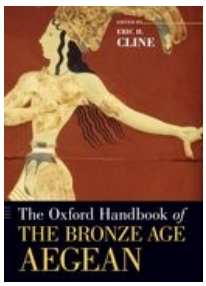

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CHAPTER

2 Chronology and Terminology

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Abstract

This article argues that scholarship that is concerned with the discovery, creation, and interpretation of Aegean prehistory has, throughout its history, been intimately associated with the allocation and categorization of time. Chronology has become framework and constraint, friend and problem. How one chooses to see the framework entirely creates prehistory. The early nineteenth-century AD concept of the Three Age system developed from Christian Thomsen's reorganization of the National Museum of Denmark and its ideas of evolutionary progression became the standard in most European prehistory. A quest to create some sort of structure and to bring order to a couple of millennia of calendar time has, over the course of the later nineteenth through the early twenty-first centuries AD thus come to create an incredibly rich, dense, ad hoc, and arcane system for describing and demarcating the time frame of the Aegean Bronze Age.

事物都由进化而来

Keywords: scholarship, chronology, prehistory, Three Age system, Christian Thomsen, Aegean, Bronze Age

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A Very Brief Historical Introduction

Scholarship that is concerned with the discovery, creation, and interpretation of Aegean prehistory has, throughout its history (mid-19th century AD to present; e.g., McDonald and Thomas 1990; Papadopoulos 2005; Darcque, Fotiadis, and Polychronopoulou 2006; Manning 2008a), been intimately associated with the allocation and categorization of time. Dialectically, the field has been strongly shaped by these time frames as developed by modern scholars. Chronology has become both framework and constraint, friend and problem. If we know nothing else (concretely), we at least hope to put things in order, but how we create this order and how we choose to see the framework entirely creates our 'prehistory.'

如何去定义时间

三时间系统，如今也广泛使用，不仅在欧洲，其它地区也一样，因此使用该系统把爱琴海地区细分了.

The early 19th-century AD concept of the Three Age system developed from Thomsen's reorganization of the National Museum of Denmark (originally Stone Age, Bronze Age, Iron Age; cf. Daniel 1943; Gräslund 1987) and its ideas of evolutionary progression became the standard in most European (region and scholarship) prehistory. In turn, it was transferred to the Near East and the Mediterranean. In the Aegean, via especially the Three Age division of Egyptian history into the Old, Middle, and New Kingdoms for the third–second millennia BC, this framework of classification led to the creation of an Early, Middle, and Late Bronze Age in the Aegean (and before the Bronze Age the Neolithic and afterward the Iron Age) and then to further subdivisions (also typically tripartite, at least to start) of I, II, and III within these periods (Evans 1906 represents a succinct statement and delineation of such a method for Crete). And often further
p. 12 subdivisions, typically of A, B, and C ↳ (with a typically tripartite maximum and sometimes even additional subdivisions) were added later; thus, we have 'Late Minoan IIIA2 early' or 'Late Helladic IIIB2' (and even further Early and Late groups; see Vitale 2006) at the extreme. Some additional transitional phases have also been suggested at various times, for example a Middle Minoan III–Late Minoan IA transition (Warren 1991) (see caption to table 2.2).

产生很极端的时间↓

Each main region, moreover, has its own system: thus Early, Middle, and Late Cycladic and subdivisions; Early, Middle, and Late Helladic and subdivisions; and Early, Middle, and Late Minoan and subdivisions. Western Anatolia has avoided regionalization and either has only key site sequences or Early, Middle, and Late Bronze Ages with various subdivisions. These classifications and their own evolutionary processes have led to an undeniably cumbersome and artificial structure with which scholars actively contend today. Much of our evidence and interpretation does not neatly fit such a unilinear evolutionary framework in terms of both time progression and space (different sites and regions had slightly to more substantially varying histories).

每个地方都有自己的时间系统，就像早、中、晚基克拉迪时代，还有它们的分组；早、中、晚米诺斯时代，同样有分组。西安纳托利亚就比较特别了，它没有搞区域化，就只有一些关键遗址的序列，或者就是早、中、晚青铜时代，然后再细分一下。

A quest to create some sort of structure and to bring order to a couple of millennia of calendar time has, over the course of the later 19th through the early 21st centuries AD thus come to create an incredibly rich, dense, ad hoc, and arcane system for describing and demarcating the time frame of the Aegean Bronze Age. For some, chronology became an end in itself (and it is almost a subfield of study of its own), forever to be elaborated and pursued to some elusive goal of a totality of knowledge. For others, chronology has, however, become almost a pejorative term—and its central role in Aegean prehistory is argued to distract attention from the more important topics of wider culture change, process, and history, as well as the role of this preclassical world in the creation of later classical civilization. Proponents of such views would argue that we need an agreed approximate framework, yes, but not endless detail and caveats.

他们努力划分时间，并出现单纯的学科.问题在于，这使时间>超过本身

An analogous situation exists for the chronology of prehistoric Cyprus, and, in response, Knapp and colleagues (e.g., Given and Knapp 2003, 30) have for some years proposed a much simplified/generalized chronological framework; thus, 'Early Prehistoric,' 'Prehistoric Bronze Age,' and 'Protohistoric Bronze Age' cover the entire previous Epipalaeolithic/Akrotiri phase, Aceramic Neolithic (early, late), Ceramic Neolithic, Early Chalcolithic, Middle Chalcolithic, Late Chalcolithic, Early Bronze/Cypriot I, II, III, Middle Bronze/Cypriot I, II, III, and Late Bronze/Cypriot I, II, III (and various subdivisions) phases. Knapp finds this useful, but many in the field have ignored or criticized this 'brave' attempt to cut through the minutiae (e.g., Frankel 2008).

Knapp在研究史前Cyprus时也有同样的时间问题，于是他将时间简单地三个部分代替

There are two basic types of chronology in Aegean Bronze Age studies: relative chronology and absolute chronology.

相对编年史指研究物体和事件之间的时间关系。同时，有相似或不同特征的物体也会用于区分时代。
同时期 不同时期

Relative Chronology

Relative chronology refers to the temporal ordering of objects and events relative to each other, such that assemblage (or context or object, etc.) 'A' is older or younger than or equivalent to assemblage 'B,' and so
p. 13 on. At a particular site this can be a ↳ clear stratigraphic ordering, such that level 10 is followed by level 9, and so on to the most recent level 1. However, on a wider basis, connecting different contexts or sites, comparisons are made between artifact types (and assemblages thereof). Sets of stylistic traits are thus defined to represent one context or phase or period or culture and so on, and assemblages found in different contexts or at different sites with similar stylistic traits are then linked—as seemingly very similar (and more or less) contemporary or as seemingly a bit earlier or later, and so forth. At Knossos on Crete, Evans found a (complicated) stratigraphic sequence at the beginning of the 20th century AD (Evans 1921–1935), which ran from the Neolithic through the post-Minoan, thus almost immediately creating the basis for a long diachronic synthesis (though many details were clarified only many years later, if at all; see Pendlebury 1939, xxxi-xxxii; Evely, Hughes-Brock, and Momigliano 1994; Cadogan, Hatzaki, and Vasilakis 2004).

用一系列风格来定义一个时期

地层顺序决定类型顺序

Ideally, stratigraphic sequences set the order of the typological sequences, but, as Petrie 1899) showed, assemblages that lack stratigraphic order (grave assemblages in his case) can still be plausibly best ordered through what he termed *sequence analysis*. Petrie minimized the relative duration of sets of typological elements on the basis that this was the most efficient general solution (for general archaeological applications of seriation since then, see, e.g., O'Brien and Lee 1999). Turning to the Aegean, we may note that an attempt to better delineate Early Bronze groups (also known largely from cemeteries at the time) in the Cyclades along statistical lines was attempted (with only partial success) by Renfrew 1972, 142–47 and appendix 3). Luckily, subsequent work has found and investigated stratigraphic sequences, which now provide key evidence to better define the Early Cycladic period (e.g., Marangou, Renfrew, Doumas, and Gavalas 2006; Renfrew 2007; Renfrew, Doumas, Marangou, and Gavalas 2007; Brodie, Doole, Gavalas, and Renfrew 2008; Kouka 2009).

By 1903, Montelius had created a typologically derived chronology for Europe, and such work formed the general basis to wider European prehistory for the next two to three generations of scholarship, seen in seminal works such as Childe 1925. A contrast was available in the Aegean, however, as stratigraphic sequences, even if imperfect, informed the efforts to create chronology on Crete and the mainland. Thus, Evans 1906) proposed a Three Age stratigraphic-typological sequence for Crete, taking the term 'Minoan' from its legendary king Minos, and Wace and Blegen (1916–1918) did the same for the mainland, using the term 'Helladic' (thus, Early Helladic, Middle Helladic, Late Helladic—sometimes 'Mycenaean' is used in place of Late Helladic). Purported criticisms of these approximate stratigraphic systems in favor of architecturally or culturally based assessments (notably Åberg 1933) were rejected by most (but see below) and gave the Aegean a key place in the development of European prehistory (see, e.g., Childe 1935; for specific responses regarding Crete, see, e.g., Pendlebury 1939). Åberg's (1933) observations regarding instances of cultural (architectural) sequence and regionalism (and generally in favor of a more compressed European prehistoric chronology) were useful correctives, nonetheless. The Three Age-based, stratigraphy-typology derived structures became largely standard for the chronology of the Aegean Bronze Age, and, as
p. 14 Åberg's (1933) synthesis among others demonstrated (despite criticisms), the ↳ mainland, Cretan, and Cycladic sequences could be approximately related, and an overall Aegean chronology was thus available.

三时代地层类型学

Crete island — Minoan
mainland — Helladic
Cyclades (群岛) — Cycladic
↑ Keros 在 Cyclades 里

Two partial exceptions to this standard, tripartite ordering process also developed. In the Cycladic Islands Renfrew 1972) and then Doumas 1977) proposed to break with the use of Early Cycladic I, II, III, and so forth and instead to employ cultural groupings, principally the Grotta-Pelos culture, the Keros-Syros culture, and the Phylakopi I culture, along with some intermediary groups (especially the Kampos group between Early Cycladic I and Early Cycladic II, and the Kastri group between Early Cycladic II and Early Cycladic III, as well as other subregional or intermediary variants like the now abandoned 'Amorgos Group'). They based their proposal partly on the longstanding lack of stratigraphic sequences in the Cycladic Islands and partly on theoretical or appropriateness grounds. The logic was sensible, but the reality of these groupings as real 'cultural groupings' was questionable, and, to be pragmatic, the groups largely equated with the conventional Early Cycladic I, Early Cycladic II, and Early Cycladic III labels (adding Early Cycladic IIIA and IIIB; see Barber and MacGillivray 1980) and perhaps made less difference than hoped. The complex but fragmented world of the Cycladic Islands offers two other challenges to uniformitarian scholarship. First, the lack of replicated, long stratigraphic sequences leaves some possible gaps in the overall sequence, most notably between the Kastri and Phylakopi I groups in the Early Bronze 3 period (Rutter 1984; Broodbank 2000, 331–35), but see the later discussion. Second, our evidence remains incomplete even today. Just in the last few years new, hitherto unknown, material cultural groupings have been recognized, in particular the 'Rivari Group' found on Melos (Renfrew 2008, 4–5). Differences between islands, moreover, highlight the issues of regionalism and variability in the temporal and spatial dimensions and thus the problem of rigid, overarching chronological frameworks. In the subsequent Middle and Late Bronze Age periods, Cycladic phasing is understood mainly in terms of the sequences at Phylakopi on Melos and Ayia Irini on Kea and increasingly at Akrotiri on Thera (see Barber 1987; MacGillivray and Barber 1984; Renfrew 2007; Nikolakopoulou, Georma, Moschou, and Sofianou 2008), but nonetheless the labels Middle Cycladic I, II, II, and Late Cycladic I, II, and III are standard. (Although it is now dated in light of important subsequent work, MacGillivray and Barber [1984, 301] provide a useful chart of the Cycladic phases and their approximate placement against the mainland and Cretan phases.)

The other main alternative paradigm developed on Crete, where an archaeological framework based on the main architectural/historical phases has appealed to many (beginning with Åberg 1933 and given modern form by Platon 1961; 1968). Thus, we have a Prepalatial period (Early Minoan I–Middle Minoan IA ceramic phases), a Protopalatial period (the first or Old Palace period, comprising the Middle Minoan IB–II ceramic phases), a Neopalatial period (the second or New Palace period, comprising Middle Minoan III to Late Minoan IB), a Monopalatial period (only at Knossos in Late Minoan II to IIIA2 early, when Knossos appears to have been the only functioning palace on the island and to have exerted control over much of central and
p. 15 west Crete at least), and a Postpalatial period (Late Minoan ↳ III, except Knossos, where the palace appears to have functioned until Late Minoan IIIB).

Over the course of the last century, relative chronologies for each Aegean region have thus been constructed, linking assemblages and sites together, with the various typological groups placed into an approximate order (for example, Early Minoan IA, IB, IIA, IIB, III; Middle Minoan IA, IB, II, IIIA, IIIB; sometimes with various individual ceramic wares or classes noted either within or across these periods, like EM Ayios Onouphrios ware or MM Kamares ware on Crete; see Betancourt 1985). Endless elaboration and further subdivision is both possible and inevitable, as new sites and assemblages are found and studied; for example, after many years of debate and some nonclarity, very recent scholarship now offers a much better definition for the beginning of the Middle Bronze Age in the Cycladic islands (Nikolakopoulou, Georma, Moschou, and Sofianou 2008) and largely closes the Early Cycladic III gap (much as suggested by Broodbank 2000, 331–35).

通过比较物质文化的交流实例或明显的风格特征，我们可以将这些不同的地区相互协调，从而构建出爱琴海的整体相对年代学地图。

The various regions can then be coordinated with each other to build an overall, relative chronological map of the Aegean by comparing instances of exchanges of material culture or apparent stylistic traits. For example, the sauceboat form and several other indicators are found widely in the earlier to mid-Early Bronze Age 2 period of the Aegean (Early Helladic II, Early Cycladic II, Early Minoan IIA) and serve to link a variety of contexts and cultures from Troy and the northern Aegean to as far south as Knossos on Crete (Broodbank 2000, 305–309). Or, the finds of Phylakopi I duck vases (especially) in the Cyclades and southeast Aegean and then Cretan Middle Minoan IA ceramics in parts of the Cyclades and the mainland tie a series of contexts together in successive time slices and in trade, cultural, and perhaps political ways at the beginning of the Middle Bronze Age (Broodbank 2000, 351–61).

物质与人文的关系

A fundamental problem, though, when one considers the apparent neat framework of the Aegean relative chronology, is the relationship between the typology of material cultural classes—be they ceramic forms and decoration or forms of metal objects and so on—and time, history, and human culture. Some types of material culture tend to be more conservative and stay similar over long periods (for example, storage vessels and cooking utensils are often suggested as belonging in this category), whereas others change rapidly (i.e., as soon as any improvement is available) (weapons and other critical technologies are usually placed in this category), and most lie in some rather ill-understood middle region. Major stratigraphic breaks and building changes at important sites (or across a group of sites) are often seen as demarcating key historical or cultural changes, yet there is no reason that material culture in the form of, let us say, ceramics will reflect these changes (or not immediately). However, in reverse, such major stratigraphic changes at sites (for example, the ubiquitous 'destruction' horizon) usually provide the large bodies of ceramic material that archaeologists then study and use to define the typologies and stylistic phasings and thence chronology. We thus have detailed views through open windows for these destruction events only, from which we can learn a lot, and then closed blinds/curtains for much of the rest of the overall timescale. Thus,
p. 16 some ↳ end of phase assemblages (e.g., the Late Minoan IB destruction horizon on Crete) largely define the past we have, leaving out much of the rest of the life of a site and wider regional groupings (in this case early through mid- to mature Late Minoan IB; perhaps also tending to seem to minimize real chronological spans for overall periods in some such cases, as perhaps for Late Minoan IB: see Manning 2009).

但有时物质不一定能反映当时的情况

The relative chronologies that scholars construct end up with boxes of time labeled as Late Helladic I, then IIA, then IIB, and so on. These are correlated (through exchanges and stylistic similarities) with Late Minoan IA, IB, II, and so on to yield an overall (or macro) Late Bronze 1, 2, and so on regional chronology. This is a useful heuristic device, and the standard framework constructed from years of scholarship is invaluable. However, it is also deeply misleading. Style in material culture is dynamic, and different aspects change or do not change at varying rates within any society and among different groups and places and at different times for many reasons, thereby affecting scales from individual actors to the wider regional settings (including processes linked with biography, status, gender, and ethnicity as much as wider group values, technology, trade, and so on). Fundamentally, one style (and certainly any grouping of styles) neither starts nor ends on any wider basis on a given day, month, year, or maybe even decade, and plural styles and interplays are possible, if not likely. Regionalism can also act to create confusion, with one area apparently conservative with certain 'old' styles continuing in use, whereas another area adopts new styles or influences—yet these different assemblages can be contemporary.

用风格区分的问题在于，有的地区沿用过去风格，有的地区则改变，而它们实际是一个时期

Two examples illustrate the issues. One dynamic form of regionalism/variation occurs on the eastern-central mainland in late Early Helladic II marked by the appearance of new ceramic forms and technology—linked to the Kastri Group in the Cyclades and progenitors in the east Aegean and western Anatolia (in Anatolian terms it is EBIIIA)—conspicuous at some sites and a minor presence at others. Taking its name from the site where it was first recognized as a major element, this grouping or phase is referred to as the Lefkandi I culture/phase (Rutter 1979). It appears largely contemporary with later Early Helladic II (though some see it as representing initial Early Bronze 3 = Early Helladic IIIA (see Manning 1995, 51–63; Rutter 1983; Warren and Hankey 1989, 36–42; Broodbank 2000, 309–19; Kouka 2009). This Lefkandi I phase is not just a regional variant; it also represents new ways of doing things: new technology (wheel-made), new shapes/styles, new external influences, and new or refocused social practices embodied in these new artifact types. These new ways seem to play a central role in restructuring the whole Early Helladic world as seen by the subsequent period.

Another form of regionalism is the more typical occurrence of significant temporal/spatial variation, where one region seems to precede or lag another. An example in general terms can be seen when east Crete continues with its Early Minoan III styles into the temporal period, when central Crete, and especially the sequence as defined at Knossos, has adopted the distinctive new Middle Minoan IA styles— and thus into the chronological period called Middle Minoan IA as a general label (Warren and Hankey 1989, 20;
p. 17 Momigliano 2000). ↳

Table 2.1. **Schematic and summary relative chronology for the Aegean Bronze Age showing the main phases and sequences**.

	Crete		Cycladic Islands	Greece
Early Bronze 1	Early Minoan IA		Early Cycladic I-Lakkoudes, Pelos and Plastiras Phases/ Groups	Early Helladic I
	Early Minoan IB	Early Pre-palatial period	Kampos Group	
Early Bronze 2	Early Minoan IIA		Early Cycladic II—Keros-Syros Phase/Group	Early Helladic II
	Early Minoan IIB		Kastri Phase	Lefkandi I Phase
Early Bronze 3	Eary Minoan III	Late	Early Cycladic III—Phylakopi I	Early Helladic III
Middle Bronze 1	Middle Minoan IA		Middle Cycladic I Group/Phase	
	Middle Minoan IB			
Middle Bronze 2	Middle Minoan II (A-B at main palaces)	Protopalatial (Old Palace Period)	Middle Cycladic II	Middle Helladic
Middle Bronze 3	Middle Minoan IIIA		Middle Cycladic III	
	Middle Minoan IIIB	Neopalatial (New Palace Period)		
Late Bronze 1	Late Minoan IA		Late Cycladic I	Late Helladic I

	Late Minoan IB			Late Helladic IIA
Late Bronze 2	Late Minoan II	Monopalatial Period (Knossos only)	Late Cycladic II	Late Helladic IIB
Late Bronze 3	Late Minoan IIIA1		Late Cycladic III	Late Helladic IIIA1
	Late Minoan IIIA2			Late Helladic IIIA2
	Late Minoan IIIB			Late Helladic IIIB (phases 1–2 in Argolid)
	Late Minoan IIIC	Final Palatial Period		Late Helladic IIIC (with 3 to 5 phases)

Source: Courtesy of the author.

爱琴海史前史更倾向于假设基于风格的时期通常都有相当明确的开始和结束，并且时间框架可以清晰地划分成一个又一个的时间段

p. 18 It is important to appreciate these variations and dynamic processes. Yet, for all intensive purposes, Aegean prehistory rather pretends that style-based periods do typically start and end fairly neatly and that time frames can be mapped out in clear boxes of time, one after the other. This might seem practical and harmless enough if everyone understands the true, inherently fuzzy nature, but the problem with abbreviations and labels is that they come to have their own reality as they enter textbooks and common currency, sometimes independently of the information they summarize. They become factoids that are then transferred into other categories of thinking. This can particularly impact Aegean prehistory because of the logical or practical problem that the ceramic and stratigraphic labels are often the same—yet there is no reason they should relate. A system in which the material culture is comprehensively and consistently defined in its own terms (by, e.g., wares), which are then linked to whichever stratigraphic phase *or phases* in which they occur, as on Bronze Age Cyprus, would have merits.

More practically for the student and general reader, relative chronology has become a gate-keeping technology for the academic field: Only the initiated understand the otherwise impenetrable terms such as LH IIIA2 early or EM IB or Transitional LH IIIB2-LH IIIC Early or late Prepalatial, or the Grotta-Pelos culture and so on. Much of this tradition stems from the largely Classical roots of the discipline and its key practitioners; classics has long employed a system of abbreviations, codes, and technical terms known only to those in the field, and Aegean prehistory unfortunately extended this tradition (see table 2.1).

Absolute Chronology

Absolute chronology is simple in concept but fiendish in practice; it means the ability to allocate the Western calendar timescale (thus dates AD/CE or BC/BCE) to archaeological contexts, objects, or discussions. Thus, we hope to be able to make statements that such and such an artifact, type of artifact, building, series of changes in the archaeological record, or burial dates to such and such a century, set of years, or, in a perfect world, even a specific year. The problem is how to establish the calendar years.

Archaeological-Historical Dating

One approach to dating the Aegean Bronze Age tries to link exports or imports of objects or apparent stylistic features or technologies between the Aegean world and the approximately historically dated cultures of Egypt and the Near East. Subject to possible time lags in import/export processes and to how long an imported object remains in use before becoming incorporated in the archaeological context, where
p. 19 it is subsequently found by modern excavations and scholarship, the assumption is ↳ that the Egyptian/Near Eastern date associated with either the import or the context of the Aegean export can be roughly applied to the associated Aegean cultural phase. Thus, for example, when Sir Flinders Petrie found Middle Minoan Kamares ware ceramics in Middle Kingdom Egyptian contexts and Late Helladic IIIA2 ceramics at Tell el-Amarna in Egypt, along with finds of other Aegean exports, he provided a solid chronological basis to Mycenaean and Minoan chronology (Petrie 1890; 1891a, 9–10; 1891b; Petrie 1894; Phillips 1997). In this way the Aegean Bronze Age was first established as a genuine preClassical period.

埃及和近东有文字记录，所以可以定位具体时间

The date for the Egyptian or Near Eastern context or object is possible because various written/inscribed records from Egypt, Assyria, Babylonia, and so on provide lists of kings and other officials and sometimes the period of time they reigned or held office (in years and sometimes even the months and days), and in several cases we have long more or less continuous 'king lists.' Calendar dates are then calculated, in some cases on the basis of an ancient record of an astronomical event (like an eclipse, the first reappearance of a conspicuous star, or records of the moon) and in others on the basis of dead reckoning—that is, starting at a known point, like 525BC, when the Greek historian Herodotos tells us Cambyses conquered Egypt and ended the 26th Dynasty (last king Psamtik III), and working backward, adding attested and best interpreted reign lengths to the point of interest.

文件信件也是定位的证据

Occasionally we also have extant written communications between two or more of these various Near Eastern and Egyptian kings, and we can test and refine the chronologies (especially Assyrian/Babylonian dates versus Egyptian). In particular, the Amarna letters from Egypt in the mid-14th century BC (Moran 1992) contain correspondence between the Babylonian kings Kadasman-Enlil I, Burna-Burias II, and Pharaoh Amenhotep III of Egypt and between Burna-Burias II and both Akhenaten and Tutankhamun. Thus, these associated kings were more or less contemporary and have to be fitted together (given the known order of reigns in each country). In this way, the various ancient Near Eastern chronologies can be closely synchronized (see Brinkman 1972, 1976; Kitchen 1996a, 1996b; Beckerath 1997; Hornung, Krauss, and Warburton 2006). Various archaeological contexts in Egypt and the Near East can then be associated with these dated kings or their families or officials—and imported objects from these are approximately historically dated (see, for example, Aston 2003 on New Kingdom examples). In reverse, Egyptian/Near Eastern exports can be related to styles known from dated contexts in Egypt/the Near East—and sometimes the object even carries the name of a specific king (such as the group of items in the Aegean with the name of Amenhotep III; cf. Cline 1987).

出入口的物品也会有相关风格或文字

Where the linkage comprises a single object or a nonspecific stylistic association, this type of archaeological dating is entirely uncontrolled and could be substantially misleading. When several (and, even better, numerous) linkages exist for a specific period, however, then we may have much more confidence in the dating. In the third millennium BC, for example, we have just a few loose or indirect linkages between the Aegean and the ancient Near East, and the archaeological-historic chronology is approximate and flexible at best. From the First Intermediate Period ↳ and the start of the second millennium BC, we begin to see more linkages. The protopalatial period on Crete then has several direct ties with 12th–13th-Dynasty Egypt and is relatively secure in the 19th–18th centuries BC.

当物体少时，该方法不准确但样本多了后，对年代的确认会更准确

We then have very few useful or secure linkages until some Late Minoan I (and mainly IB and mature/late Late Minoan IB, where diagnostic) objects appear in early 18th-Dynasty contexts in Egypt, before mainland Late Helladic IIA and then IIB products replace these during the reign of Thutmose III in the mid-15th century BC (and a vessel with the cartouche—royal name—of Thutmose is found in Crete). Some wall paintings from Egypt also provide likely images of Aegeans ('Keftiu' = Cretans) in Late Minoan I and then Late Minoan II(–IIIA)-style clothing through the reign of Thutmose III. Late Minoan/Helladic IIIA1 is then linked with Amenhotep II and Amenhotep III, and Late Helladic IIIA2 is securely tied to the reign of Amenhotep IV (Akhenaten) and continues subsequently into the late 14th century BC. Late Helladic IIIB and Minoan IIIB subsequently occupy the 13th century BC.

The period c. 1400–1200 BC in broad terms represents the developed palatial era of the east Mediterranean, with major interlinked economies and trading worlds incorporating the Myceneans/Aegeans, the Hittites and other Anatolian powers, Cyprus, the Levant, and Egypt. This all starts to change from around c. 1200 BC and through the 12th century BC, and, as export patterns become less clear, our dates become less certain in the period from the close of the Late Bronze Age through the early Iron Age (for data and discussions, see, e.g., Höflmayer 2007; MacGillivray 1998, 106–108; Merrillees 2003; Kemp and Merrillees 1980; Warren and Hankey 1989, 121–69; Manning 1995, 104–120, 217–29; 1999; 2009; Aston 2003; Wiener 2003; Deger-Jalkotzy and Zavadil 2003; Mountjoy 1999, 2005).

Science-Based Dating

The main science-based dating technique relevant to the Aegean Bronze Age is radiocarbon dating. This enables estimates of the date when organic materials stopped exchanging carbon dioxide with the atmosphere (e.g., when a plant or part thereof—like a tree ring—stops growing or an animal dies; see Taylor 1987, 1997). In archaeology, the critical issue is the use of organic material that relates closely and as directly as possible to the context for which a date is sought (Waterbolk 1971); usually this means that samples of short-lived nature, such as annual growth material, are the ideal candidates because they should yield ages more or less contemporary with the time of human use. In contrast, random wood charcoal (with no evidence of bark or sapwood), when from long-lived tree species, can easily yield correct ages that are many decades to even centuries older than the archaeological context from which they come (and are thus very unhelpful *terminus post quem*—point after which—ranges). Over the last few decades, increased dating precision has become available, and on very much smaller samples (using Accelerator Mass Spectrometry radiocarbon dating; Gove 1992, 1999), making the dating of short-lived samples and other focused
p. 21 materials and contexts practical. ↳

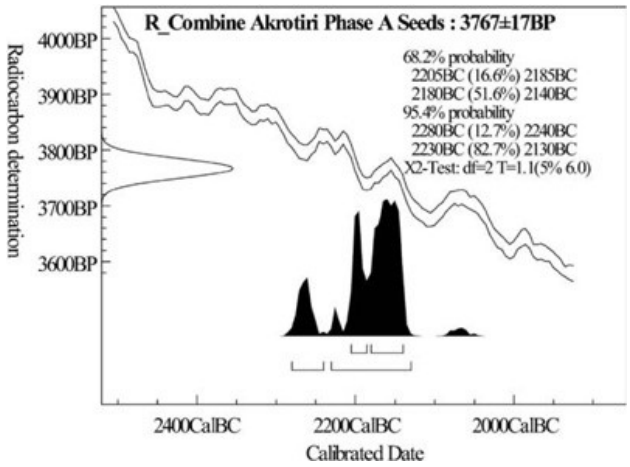

Figure 2.1. **Calibrated calendar age probability distribution for the weighted average radiocarbon age from three measurements on charred seeds from a single lump from Locus M31/67 N069 at Akrotiri on Thera/Santorini belonging to the initial Middle Cycladic Phase A (and not the end of the phase). Data from OxCal and IntCal04 (Bronk Ramsey 1995, 2001, 2008; Reimer et al. 2004).**

For the Early Bronze Age Aegean, radiocarbon is our main source of absolute dating evidence and provides the available chronology and temporal framework c. 3000–2000 BC (see Manning 1995, 1997, 2008b; Korfmann and Kromer 1993; Kromer, Korfmann, and Jablonka 2003). Additional modern, high-quality dating programs are needed, however, especially to focus on short-lived sample material. A promising example of the progress possible toward the resolution of longstanding problems comes from Akrotiri on Thera/Santorini. Here Phase A is now defined at the very beginning of the Middle Cycladic sequence linking to the Phylakopi I (-ii and -iii) phase (Nikolakopoulou, Georma, Moschou, and Sofianou 2008, 313–17). The weighted average of three very similar radiocarbon measurements on a compressed lump of charred seeds (Manning 2008b, 56) from this phase offers a calibrated calendar age range at 2 standard deviation (95.4%) confidence of 2280–2240 BC (12.7% of probability) or 2230–2130 BC (82.7% of probability); see figure 2.1. Thus, we may start the Middle Cycladic period no later than about the same time; this relatively early date closes the gap somewhat to the late Early Bronze 2 Kastri Group, which seems to cover the early 25th through the later 23rd centuries BC (Manning 2008b). (Some Middle Minoan IA ceramics have also been found in Phase A at Akrotiri; whether this early date applies also to them is an interesting issue for further clarification; the archaeological linkages suggest a date more in the 21st century BC for the start of Middle Minoan IA.)

p. 22 For the Middle and Late Bronze Ages, there are data and interpretations from both archaeology and radiocarbon evidence. At first, the long-studied and relatively refined archaeological chronologies were much more accurate and precise than anything radiocarbon could offer (Kohler and Ralph 1961). Thus, radiocarbon dating was of interest but at most offered support to an already accepted framework; if there was a conflict, it was obvious that the archaeological chronology was to be preferred (Betancourt and Weinstein 1976; Warren and Hankey 1989, 127).

However, over the last three decades, increasingly precise radiocarbon dates have been obtained, and more sophisticated analytical frameworks developed to refine interpretation (especially Bayesian model-based approaches as employed in the Manning et al. 2006 study). Work on short-lived samples from the Late Minoan IA and IB periods, in particular, have highlighted some apparent discrepancies between the archaeological chronology and the radiocarbon chronology (Manning et al. 2006; Manning 2009). This issue centers on the date of the important eruption of the volcano of Santorini/Thera and the associated archaeological horizon (see chapter 34). A major controversy now exists in the field, and rival (High v. Low) chronologies are in parallel use, depending on whether the radiocarbon evidence (High chronology) or the conventional archaeological evidence (Low chronology) is preferred for the mid-second millennium BC.

An appropriate perspective on this debate is critical, however, as the published literature has become a clash of scholarly cultures, with many arguments made on the basis of assumed truths. The fundamental observation is that the Late Minoan IA period and the earlier part of the Late Minoan IB period (and the preceding Middle Minoan IIIA and IIIB periods) form a time for which very little chronological evidence exists in the form of clearly defined and plural exchanges of material with Egypt and the Near East. Instead, conventional dates were largely estimated for this era between the good Middle Minoan links with the Middle Kingdom and the mature-late Late Minoan IB, as well as Late Helladic IIA and IIB links with the earlier 18th Dynasty and into the reign of Thutmose III. Thus, things were always potentially suspect (or flexible), and phases might be longer or shorter than guessed. Radiocarbon finds age ranges consistent with the archaeological chronology where the latter is well based on numerous exchanges (e.g., Late Minoan II/Late Helladic IIB to Late Helladic IIIB; see, e.g., Manning and Weninger 1992; Manning, Weninger, South, Kling, Kuniholm, Muhly, Hadjisavvas, Sewell, and Cadogan 2001; Betancourt and Lawn 1984), but it suggests a much longer Late Minoan IB period than previously thought (though archaeology now also suggests this; see Rutter n.d.; Betancourt 1998) and a date for Late Minoan IA about one hundred years earlier than the conventional date (Manning et al. 2006; Manning 1998, 1999, 2009). The necessary implication is that Middle Minoan III as a whole was relatively short (something already considered likely; cf. Warren and Hankey 1989, 54–60). The Middle Minoan II linkages with the Middle Kingdom remain untouched and unquestioned, however. Thus radiocarbon redefines some best guesses in the past (where solid evidence was lacking) for Late Minoan IA and IB but does not contradict any good, sound, replicated body of archaeological evidence. ↳

Table 2.2. Approximate Absolute Chronology for the Aegean Bronze Age

Crete	Dates BC	Cyclades	Dates BC	Mainland	Dates BC
Early Minoan I	3100–3000	ECI	3100–3000	Early Helladic I	3100+ to 3000
(EMIB)	(2900–2650)	Kampos Phase	2900–2650		
EMIIA	2650–2450/00	ECII (Keros-Syros phase)	2650–2500	EHII	2650–2500
EMIIB	2450/00–2200	Kastri Phase	2500–2250	Later EHII/Lefkandi I	2500–2200
EMIII	2200–2100/2050	Kastri Phase and into Phylakopi I Phase	2400–2200	EHIII	2250–2100/2050
Middle Minoan IA	2100/50–1925/00	Middle Cycladic-Phylakopi I Phase	2200-	Middle Helladic	2100/2050-
MMIB	1925/00–1875/50				
MMII	1875/50–1750/00				
MMIII(A-B)	1750/00–1700/1675				
Late Minoan IA	1700/1675–1625/00	00 Late Cycladic I	1700/1675–1625/00	Late Helladic I	1700/1675–1635/00
LMIB	1625/00–1470/60	LCII	1625/00-	LHIIA	1635/00–1480/70

LMII	1470/60–1420/10			LHIIB	1480/70–1420/10
LMIIIA1	1420/10–1390/70	LCIII	1420/1400-	LHIIIA1	1420/10–1390/70
LMIIIA2	1390/70–1330/15			LHIIIA2	1390/70–1330/15
LMIIIB	1330/15–1200/1190			LHIIIB	1330/15–1200/1190
LMIIIC	1200/1190–1075/50			LHIIIC	1200/1190–1075/50

Note: Minoan, Cycladic, and Mainland phases are of course not in exact synchronicity in reality, even when closely aligned; for example, Late Helladic (LH) IIA appears to begin a little before Late Minoan (LM) IB. However, this serves as a general system, so these minor, specialist, issues can often be overlooked (or could fit into the dating ranges indicated for the start/end dates). Similarly, although the table lists specific numbers, these are all approximate. For the EM/EC/EH phases ±50 years should be allowed as a reasonable guide range. For the MM/MH/MC and LM/LC/LH phases, ±25 years may be a reasonable allowance. There is of course one major possible exception. The dates in the table reflect the high or radiocarbon-based dates for LMIA-II and so on (from the study of Manning et al. 2006 in particular). If the conventional archaeological dates are employed instead, then the MM period must become longer, the LMIA period begins closer to ca. 1600 BC, and LMIB begins in the late 16th century BC to ca. 1500 BC. The time period on Crete at the close of the MMIII period and start of the LMIA period has been variously called MMIII to LMIA transition, or LMIA Early, or most recently (as again) MMIIIB-each label referring to more or less the same interval. On the high chronology shown in table 2.2, this time period lies around the late 18th century BC into the first decades of the 17th century BC (courtesy of the author).

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p. 24 The other dating technique of general relevance to the Aegean Bronze Age is dendrochronology, also called tree-ring dating (Kuniholm 2001; Schweingruber 1987). Where bark or sapwood is present, it is possible to define closely the cutting date and hence human use of timbers. A long near-absolute dendrochronology from Anatolia covers the earlier first and most of the second millennia BC and has major implications for the dating of key sites and even ancient persons in Anatolia and the Near East (Manning, Kromer, Kuniholm, and Newton 2001). Some chronologies, though with a questionable linkage as yet to the second–first millennia dendrochronology, exist also for a good part of the third millennium BC (Newton and Kuniholm 2004).

There has been less success to date in finding good wood or charcoal samples from the Aegean region (but the potential remains, and one reads sadly of apparently large timber remains (now lost) found earlier in the 20th century AD at some of the main palace sites). Nevertheless, some key shorter tree-ring series have been radiocarbon wiggle-matched to yield high-precision information. Examples include a pine timber from Troy I (Korfmann and Kromer 1993; Manning 1997), an oak sample from Miletus that offers a high-resolution *terminus post quem* for the eruption of Santorini/Thera (Manning et al. 2006), and a speculative effort at best-dating some short sequences at Assiros from toward the end of the Late Bronze Age (Newton and Wardle 2005). An approximate absolute chronology for the Aegean Bronze Age is shown in table 2.2.

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