIA2 early" (Chs. 10, p. 230; 12, pp. 311, 312). Further problems develop when, for example, a type of EM III pottery is redated to MM IA (Ch. 5, pp. 109–10), or when EM III in east Crete is found to be partly contemporary with MM IA in central Crete (Ch. 5, p. 110).[9] Renfrew tried to replace this cumbersome scheme for the Early Bronze Age with cultural labels. Thus the "Keros–Syros Culture" refers to a particular assemblage of sites, artifacts, burial customs, and the like (exemplified by sites on the Cycladic islands of Keros and Syros; Ch. 3, pp. 161–3).[10] This terminology, although useful in some respects, has not replaced the conventional system. One problem is that it carries no intrinsic chronological information. Renfrew's hope was that the cultural groups would ultimately be tied into a framework of reliable absolute dates; this hope has not yet been fully realized (below). In the interim, it is hard to coordinate cultural terminology with the old tripartite scheme. The EC III period, for instance, has always been elusive in terms of finds, and recent evidence suggests that both Kastri Group (later EC II) and Phylakopi I (MC I) material were in use during this period (Ch. 3, pp. 68–70). The cultural labels cannot reflect that overlap.

Figure 1.1 shows the relative and absolute chronology for the areas and periods covered in the book. Relative chronology depends chiefly on correlations among different ceramic types found in reliable stratified deposits. As the authors of individual chapters make clear, the reality is not as certain and precise as a table looks. We can often assert that one period on Crete overlaps with one on the mainland, for example, but we never assume that they began and ended at exactly the same

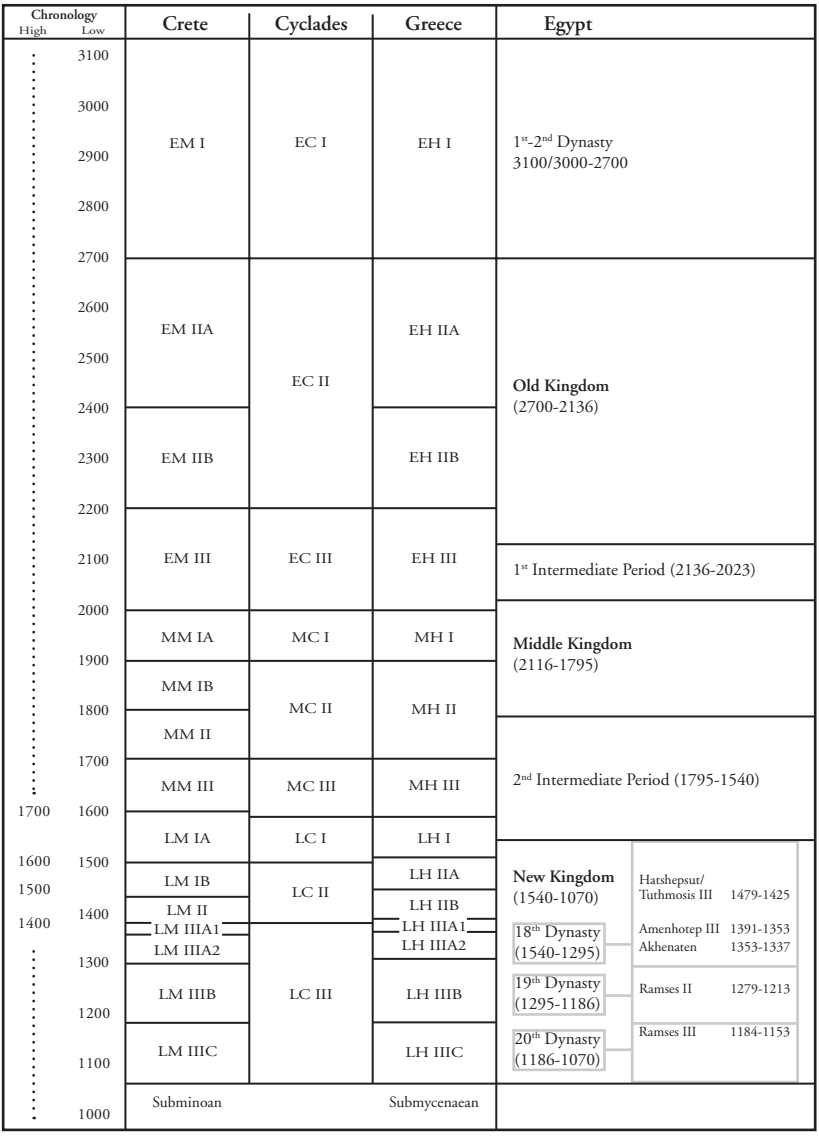


FIGURE 1.1. Table of Aegean relative and absolute chronology. Table by Dan Davis.

time. Sometimes we know that they did not. The periods LH IIA to LH IIIA2 all seem to start before their Minoan counterparts LM IB to LM IIIA2.[11] Another example concerns the Early Bronze Age on the Greek mainland: some sites and indeed whole areas apparently never

| High Dating BCE | Crete | Greece | Low Dating BCE | Egypt |
|---|---|---|---|---|
| 1750 | MM III | MH III | 1700 | |
| 1700 | LM IA | LH I | 1600 | |
| 1600 | LM IB | LH IIA | 1500 | |
| 1490 | LM II | LH IIB | 1430 | Hatshepsut/Tuthmosis III (1479-1425) |
| 1430 | LM IIIA1 | LH IIIA1 | 1390 | |
| 1390 | LM IIIA2 | LH IIIA2 | 1370/1360 | Amenhotep III (1391-1353) |
| 1300 | | | 1300 | |

FIGURE 1.2. Table of unreconciled high and low Aegean chronologies, MB III–LB IIIA2. Table by Dan Davis.

had the artifact assemblage of EH III (the "Tiryns culture"), but went right on using the pottery, etc. of EH II (the "Korakou culture") until the start of the Middle Bronze Age (Ch. 2, p. 36).

Far more difficult is the problem of determining absolute chronology, or actual dates for the periods under review. Considerable controversy has arisen about the beginning of the Late Bronze Age, in particular, because some $^{14}C$ dates and archaeological synchronisms are at variance. Figure 1.2 shows two competing Aegean chronologies for the relevant periods. The lower one is based on the traditional method of establishing ceramic synchronisms with Egypt and to a lesser extent Mesopotamia, where we find the only contemporary civilizations with long independent absolute chronologies.[12] The Egyptian sequence is based on a variety of contemporary sources, checked against later king list compilations and refined by a few astronomical observations and points of synchronism with Mesopotamia and other Near Eastern cultures.[13] The higher Aegean chronology reflects the results of more recent scientific studies, chiefly radiocarbon dating. The

radioactive carbon isotope $^{14}C$ decays at a known rate, so measuring how much has decayed in an organic sample can reveal when it "died." Good carbon dates are available for the third millennium BCE and earlier, but those from later periods of the Bronze Age are less certain, for reasons ranging from oscillation of the calibration curve, which can give two different absolute date ranges for one radiocarbon age, to seasonal variation in different regions, to contamination by old carbon.

These problems impact Aegean chronology particularly during the seventeenth and sixteenth centuries BCE, where the calibration curve is most ambiguous. It is clear that the volcanic island of Thera suffered a cataclysmic eruption late in the LM IA period, though likely before its very end. The tons of ash and pumice that buried the site of Akrotiri account for its remarkable state of preservation, making it a Bronze Age version of Pompeii (Ch. 8, pp. 189–93). Some carbon dating analyses place the eruption in the later seventeenth century BCE; two newly reported studies favor ranges of 1627–1600 and 1660–1613 BCE, respectively.[14] These studies have, however, faced substantial and detailed criticism.[15] In this case LM IA, which was probably about a hundred years long, had to begin around 1700 BCE. The traditional chronology, however, places this transition a century later, based on archaeological indications that LM IB was a rather short period and on material (particularly ceramic) synchronisms, for example between LM IB and the reigns of the Egyptian pharaohs Hatshepsut and Tuthmosis III (1479–1425 BCE).[16] As Fig. 1.2 shows, on the high Aegean chronology LM IB does not even overlap with those pharaohs unless LM IB (and LH IIA) lasted much longer than archaeological evidence and synchronisms would indicate. The weight of archaeological evidence thus favors the low Aegean chronology. Because both camps agree on dates from the end of LM IIIA1 onward, however, lengthening the LM IB–II periods is necessarily the solution most recently proposed by those favoring a high chronology. That solution is reflected in the high chronology shown in Fig. 1.1.[17] The problem has yet to be settled definitively, and opinions continue to differ, even among the authors of this volume.

Another scientific dating technique of interest is dendrochronology. Most trees produce one ring a year under normal circumstances, so by counting the rings (assuming all are preserved), one may learn how old the tree was when it stopped growing. Thick and thin rings also indicate years of greater or lesser growth, due to excessive drought or rain, excessive cold, disease, and the like; variations can sometimes be matched with climate events, which may be caused, for example, by

volcanic eruptions. Such analysis has been performed on tree samples from many archaeological sites, as well as modern examples. Lining up the thick and thin rings in samples of overlapping date yields long dendrochronological sequences for Europe, America, and Anatolia. It makes a difference, of course, if the sample is part of a house, in which case its archaeological find context might be years after the tree was cut down, or a branch, where the interval between cutting and deposition may have been quite short.

An instructive example of the latter is the brushwood probably used as dunnage (packing material) on the Uluburun shipwreck (Ch. 14, p. 364). One piece, a cedar branch, on which early hopes were pinned, has proved not to provide a reliable date for the sinking of the ship, because its full circumference is not preserved and because its relationship to the Anatolian dendrochronological sequence is uncertain.[18] Radiocarbon dates for the dunnage and organic materials in the cargo, however, corroborate the latest dendrochronological analyses of other brushwood. The last preserved ring of the dunnage, for example, is dated by radiocarbon analysis to 1304 ±33 BCE, whereas the dendrochronological date is 1307 +4/-7 BCE.[19] Taken together, the two types of analysis indicate that the ship sank not long before 1300 BCE.[20] Artifacts on the wreck for which dates can be suggested also fall in the later fourteenth century. The wreck includes LH IIIA but no LH IIIB pottery, though it cannot be ruled out that LH IIIB wares were already being produced in some places, especially in the trend-setting Argolid, when the ship went down. Nevertheless, the evidence from the Uluburun wreck seems in line with other indications that the LH IIIA/IIIB transition occurred in the late fourteenth century BCE.[21]

## Excavation and Survey

As knowledge about the Bronze Age has increased over the past century, so have techniques for exploring and analyzing the wide variety of data that allow us to understand these cultures. Excavation and survey offer different ways of observing the sites themselves. Excavation is the oldest method of getting at past cultures and the most informative about individual sites. The ancient Greeks themselves occasionally dug up earlier remains, accidentally or on purpose. Herodotus' story (*Histories* I.68) about a blacksmith digging a well in his yard and finding a 10-foot-long coffin with a skeleton in it no doubt reflects an exaggerated version of reality. Another sign of the Greeks' awareness of the past is a

hoard of Mycenaean ivories and other artifacts from the Cycladic island of Delos. They were evidently collected and reburied as a foundation deposit for the Archaic sanctuary of Artemis in the late Geometric period (late eighth century BCE).[22]

Different kinds of sites yield different kinds of data. Prestige goods and precious materials are found far more frequently in burials than in settlements. The latter are more vulnerable to plundering and to the ravages of time, though of course tomb robbing has been an unworthy industry from antiquity to the present day.[23] Humbler artifacts such as pottery also differ in the two contexts: small closed vessels (jars and jugs) are common grave offerings (e.g., Figs. 4.2, 9.1), whereas settlements, logically enough, yield large storage jars, cooking vessels, and open shapes (cups and bowls) for eating and drinking (e.g., Pls. 4.1, 5.2; Ch. 11, pp. 273–4). Drinking vessels may also be found in or just outside tombs, indicating burial rituals (Chs. 4, pp. 80–86; 13, p. 339).

These differences have made Bronze Age burial sites generally more attractive to archaeologists and their financial backers; the rich finds from unplundered elite tombs have always made headlines. Thus for EM I Crete and LH III Greece alike, excavated material comes overwhelmingly from burial sites, not settlements (Chs. 4, pp. 79–87; 13, p. 327). Among settlement sites, of course, the Minoan and Mycenaean palaces have most captured people's imagination and have also received the most scholarly attention (Chs. 6, pp. 141–3, 146–9; 11, pp. 261–4). For the Late Bronze Age mainland, very few smaller sites have been excavated to date. Carl Blegen, the excavator of Troy, Pylos, and other sites, was a pioneer in this regard, with his excavation of Korakou and Zygouries in the Corinthia.[24] Tsoungiza in the Corinthia, Ayios Stephanos in Laconia, and Nichoria in Messenia have been the focus of more recent attention (Chs. 10, pp. 239–40, 246–7; 12, p. 303). Settlement sites such as these open our eyes to the lives of ordinary Mycenaeans, and more such excavations are much to be desired (Ch. 12, p. 308). Smaller towns and villages have been made to reveal a great deal of information about the Early Bronze Age Cyclades, for example, which offer no palatial centers to deflect attention (Ch. 3, pp. 53–6).

Another confirmation of the usefulness of lesser sites comes from archaeological survey, a development of the later twentieth century CE. Whereas excavation can reveal a lot about a single site, surface surveys identify the locations of many sites. Pottery fragments and other artifacts are brought to the surface by plowing, erosion, or even a hard rain; when their dates can be determined, they indicate the periods of human activity on a site. From such data one can get a rough picture of

settlement patterns across a region and through time. As early as 1940 Carl Blegen, prescient as ever (above, p. 8), foresaw the importance of survey archaeology. At the bicentennial of the University of Pennsylvania he spoke of

> . . . [the] urgent need, apart from further actual digging, of a systematic comprehensive survey of the districts of Greece. . . . Most of the large centers have long ago been noted, but scores, not to say hundreds, of smaller settlements still await discovery. . . . When the whole country has thus been methodically and thoroughly explored . . . , we shall know infinitely more than we now do regarding the extent of occupation and the movements and distribution of population from period to period.[25]

Archaeologists of the Aegean Bronze Age were slow to answer Blegen's call to arms. One of the first was William McDonald, who with Richard Hope Simpson undertook a survey of Messenia and southern Elis in the 1960s.[26] This was an extensive survey; they looked for sites in likely locations – such as low hilltops near sources of water – all over the region, some 3,800 sq. km., and recorded those they found. Some of their results were dramatic; for instance, they were able to identify LH IIIB pottery at 195 sites (168 of them certain), and LH IIIC pottery at only 16 (13 certain), documenting a striking drop in population at the end of the palatial period (Ch. 15, pp. 390–2, 393–4).

More recent surface exploration has taken the form of intensive surveys. Instead of spot-checking a large region, such projects concentrate on a smaller area, sampling all available types of terrain and soils, from flat coastal plains to ridgetops and the hills and valleys between. In this way they may find sites in unexpected locations, and also sites of quite small size. Breaking up the survey area into grid squares, or tracts with existing boundaries such as fences or gullies, team members collect every artifact (usually potsherds and stone tools) they find as they walk, or make careful count and keep only representative pieces diagnostic of a particular period or artifact type. Working in a small part of the area covered by the Minnesota Messenia Expedition, the Pylos Regional Archaeological Project (PRAP) increased the number of known Mycenaean sites by 50%, partly because the intensive coverage picked up many more smaller sites, under 1 **hectare** (10,000 sq. m. or about 2.5 acres) in area.[27]

This project is just one of a number of archaeological surveys that have documented regional settlement patterns in Greece, Crete, and the Aegean islands during the Bronze Age and later (Fig. 10.2), and have clarified settlement hierarchies by carefully measuring site sizes (Ch. 12, pp. 298–300).[28] In Messenia, for example, several settlements documented by PRAP are 4–5 hectares in area, about 1/4 the size of Pylos itself, and thus of the right order of magnitude to stand among the second-order centers mentioned in the Linear B tablets as district capitals in the Pylos state. Thus, though surface pottery rarely allows fine chronological distinctions within general periods (Ch. 2, p. 26), even the broad picture painted by survey work is usefully enhancing our understanding of the Aegean Bronze Age.

## SCIENTIFIC TECHNIQUES

Traditional forms of analysis such as stylistic study of pottery and frescoes and the scrutiny of texts continue to be essential tools for archaeologists. At the same time, technological advances have provided not only new dating techniques, but also new ways of identifying the composition and provenience of ceramics and metals, new mapping aids, and the like. This brief account is mainly restricted to techniques relevant to discussion in this volume. Many other useful advances are being applied and perfected: residue analysis of ancient vessels can identify their contents; human skeletal analysis can indicate diseases and diet prevalent in a population, and DNA study is also revealing; recovery of pollen and botanical samples can help reconstruct the ancient environment.[29] Most often cited in this volume is lead isotope analysis (Chs. 3, p. 64; 8, pp. 200–1; 9, pp. 212, 215, 219; 14, pp. 364, 375, 380). Most veins of lead in the world seem to have slightly different isotopic signatures, so it is in theory possible to match a particular artifact to a particular source. This matching can also be done for metals such as silver and copper that may contain lead, thus providing an invaluable indicator of what sources were exploited in a given period.

Chemical and petrographic analyses have opened up similar possibilities for pottery. Such studies help us trace the dynamics of contact between one group or region and another. It was a surprise, for example, to learn that the "palatial" Kamares ware pottery found in Protopalatial Knossos came from south-central Crete (Ch. 5, p. 107). Similarly, we now know that most of the inscribed stirrup jars found on Crete and the Greek mainland were made at some distance from the palaces,