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(ca. 3000–1000 BC)

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ERIC H. CLINE

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## CHAPTER 27

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# LINEAR B

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THOMAS G. PALAIMA

LINEAR B is a Late Bronze Age (ca. 1500–1200 BCE) writing system within the distinctive tradition of Cretan and Cretan-inspired scripts (Cretan Hieroglyphic and Linear A, Cypro-Minoan, and Cypriote Syllabic) that spanned nearly two millennia (ca. 2100 to ca. 225 BCE) (Bartoněk 2003, 16–49; Chadwick 1987; Duhoux 1989; Palaima 1989, figures 4 and 9; Olivier 2008). It is an adaptation of the earlier (ca. 1900–1450 BCE) Linear A, with which it shares peculiarities in the use of both the signs that represent sounds (phonograms) and the signs that represent objects (ideograms) or the words for those objects (logograms) (Duhoux 1985; 1989, 63, 72–76).

Unlike the other Bronze Age scripts in this tradition (Cretan Hieroglyphic, Linear A, and Cypro-Minoan), Linear B has been deciphered—by British architect Michael Ventris. Ventris announced his achievement for the first time in personal handwritten letters of June 18, 1952, to two close collaborators, Emmett L. Bennett Jr. and Sir John L. Myres (Robinson 2002, 102–106; Palaima, Pope, and Reilly 2000). The primary language in the preserved Linear B texts is Greek (Ventris and Chadwick 1953), as it was developing in the 14th and 13th centuries BCE. Like the historical Greek lexicon, the lexicon of the Linear B texts (Ventris and Chadwick 1973, 527–94; Aura Jorro 1985, 1993) contains loan words that come from the languages of the many cultures with which first the Minoans during their two palatial periods (MM II–LM IB) and then the Mycenaeans during their palatial period (LH II–LH IIIB) were in contact. This includes the languages of the so-called substrate cultures with which the Greek speakers interacted when they entered the Balkan peninsula and as they then spread out over the Aegean area (Brown 1985, 1–19; Hester 1968; Renfrew 1998).

The Linear B texts, therefore, give us information about an important formative stage of the Greek language and how it was affected by language contact with

surrounding cultures. They also provide our earliest primary written evidence about all facets of Mycenaean palatial civilization. Finally, because what we call the *Mycenaean* Linear B script is an adaptation of *Minoan* Linear A, Linear B texts give us insights into how speakers of the still undeciphered Minoan language(s) and of early Greek analyzed spoken language and how they represented it in writing as ‘visible speech’ (Sharypkin 2008; Woodard 1997; Palaima and Sikkenga 1999).

## THE DISCOVERY AND PUBLICATION OF TEXTS

The first scientifically excavated Linear B tablets were uncovered by Sir Arthur Evans at the site of Knossos on Crete on March 30, 1900 (Evans 1900, 18, 55–58; MacGillivray 2000, 177–78, 181–85). Many more texts were uncovered in the succeeding years of excavation. There are now about forty-two hundred texts from Knossos, many of which are small fragments (Shelmerdine 2008b, 18n33; Bartoněk 2003, 30).

Evans was the first great scholar of Aegean writing systems (Palaima 2000a). The adjective ‘great’ is no exaggeration. In fact, Evans’s interests in early writing systems are what led him to become an excavator (Myres 1941). Evans devised the first typology of Bronze Age Aegean scripts in *Scripta Minoa* I (Evans 1903–1904, 1909) and then turned his attention to other matters (e.g., reconstruction of the Knossos site and full, synthetic publication of its excavation [Evans 1921–1935] and even Balkan diplomacy in the aftermath of World War I).

Consequently, Evans’s planned companion volume on Linear B, *Scripta Minoa* II, was published only in 1952. It was a major reworking of the manuscript he left at his death in 1941 to the care of Sir John L. Myres. Myres, who was not a specialist in scripts, first enlisted in 1947 major help from Alice E. Kober, arguably the foremost scholar working on Aegean writing in the 1940s. After Kober’s death in 1950, Myres received help from Emmett L. Bennett Jr., whose work on the Pylos tablets had been interrupted by his service analyzing Japanese encoded texts during World War II. The only other scholar who did sustained and consistently sober analytical work on the linear scripts before 1941 was Johannes Sundwall of Finland (Sundwall 1920, 1932, 1936).

*Scripta Minoa* II (Evans 1952), however, was prevented from becoming the fully scientific publication that Alice Kober wanted it to be for two reasons. First, dire postwar economic conditions made it necessary for the Clarendon Press to use plates and fonts (for charts of signs and drawings and transcriptions of texts) that had been produced for Evans when *Scripta Minoa* I and *Palace of Minos* were published. Second, Myres viewed it as his obligation to publish a faithful edited version of the book that Evans had partially written, not the up-to-date scientific study that Kober and Bennett were capable of producing. *Scripta Minoa* II, when it appeared, was already a fossil.

In the decades after Evans’s initial finds at Knossos, there were two major impediments to further progress on Linear B: Few of the nearly eighteen hundred tablets

that Evans had uncovered from Knossos were carefully published and available to scholars, and there were no further discoveries to add to the variety and quantity of the Linear B data. The problem with nonpublication of the Knossos material was partly remedied when *Palace of Minos*, volume IV, appeared in 1935 (Evans 1921–1935). It presented a selection of tablets with learned commentary. Significant help with the second problem came when Professor A. D. Keramopoulos at Thebes in 1921 began his discovery of a large deposit of transport stirrup jars, twenty-eight of which bore painted Linear B inscriptions (Wace 1921, 272–73).

The other important predecipherment discovery of tablets was made by Carl W. Blegen in 1939, when excavating at the site of Pylos in Messenia in the southwest Greek mainland (Blegen and Kourouniotis 1939). The advent of World War II delayed the publication of these 636 tablets, but in 1951 they were given to the scholarly world in a careful, regularized transcription by Emmett L. Bennett Jr. (Bennett 1951), based upon his equally painstaking work on the forms of signs of the syllabary in his earlier dissertation (Bennett 1947).

## NUMBERS AND GENERAL TIME PERIOD OF TEXTS

In the fifty-six years since the decipherment of Linear B, the corpus of Linear B inscriptions has greatly expanded. We now have more than five thousand inscribed clay records from Khania and Knossos on Crete and from Pylos, Mycenae, Tiryns, Midea, and Thebes on the mainland (Bartoněk 2003, 30; Del Frio 2008, 213–22). The limited numbers of clay records are explained by the fact that they are preserved only when accidentally fired in the destruction of the buildings in which they were located. The rule is: no fire, no tablets.

This also severely limits the coverage that these economic documents provide of human economic, political, religious, and social activities. The Linear B texts were never intended to be long lasting. They were written, stored, and consulted in connection with the administrative year in progress. They look back at the year past and ahead at the year coming. There is no system in the tablets equivalent to the historical Greek practice of dating decrees or other inscriptions by reference to eponymous magistrates (archons), priests, or priestesses. We have evidence for only one or at most two or three randomly selected and undated years at any given Mycenaean site. Thus, we have little way of reconstructing trends, beyond a single year, over time. There has been, however, some attention paid to the chronology of texts within a given administrative phase (Palaima 1995).

In addition, painted inscriptions on ca. 160 transport stirrup jars are known from five sites on Crete (Malia, Knossos, Armenoi, Khania, and Monastiraki) and seven sites on the Greek mainland (Tiryns, Midea, Mycenae, Eleusis, Kreusis, Thebes, and Orchomenos) (Van Alfen 2008). There is also a single stone ‘parallel-epiped’ from the important northern site of Iolkos, which was identified long ago

by Nilsson (1932) as a potential major palatial site. It has three signs inscribed into it (Del Freo 2008, 215–16 and note 82).

All of the inscribed material comes from the 14th and 13th centuries BCE (at Pylos the transition into the 12th), and all of it comes from the environs of significant settlements (Driessen 2008). We have no good evidence yet that Linear B was used at the smaller settlements within the structure of regional organization in Mycenaean palatial territories that are called second- or third-order centers (Bennet 1990, 1998).

## AN UNLIKELY INSCRIBED PEBBLE

It has been proposed that our earliest Linear B text is an inscribed pebble from an insignificant Middle Helladic settlement in the district of Elis, found supposedly in a mid-MH III (i.e., ca. 1650 BCE) context (Del Freo 2008, 216–17). Here follow the many reasons to reject this proposal (as argued fully by Palaima 2006b).

The very status of the site where it was found makes it highly dubious, as does the fact that the *galet*, as it is known in Mycenological circles, was discovered on April Fool's Day (April 1, 1994). Also humorously suspicious is the inscribed image of a double ax surrounded by cartoonlike rays (completely unparalleled in Minoan or Mycenaean art). As regards writing style, the Linear B signs are not early prototypical forms that we would expect in 1650 BCE, but they are in the style of the main scribe at Pylos ca. 1200 BCE (450 years after the date of the pebble). When the sign groups are read, they give the names and nicknames of the son of the excavator and possibly his father. It is surprising that this object has been published as a genuine inscription and almost unconscionable that it is now being cited, whether uncritically or with reservations, in handbooks and discussions of the history of Linear B (e.g., Bartoněk 2003, 73–74; Driessen 2008, 76).

## TYPOLGY OF CLAY DOCUMENT INSCRIPTIONS

Even before the decipherment, Kober and Bennett exploited the typology of the clay inscriptions in Linear B as a means of studying their texts. All Linear B tablets are devised so that they can be held in one hand, while writing with the other. We even find the finger impressions of scribes along the edges of the texts where they gripped the tablets (Palaima 1988).

The two main shapes are (1) long, narrow tablets that Evans called leaf shaped because they reminded him of palm-leaf documents from south Asia; and (2) rectangular, page-shaped texts (Palmer, 2008a, 61, figure 2.1). The leaf-shaped tablets are used mainly for documents focused on discrete records within larger bookkeeping assignments. Good examples are the inspection inventories of individual sets of

armor (and helmets) in the Pylos Sh series (Palaima 1996a); ration allotments to dependent women work groups in the Pylos Aa, Ab, and Ad series (Chadwick 1988; Palmer 1989); the receipts of six taxed commodities in the Pylos Ma series, which the principal districts making up the territory of the palatial state of Pylos each have to give (Ventris and Chadwick 1973, 289–95, 464–66); honey being shipped to the sanctuary of Zeus specifically for Zeus and Dionysos in Khania Gq 5 (Palaima 2004a, 448); and the assignment of armor, a chariot, and a pair of horses to individual warriors in the Room of the Chariot Tablets at Knossos (Driessen 1996).

Page-shaped tablets are used to compile and summarize the information that might originally have gone on a number of leaf-shaped documents or to record the responsible parties involved in transactions and activities involving large numbers of individuals, localities; or institutions. These tablets generally are records of distribution, delivery, collection, mobilization, inventory, or census. Good examples are a simple record of rowers of a single ship coming from five communities in Messenia (Pylos An 1: Killen 1983); bronze allocation to groups of smiths (Pylos Jn series: Smith 1993); the mundane daily allotment of grain to individuals and workers who perform different services within the palatial system (Thebes Fq series: Palaima 2006a); and the list of human beings connected with organizations involving the *lawagetes* and the *basileus* (KN As 1516: Driessen 1985).

Clay is used in Mycenaean administration also for nodules. These are small lumps of clay molded around knotted string and impressed with a seal (Hallager 1996, 31–38; [Palmer, 2008a, 61, figure 2.1]). Linear B–inscribed nodules usually serve as records of single transactions (Palaima 1996b, 2000b). The best example here is the set of sixty-one such devices (fifty-six inscribed) discovered at Thebes and dealing with animals being provided for a sacrificial feast (Piteros, Olivier, and Melena 1990). The inscriptions and seal impressions in the Theban nodules identify responsible parties, place names (including Thebes itself and Amarunthos and Karustos in Euboea), the kinds of animals, and the conditions under which these contributions are made (whether ‘paid’ as a kind of religious obligation or ‘finished off,’ i.e., brought into a state fit for sacrifice) (translation and discussion in Palaima 2004b, 220–21, 225–28, 237–39).

Finally, clay was pressed flat against the outer surface of transport baskets made of woven, pliant plant fiber (generically ‘wicker’). These ‘labels’ were then inscribed with brief descriptions of the tablets that were placed inside the baskets. The baskets were carried from one location to another. The labels from Pylos all come from the centrally located Archives Complex.

## GENERAL TECHNIQUES OF ANALYSIS

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A key resource in interpreting the Linear B documents is palaeography (Palaima forthcoming), literally the study of ‘old writing.’ Many of the common signs of



the Linear B script are complex in form, with lines crossing or running into one another. Moist clay generally preserves a clear record of the habitual order in which individual tablet writers made particular signs and the peculiar ways they drew component elements. This and other idiosyncratic features, such as tablet layout, vocabulary, subject matter, and spelling variants, have made it possible to identify 'scribal hands.' By studying their work, we can reconstruct, at least partially, the administrative systems (including central archives) in which the tablet writers functioned (Palaima 2003a).

Three specialized studies (Olivier 1967, Palaima 1988, Driessen 2000) of scribes and their work have been crucial in determining how to interpret sets and other groups of tablets from Knossos and Pylos and even how to establish the relative chronology of the tablets from a particular site. The study of traces of palmprints on tablet surfaces, made, it seems, by young apprentices and older retirees who assisted the tablet writers in their work (Sjöquist and Åström 1985, 1991) has also added to our understanding of how tablet writers interacted with each other.

A major recent advance is the application of phylogenetic systematics to the palaeographical data (Skelton 2008). Skelton has used this biological research method to determine the most probable line of chronological development of the styles of the identifiable scribal hands and to trace possible affinities among tablet writers. Significantly, Skelton's study independently isolated the same groups of texts that scholars of palaeography had considered somehow problematical or anomalous. The phylogenetically determined chronology is right in line, too, with the relative chronology devised by palaeographers. It also puts the forgery (see earlier) known as the *Kafkania galet* where it would belong stylistically, 1200 BCE, if it were genuine.

## CHRONOLOGY OF THE TABLETS

The Linear B tablets have a chronological range. Most problematical, as might be expected because scientific methods for the control and recording of data were not very advanced at the time, are the earliest excavated tablets from the site of Knossos, specifically those that come from the Room of the Chariot Tablets (RCT). Driessen (2000, 2008, 70–72) has argued convincingly on the basis of text typology, small linguistic peculiarities, the discovery among these tablets of 'transitional' types of clay sealings, palaeographical singularity, and the decided lack of any prosopographical connection between the RCT texts and the rest of the Knossos tablets, that the RCT tablets are earlier than other Knossos tablets. The RCT tablets may be dated to LH IIIA1 (ca. 1390–1340 BCE).

In spring 1990, three tablets were discovered at the Khania site in a secure end of LH IIIB1 context (early to mid-13th century BCE). The handwriting and formatting style of these tablets was very similar but not identical to that found on the tablets

of Scribe 115 at Knossos (Olivier 1993, 1996; Palaima 1993). This suggests that at least some of the remaining Knossos tablets should be dated to this phase.

On the mainland, tablets from the so-called houses at Mycenae and various locations on the citadel of Thebes, as well as from Midea, Tiryns, and the major destruction phase at Pylos, date from mid- to very late LH IIIB, even transitional into LH IIIC (ca. 1250–1190 BCE). Exceptions are a few contextually isolated tablets from Pylos that also show palaeographical and lexical peculiarities. These may come from LH IIIA (Driessen 2008, 73). A tablet from Petsas House at Mycenae (Shelton 2003) comes from an LH IIIA<sub>2</sub> context.

## THE STRUCTURE OF THE LINEAR B SCRIPT

Even before the decipherment of Linear B, scholars like Bennett, Evans, Kober, Sundwall, and Ventris could distinguish within the Linear B texts signs that represented words through their phonetic parts (phonograms) and signs that stood for objects (ideograms) or the whole words (logograms) for those objects. For these components and how they work separately and together, see Duhoux (1985, 11–19) and Palmer (2008a, 31–35).

As mentioned earlier, Linear B has a set of phonograms (see figure 27.1) that represent discrete elements of sound (pure vowels [V] or open-syllabic combinations of consonant plus vowel [CV]). There are about eighty-seven such signs now identified. About seventy-five of these have been given secure or very probable values. The ‘spelling rules,’ we have lately come to think, reflect the natural ways in which native speakers of Minoan and Greek, or bilingual Minoan/Greek speakers, conceived of words. For example, writers of Linear B spell the later Greek word for ‘human being’ *anthrōpos* *a-to-ro-kwo*, where both the *n* that precedes the later Greek theta /*th*/ and the final *s* are not written; the aspiration of the /*t*/ is not written; the length of the first /*o*/ vowel is not represented; and the sequence *thr* is written *to-ro* with what is called a ‘dummy vowel’ taken from the syllable that this sequence of consonants begins. Finally, the last syllable in this example begins with a consonant called a labiovelar (a combination of a palatal stop and the glide /*w*/ treated as a basic sound, or *phoneme*, in the language). Labiovelars in specific environments develop into various simple consonants in historical Greek (i.e., they disappear from Greek speech).

In order to represent the peculiar features of the Minoan language, Linear A script used a set of syllabic signs that stand for combinations of stop consonants (e.g., /*t*/ and /*d*/) and palatal and labial glides (/y/ and /w/) plus, of course, vowels. Linear B preserves some of these signs as holdovers (Duhoux 1985, 41–48). So, for example, the word in the sphere of chariot wheel construction that means ‘provided with a *termis*’ (referring to a kind of insertion technique used at the points on wheels where the spokes met the rims) is spelled alternatively *te-mi-de-we-te* and *te-mi-dwe-te*. In

08 a		38 e		28 i		61 o		10 u	
01 da		45 de		07 di		14 do		51 du	
57 ja		46 je				36 jo		65 ju	
77 ka		44 ke		67 ki		70 ko		81 ku	
80 ma		13 me		73 mi		15 mo		23 mu	
06 na		24 ne		30 ni		52 no		55 nu	
03 pa		72 pe		39 pi		11 po		50 pu	
16 qa		78 qe		21 qi		32 qo			
60 ra		27 re		53 ri		02 ro		26 ru	
31 sa		09 se		41 si		12 so		58 su	
59 ta		04 te		37 ti		05 to		69 tu	
54 wa		75 we		40 wi		42 wo			
17 za		74 ze				20 zo			

25 a <sub>2</sub>		43 a <sub>3</sub>		85 au		29 pu <sub>2</sub> *m <sup>b</sup> u?	
76 ra <sub>2</sub>		33 ra <sub>3</sub>		68 ro <sub>2</sub>		66 ta <sub>2</sub>	

71 dwe		90 dwo		62 pte		87 twe		91 two	
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18		19		22 *m <sup>b</sup> i?		34		47	
49		56 *m <sup>b</sup> a?		63		64			
79		82		83		86		89	

Figure 27.1. Linear B phonograms classified by their phonetic values (based on images from Duhoux and Morpurgo Davies 2008; courtesy of Ruth Palmer).

both of these spellings, the /r/ that precedes /m/ is not represented. However, in one spelling the consonant sequence arising in word formation from suffixation (*termid-went-*) is treated as a sequence of two consonant sounds (*de-we*), while in the other spelling, this consonant cluster is heard and represented in a Minoan way—almost as a single phoneme (*dwe*). ‘Extra’ signs, like *dwe*, which are useful but not necessary, and the ‘partial spellings’ we just looked at give the Linear B syllabary a look of inefficiency, especially in contrast with the later Cypriote syllabary (Olivier 2008). However, they are rightly explained as good evidence for the continuing influence

Humans	100 MAN	102 WOMAN		
Animals	104 DEFR	105 HORSE	105 <sup>f</sup> HORSE <sup>f</sup>	105 <sup>m</sup> HORSE <sup>m</sup>
	106 <sup>f</sup> SHEEP <sup>f</sup>	106 <sup>m</sup> SHEEP <sup>m</sup>	107 <sup>f</sup> GOAT <sup>f</sup>	107 <sup>m</sup> GOAT <sup>m</sup>
	108 <sup>f</sup> PIG <sup>f</sup>	108 <sup>m</sup> PIG <sup>m</sup>	109 <sup>f</sup> BOVID <sup>f</sup>	109 <sup>m</sup> BOVID <sup>m</sup>
Vegetable products	120 BARLEY?	121 WHEAT?	122 OLIVE	123 SPICE
	125 CYPERUS	129 FLOUR	130 OIL	131 WINE
	144 SAFFRON	174 	176 TREE	30 FIGS
Metal	140 BRONZE	141 GOLD	167 INGOT	
Fiber and cloth	31 FLAX	145 WOOL	146 CLOTH	159 CLOTH
Animal products	151 HORN	152 OX HIDE	153 SHEEPSKIN	154 
Vases	155 <sup>VASE</sup> 	200 <sup>VASE</sup> 	201 <sup>VASE</sup> TRIPOD	202 <sup>VASE</sup> 
	203 <sup>VASE</sup> 	204 <sup>VASE</sup> 	205 <sup>VASE</sup> 	206 <sup>VASE</sup> 
	207 <sup>VASE</sup> 	208 <sup>VASE</sup> 	209 <sup>VASE</sup> AMPHORA	210 <sup>VASE</sup> STIRRUP JAR
	211 <sup>VASE</sup> 	212 <sup>VASE</sup> 	213 <sup>VASE</sup> 	215 <sup>VASE</sup> KYLIX
	226 <sup>VASE</sup> 	227 <sup>VASE</sup> RHYTON	229 <sup>VASE</sup> 	250 <sup>VASE</sup> 
Armor and weapons	162 BREASTPLATE	163 ARMOR SET	191 HELMET	230 SPEAR
	231 ARROW	232 SACRIFICIAL AX	233 SWORD	254 JAVELIN
Chariots	240 CHARIOT	241 CHASSIS	242 CHARIOT BOX	243 WHEEL

Figure 27.2. Selected Linear B ideograms according to category (based on images from Duhoux and Morpurgo Davies 2008; courtesy of Ruth Palmer).

of Minoan culture within Mycenaean culture. Several hundred tablet writers had no difficulty using the script effectively and routinely on a daily basis.

One final way that we can trace Minoan elements in the Linear B script is among the ideograms (see figure 27.2). The ideogram for 'figs' in Linear B is also used as the phonogram for the phonetic value /ni/. Greek used the loan word *sukon* for 'figs,' with initial syllable /su/, so we assume that /ni/ in Linear A was the initial syllable of the Minoan word for 'figs.' This is confirmed by a lexicographical entry that tells us that the word *nikuleon* is the Cretan word for 'figs' (Duhoux 1989, 71). There are several other such examples.

In the repertory of Linear B signs for objects, many of the signs for military equipment, vessels, and cloth are representational. We can immediately see that a sign represents a tripod, a chariot chassis, or fringed cloth. The sign for 'horse' is clearly a horse. Other signs have been made more abstract by their long history in Cretan writing, which goes back to the earliest period of Linear A economic records. Thus, whether signs \*120 and \*121 represent 'wheat' and 'barley' or vice versa (Palmer 2008b) is a controversial issue that has to be decided on the basis of their occurrence within specific Linear B texts and sets of texts and not on the basis of their appearance.

## EDITIONS AND OTHER TOOLS OF RESEARCH

An extensive, up-to-date list of research tools is provided by Palmer (2008a, 51–55), so it need not be duplicated here. Nonetheless, some commentary and slight supplementing are in order.

All but the most recently discovered Linear B tablets are now published in official corpus editions or carefully edited volumes of transcriptions. However, these editions are designed for the handful of specialists who have learned how the script works, mastered the technicalities of language, and learned enough about the archaeological and historical background of the texts to be able to work firsthand with the tablets and their transcriptions and propose interpretations of their texts that fit what we know about Greek in the late Bronze Age and the protohistorical contexts of the records.

Special collections of tablets, like the inscribed sealings from Thebes, perfumed oil tablets, or the tablets from the RCT at Knossos, have had comprehensive studies published. Arguably the greatest aid to interpretation is the publication by a single scholar, Francisco Aura Jorro, of a bibliographically comprehensive, two-volume lexicon of Mycenaean Greek (Aura Jorro 1985, 1993). There has been no new full grammar of Linear B since Vilborg (1960).

The main general handbooks (Ventrìs and Chadwick 1973; Hiller and Panagl 1976; Hooker 1980; Morpurgo Davies and Duhoux 1985) that offer translations and interpretations of selected documents are now supplemented (Ruipérez and Melena 1990; Bartoněk 2003; Bernabé and Luján 2006; Duhoux and Morpurgo Davies 2008). A multiauthored update of Ventrìs and Chadwick (1973) is well under way, as is another systematic survey of textual evidence for themes in Aegean prehistory that Italian scholar Massimo Perna is editing. Descriptive analytical bibliographies of specialized work connected with the Linear B texts also appear regularly in *Studies in Mycenaean Inscriptions and Dialect* (SMID), now published by the Program in Aegean Scripts and Prehistory at the University of Texas at Austin and available online at <http://paspserver.class.utexas.edu/index.html>.

Finally, Mycenaean specialists hold a major international conference about once every five years. These provide a fairly comprehensive look at advances and trends in the field over time.

There are two final points to make about scholarship surrounding the Linear B texts, one positive and one a warning. First, the focus of the field has shifted away from the originally inevitable (in the twenty-five or so years after the decipherment) concentration on publication of the documents and interpreting the language of the texts and the specialized semantics of their vocabulary. All of the general studies of aspects of the Mycenaean palatial period now include specialist articles and chapters that give state-of-the-art looks at what the tablets tell us and, even more important, what they do not tell us (i.e., the limitations that we have to impose on speculation).

Second, because interpretation of these texts requires such an array of scholarly skills, the interpretation of newly discovered tablets has until recently involved extensive informal collaboration during a period of intensive preliminary study. It is necessary to say that the interpretation of the most recently discovered Thebes tablets did not follow this practice. Many radical and outright wrong ideas were put forward in the first official publication of the texts. Unfortunately, specialists in other areas, without any way of judging, may use these ideas as definitive explanations of the texts and what they mean. Reviews (Palaima 2003b) and special seminars have tried to correct this anomaly (Deger-Jalkotzy and Panagl 2006). *Caveant lectores*.

## WHAT THE TEXTS TELL US

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A survey of the ideograms and the numbers associated with them gives us a general sense of the main focuses of the economies of Mycenaean palatial territories.

Basic agricultural ideograms (grains, figs, olives, olive oil, wine) are standard in Linear A and Linear B. Linear B tablets from Knossos give us records of major harvests. One Knossos tablet records about a million liters of grain as a harvest (*amā*) at the site of *da-wo* in the Mesara. Other texts give us terminology for agricultural specialists (e.g., ‘overseers of figs’ *opisūkoī*; ‘overseers of digging’ *opiskaphēwes*; ‘winnowers’ *\*akhnēwes*). Food and land parcels on which food crops could be grown are the major ways palatial centers and village communities compensated individuals for labor and other services. In each locality, the apportioning and use of communal land was overseen by a *dāmos*, a collective group, presumably of elders, which is etymologically connected with the idea of ‘apportioning.’ The ‘holding’ of land parcels brought with it obligations, and it was often a reward for services rendered to local communities or the palatial centers.

There are extensive land tenure series at Pylos (Ventris and Chadwick 1973, 252–74, 443–56) involving individuals termed ‘servants’—in what sense is hard to know—of the deity, specialist craftspersons of the *wanax* (‘king’), and individuals (again including work specialists) who are associated with the *lāwāgetās* (a military leader and official in charge of overseeing the role of ‘aliens’ in a palatial territory; see Nikoloudis 2006, 2008). Nonfood products like flax, terebinth, and wood are also carefully monitored because they were essential for vital palatial industries:

flax in the manufacture of articles made out of cloth (in this case, linen), including sails; terebinth in perfumed oil production; and wood in the construction of ships, buildings, furniture, chariots, and weaponry.

Animals are also carefully monitored in texts that reveal how the palatial centers controlled economic activities and organized economic operations. The texts also give evidence of the degree to which the palatial system relied on (1) influential individuals (elites known conventionally as ‘collectors’ and also ‘followers’ of the king; and local ‘big men’ known as *gwasilēwes*); (2) institutions (especially councils of elders, *geronsiai*; collectives under the influence of *gwasilēwes*; and sanctuaries); and (3) locales that had status and power before the palatial centers came into existence and that continue to play a major role in controlling economic affairs.

Sheep were the focus of administration in the wool production industry (Nosch 2008). The Knossos tablets famously monitor a hundred thousand sheep in flocks controlled by collectors, sheep owners, and the deity known at *potnia*. However, sheep are also singled out as sacrificial offerings (*sphaktēria*) and listed as such on records of the resources assembled for commensal ceremonies. Likewise, bulls, goats, and pigs are listed as sacrificial offerings, but they are also recorded as economic items, used for their hides and other body parts. Male bovids are allocated in teams as draught animals, and we also have groups of cowherds listed together with wall builders on a major construction project. For all of these animals, words for specialized attendants (i.e., herdsmen, although the social implications of the modern equivalents are doubtless misleading) are attested.

Here we have already given the correct impression that the palatial centers constructed remarkably successful economic engines within their regions. The palatial system maximized productivity and made it possible for the Mycenaeans to compete in the international economy of the period (Palaima 2007). The picture the tablets give us of the successful mobilization of resources within regions is reflected in the archaeologically attested development (Bennet 2007).

Of primary concern, as Thucydides stresses in his survey of Greek prehistory and history, is military preparedness, which provided protection against attacks, whether from rival palatial territories or foreign cultures. These had the potential to disrupt and reduce the effectiveness of the exploitation of natural resources (foodstuffs and raw materials like timber) that were the basis of the palatial economies.

The Mycenaean military industrial complex, therefore, had a dominant position within the economy and society of the palatial territories (Palaima 1999). Nearly half of the definitive monograph on archaeological ideograms (Vandenabeele and Olivier 1979) is devoted to armor, weaponry, horses, chariots, and wheels. A single tablet from Pylos (Jn 829) records a prospective collection of recycled bronze (from sanctuaries and from officials overseeing agricultural labor) sufficient for 33,000 arrowheads or 142 spearheads. All of the sites except Midea (with very few tablets) attest to the production, refurbishing, and distribution of military equipment.

One tablet alone at Pylos lists 151 chariot wheels. The chariot force at Knossos in the period of the RCT texts numbers between 173 and 250 chariots with horses and accompanying sets of armor. Other Knossos records deal with the manufacture

of swords. Of the four tablets from Khania, one fragmentary text records 10 pairs of chariot wheels. At Pylos, one recently interpreted record (An 1282) lists assignments of groups of men (broken down into groups of 18 and 36) assigned to work on chariots, chariot wheels, flint (for spear- or arrowheads), horse feeding sacks, and spear and javelin shafts. Pylos also has page-shaped tablets that track the assignment of large numbers of men to 'coastal watcher' contingents and to rowing groups. In the latter case there are explicit references to their obligation to row, to groups of men designated by foreign ethnics, and to the involvement of the *lāwāgetās* and possibly even the *wanaks* in the mobilization of these men.

There are some 5,000 persons listed in collective groups as dependent labor on the Pylos texts (Hiller 1988) and roughly another 800 or so of more elevated status, listed by personal name (Nakassis 2008, 560). Set against the estimated population of 50,000 (Whitelaw 2001, 64) for the entire region and keeping in mind the haphazardly incomplete nature of the texts that we have, the Linear B tablets from Pylos give us a good impression of successful state formation and relative prosperity in a region that in later historical times never reached such a level of general well-being. The texts help us to see that the palatial centers in the various regions of the Mycenaean world relied on their status, powers of coercion, control of religious ceremonies, manipulation of networks of social institutions, and continually renegotiated relationships with high-status individuals. All of these techniques are visible in the Linear B tablets. They give us good evidence of the general human instinct for what Thucydides and Aristotle call *autarkeia*, the self-sufficiency and self-determination that comes to Mycenaean palatial centers or historical Greek *poleis* only when they acquire, exploit, and protect the resources of their regions.

*I dedicate this chapter to my friend and mentor Emmett L. Bennett, Jr., who turned ninety-one years of age on July 12, 2009, the birthday he is very pleased to share with Michael Ventris.*

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