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**STUDIES IN AEGEAN ARCHAEOLOGY
PRESENTED TO MALCOLM H. WIENER
AS HE ENTERS HIS 65th YEAR**

II

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LINEAR A > LINEAR B*

Linear B has often been judged to be a deficient and inefficient writing system for expressing the Greek language, a pale and pathetic forerunner of the vastly superior alphabet. Kirk, in the latest full commentary on the *Iliad* of Homer, presents this view in the usual way:¹

"In many respects [the] strange Greek backwardness over writing (presumably due in part to Minoan influence) and the insistence on clinging to the worst available system – and then dropping even that without immediate replacement – must have been disadvantageous."

Presumably by "disadvantageous" Kirk means to culture as a whole, and more specifically to literacy. There is no question but that the invention of the Greek alphabet was one of the most significant events in the history of writing, and that the alphabet is a more unambiguous method of expressing language in written form. However, assessments such as Kirk's do not take into account the historical moment of interaction between the Mycenaean Greeks and the Minoan Cretans which led to the formation of a script for writing Greek. Viewed in its proper pre-alphabetic Aegean cultural context, Linear B, far from being the "worst available system," was adequate for the purposes for which the Mycenaeans used writing.² Moreover, the phonetic features of Linear B are the well-motivated and in many ways elegant results of tailoring the existing Linear A script to be able to represent the salient features of Greek as it was spoken in the 15th century B.C.³ As we shall discuss herein, the creator(s) of Linear B also incorporated/retained features that made it possible to represent important and distinctive Minoan phonemes precisely.

We should keep in mind that the Linear B script was used for 200+ years for systematic and extensive record-keeping purposes that were vital to the functioning of Mycenaean palatial economy and society. Linear B is now attested on tablets and/or nodules at two Cretan sites (Khania and Knossos) and five mainland sites (Thebes, Mycenae, Midea, Tiryns and Pylos). The kinds of ambiguities which cause modern alphabet-using scholars to concentrate on the supposed shortcomings of the Linear B syllabary would not have troubled the many Mycenaean writers (30+ scribes at Pylos, ca. 100 scribes at Knossos) and readers of Linear B. In fact for those who used the script 1400-1200 B.C., the two most commonly cited problems (sign multivalency and the principles of spelling) would have posed as little impediment to understanding what was written as determining the phonetic value of the sequence *-ough* in occurrences such as *bought*, *bough*, *tough*, *though*, *through* poses to native English speakers, readers and/or writers. The fault, we claim, is not in the script, but in ourselves for not being able to adjust from an alphabetic mindset.

* Malcolm Wiener's interests in the interaction of Minoan and Mycenaean cultures, in the evidence provided by ancient scripts, and in research projects such as *Studies in Mycenaean Inscriptions and Dialect* are well known to all Aegeanists and well appreciated by the two authors of this paper. In this contribution, we investigate structural aspects of the Linear B writing system that give evidence for how the creators and the first and later users of Linear B were influenced by, if not full or partial members of, the Minoan-influenced cultural milieu in which the script was created. This is also the kind of defense of Linear B as a functioning script that Tom Palaima has discussed with Malcolm Wiener in snippets during many personal conversations in New York, Crete and the Cyclades, and telephonically from Austin, over the years.

1 G.S. KIRK, *The Iliad: A Commentary I* (1985) 15.

2 For a survey of the uses of Mycenaean writing, cf. T.G. PALAIMA, "Comments on Mycenaean Literacy," in J.T. KILLEN, J.L. MELENA, J.P. OLIVIER (eds), *Studies in Mycenaean and Classical Greek Presented to John Chadwick*, *Minos* 20-22 (1987) 499-510.

3 On the probable date for the invention of the Linear B script, see T.G. PALAIMA, "The Development of the Mycenaean Writing System," in J.P. OLIVIER and T.G. PALAIMA (eds), *Texts, Tablets and Scribes: Studies in Mycenaean Epigraphy and Economy in Honor of Emmett L. Bennett, Jr.*, *Minos Suppl.* 10 (1988) 269-342.

We shall start by examining the origin of the script as a tool for recording and transmitting spoken language in symbolic form. The source of the Linear B writing system, and its relation to Linear A, is a question over which scholars have been puzzling since Sir Arthur Evans discovered the first texts at Knossos in the early years of this century. Even at that stage, before decipherment, Evans, working with the Linear B materials he himself had excavated at Knossos and with such early finds as the inscribed stirrup jar from Orchomenos, was able to establish two important points: (1) Linear A and Linear B "contain a large proportion of common elements;"⁴ and (2) Linear B was not simply an evolved form of Linear A, because Linear B contained a number of new signs. Thus, Evans set forth the main principle for studying and understanding the relationship between the two scripts, i.e., close analysis of the sign repertoires of the two systems, based on the notion that Linear B was somehow a transformation of Linear A that included the invention of new signs. The implications of the newly invented signs for understanding how Linear B was created and why it has its particular features have never been completely investigated or understood.

The decipherment of Linear B in 1952 permitted scholars to study the phonetic structure of the Linear B script while comparing the sign repertoires of Linear A and Linear B. Naturally this has led to considerable advances in our understanding of the probable structure of Linear A,⁵ and as a result of that, we can observe and propose explanations for the structural peculiarities – known by some as inadequacies – of the Linear B script.⁶ Moreover, comparison with the Classical Cypriote Syllabary, which was in use from ca. 800 B.C. until the third century, can also be revealing. The parallels between Linear B and the Cypriote script for the most part have been ignored by scholars who have criticized Linear B for its deficiencies, while generally accepting the Cypriote Syllabary as an adequate method of writing Greek – and sparing it the criticisms directed at Linear B. In fact, the Cypriote script, with the same core structural features as Linear B, held its own for a long while alongside and against the Greek alphabet.⁷ The Cypriote Syllabary provides independent confirmation of what features users of a syllabic script felt it necessary to have in order to represent Greek adequately. Two further parallels make the analogy even more compelling. First, the Cypriote Syllabary ultimately derives from the Minoan tradition of writing through Cypro-Minoan stages. Second, the Cypriote Syllabary also was developed and used in a multicultural and multilingual context.

The Linear B script has a basic core of 59 signs, in comparison to the 55 core signs of the Cypriote Syllabary and a total of about 100 phonetic signs in Linear A (see Tables 1 and 2). Of course, since Linear A has not been deciphered, we cannot identify its essential core. The core of Linear B is slightly larger because it represents an earlier stage of Greek than the Cypriote Syllabary does. Linear B records Greek before the development of labiovelars into their predictable historical Greek outcomes (labials before /a/ and /o/, dentals before /i/ and /e/), so it has a distinct series of four signs to represent the labiovelar consonants before /a/ /e/ /i/ and /o/. The core signs of both Linear B and the Cypriote Syllabary can represent Greek with a tolerable degree of contextual specificity and exactness when used

4 A. EVANS, *Scripta Minoa* I (1909) 38.

5 Y. DUHOUX, "Le linéaire A: problèmes de déchiffrement," in Y. DUHOUX, T.G. PALAIMA and J. BENNETT (eds), *Problems in Decipherment*, *BCILL* 49 (1989) 59-119.

6 For concise representative summaries, cf. L.R. PALMER, *The Greek Language* (1980) 29-33; J.L. MELENA and M.S. RUIPEREZ, *Oi Mυκηναίοι Έλληνες* (1996) 79, 81; 85; R.D. WOODARD, *Greek Writing from Knossos to Homer* (1997) 8-18; E.L. BENNETT, JR., "Aegean Scripts," in P.T. DANIELS and W. BRIGHT (eds), *The World's Writing Systems* (1996) 125-133.

7 Cf. T.G. PALAIMA, "The Advent of the Greek Alphabet on Cyprus: A Competition of Scripts," in C. BAURAIN et al. (eds), *Phoinikeia Grammata, Collections d'Études Classiques* 6 (1991) 449-471. For a complete survey of writing on Cyprus, cf. N. HIRSCHFELD (ed.), *The PASP Data Base for the Use of Scripts on Cyprus, Minos* 13 Suppl. (1996). It should be noted (cf. Table 2) that the Cypriote Syllabary itself shows clear signs of imbalanced experimentation and development through time in order to represent both the non-Greek Eteocypriote language or languages and features of Greek like *zd-* or *dz-* and *ks*. See the various regional variants of the syllabary in O. MASSON, *Les inscriptions chypriotes syllabiques*² (1983).

with the established orthographic conventions.⁸ Both scripts represent all syllables as open: either as Vowel alone or Consonant + Vowel syllables. In Linear B, significantly, some Consonant + Glide + Vowel syllables can also be fully represented.

Linear B is criticized for being structurally skewed because it distinguishes between voiced and unvoiced dental stops (possessing separate sign series for *d*- and *t*-), but does not distinguish between voiced and unvoiced labials (*/b/* and */p/*) or velars (*/d/* and */t/*).⁹ However, such criticism fails to recognize that the voiced labial stop */b/*, which would be indicated in Linear B by means of the *p*-series signs, is not at all well represented in Greek. This, of course, parallels the underrepresentation of *b* in Proto-Indo-European which has long been a puzzle. We propose that such underrepresentation of a key phoneme should be used to explain what is only a seeming asymmetry in the writing system. Since there are so few voiced labials – in historical Greek, most instances of *b* come from earlier labiovelars (e.g., Mycenaean *qa-si-re-u* > historical Gk. *basileus*; Mycenaean *go-o* > historical Greek *bous*) which are represented in Linear B by the separate *q*-series (cf. Table 1)¹⁰ – it would have seemed less incumbent on the designer(s) of the writing system to distinguish */b/* from the voiceless labial */p/*. Those who created and used Linear B tolerated a structural imbalance in representing voiced and unvoiced stops because it would have been less efficient for them to expand the sign repertory in order to denote a little-attested distinction.¹¹ Writing systems (especially syllabaries like Linear B wherein consistent representation of a single distinct consonantal phoneme calls for at least five signs) are invented, operate and develop weighing the tradeoff between completeness/clarity of phonetic representation and economy of size of the overall set of signs. We should note that voiced dentals do have a distinct graphic representation in Linear B, i.e., *t* is distinguished from *d*-. We shall discuss this later.

As we have just seen, there are a number of sign multivalencies in both the Linear B and the Cypriote Syllabic scripts (cf. Tables 1 and 2). The consonantal values are ambiguous with regard to voicing and aspiration. A single sign can represent an entire class of related phonetic values. For example sign *44 in Table 1, which is *conventionally* transcribed as *ke*, has the values *ke*, *ge*, or *k^he*. The writers and readers of Linear B would have automatically written and read the sign with the value appropriate to a given context, without having to go through the artificial process of *translation* and *identification* that modern scholars must perform. Remember again how unconsciously and instantaneously native speakers-readers-writers of English in Roman alphabetic characters select among multivalent historical spellings in *-ough*.

The prime exception to ambiguity of voicing is the dental consonants of Linear B, where a distinction is made between voiced and voiceless stops, that is, between *d* and *t*, but not between the voiceless unaspirated stops and voiceless aspirates (between *t* and *t^h*). If we take into consideration the special status of coronals in the languages of the world, then it seems quite natural that further refinement would be made in the system only at this point of articulation. Compare, for example, the case of nasals in English, where only alveolar nasals assimilate to a following consonant. Think of the following examples in fast speech:

in Detroit [...n d...]	in Brussels [...m b...]	in Calcutta [...ŋ k...]
from Detroit [...m d...]	from Brussels [...m b...]	from Calcutta [...m k...]
long day [...ŋ d...]	long boat [...ŋ b...]	long car [...ŋ k...]

8 On these conventions, see WOODARD (*supra* n. 6) 19-132, and D.G. MILLER, "Ancient Scripts and Phonological Knowledge," *Current Issues in Linguistic Theory* 116 (1994) 1-37.

9 In both cases a single series does service for voiced, unvoiced and unvoiced aspirates and the values of the signs are *conventionally* represented by *p*- and *k*-.

10 It is possible, we think, that the term *barbaros* used by the later Greeks for *foreigners* might have the form that it does – using the relatively unusual *b* sound – in order to imitate the nonsensical and strange speech of non-Indo-European speaking foreigners who pronounced *b* or sounds akin to it.

11 It should be pointed out that despite the more frequent occurrence of */b/* in the historical Cypriote dialect, wherein certain labiovelars had already developed into voiced labials, the writers and readers of the script found it unproblematical to use what we conventionally term the *p*-series to stand for */p/*, */p^h/* and */b/*.

In these examples, only the final alveolar *n* – which is a coronal, like the Greek dentals – assimilates to the following consonant. The final velar and the final labial do not assimilate. If one were asked to predict which series, which place of articulation, were to be singled out, it would be the coronals. Crosslinguistically then it is not really surprising that only the dentals distinguish voicing in Linear B.

Furthermore, there is historical motivation for the distinction from within Greek itself. What has been considered a structural inconsistency or deformity of the writing system – that is, distinguishing *t* from *d*, but not *p* from *b* or *k* from *g* – actually is efficient in terms of what Greek speakers from the 15th to the 12th centuries B.C. needed to represent. *p* is not distinguished from *b* because the underrepresentation of *b* at this stage of Greek makes the distinction unnecessary in practical terms. Perhaps *g* is not distinguished from *k* for the same reason, because it would have been inefficient to do so, again in terms of systemic utility.

There are other ambiguities in both the Linear B and the Cypriote Syllabic systems (cf. Tables 1 and 2) that are puzzling to us mainly because we are so used to alphabetic representation of language. Although the Classical Cypriote Syllabary distinguishes between *l* and *r*, Linear B does not. Most complex onsets (consonant clusters) are expressed only by means of sign sequences, with empty (or dummy) vowels, if at all. Vowel length and consonant gemination are also not indicated. In other words, the people who developed the Cypriote Syllabary and those who developed Linear B felt no need to make these so-called 'improvements' in their writing system. They did not disambiguate these features because the features were not intolerably ambiguous to them. Both scripts contain signs that are clear inventions not found in their parent scripts, so such innovation was a viable option which they chose to exercise in other cases, but not in these.

What distinguishes Linear B from the Cypriote Syllabary is the existence in Linear B of about 30 additional phonetic (as opposed to ideographic or logographic) signs that are not absolutely essential for expressing Greek, as the Cypriote script expressed it. We have termed these non-core or additional signs in Table 1. However, we believe that these extra signs in Linear B were useful and well-motivated additions to the system. These signs can be grouped into those that are securely identified, and those for which the phonetic values are either unknown or provisional. It is clear that some of these signs were retained in Linear B from Linear A because they were useful in representing 'foreign' sounds, that is, sounds peculiar to or common in the language or languages of Minoan Crete (To cite a parallel, the Greek letter *k* was retained in Latin). Both signs *22 and *56 are attested in Linear A and retained in Linear B, where sign *22 is used exclusively in the Knossos corpus and on inscribed transport stirrup jars manufactured in Crete, and sign *56 is likewise used primarily on Cretan texts and a few times on mainland tablets.¹² It is probable that the phonetic value of the consonant in these signs is a prenasalized labial (sign *22 = *mbi* and sign *56 = *mba*) or something similar that is close but not quite the same as the labial initial syllables (*bi/pi* and *ba/pa*) found in Greek.¹³

FREQUENCY OF OCCURRENCE OF LINEAR B SIGNS *22 and *56
(the new unpublished Thebes tablets not included)

	KN	PY	MY	TH	TI		KN	PY	MY	TH	TI
*22	61	0	0	0	0	*56	65	2	1?	1	0

12 Sign *56 occurs on Thebes sealing Wu 45. We await publication of the new collection of tablets in order to introduce their evidence fully into this discussion. The latest proposal by V. ARAVANTINOS, L. GODART, and A. SACCONI, *Atti della Accademia Nazionale dei Lincei* 192 (1995) 21-25, that *56 = *ko* because of the single occurrence of personal name *56-*ru-we* on new tablet 201 and *ko-ru-we* on new tablet 121, runs counter to all other evidence, which they choose simply to dismiss as irrelevant. We must await full publication in order to assess by context whether these new names are in fact identical.

13 J.L. MELENA, "On Untransliterated Syllabograms *56 and *22," in P.H. ILIEVSKI and L. CREPAJAC (eds), *Tractata Mycenaea* (1987) 203-232.

Moreover, signs *22 and *56 are used in Cretan toponyms, personal names, and technical vocabulary, all examples of contexts where the borrowing of foreign words is so common that it is hardly even a consideration in any theory of language contact:

— in Cretan toponyms: *da*.*22-*to*, *56-*ko-we*;

— in personal names: *56-*i-ti*, *56-*ti*,]*56-*i-ti-je*[all of which occur as the recipient of oil in the KN Fh and Fp series, perhaps even as a theonym whose very name is related to the site of Phaistos; *ta*.*22-*de-so* on TH inscribed stirrup jars manufactured in Crete; *ka-ra*.*56-*so* who is a *te-o-jo do-e-m* in the Pylos E- series (En 659 and Eo 269) and provides the two definite instances for the use of sign *56 elsewhere than at Knossos;

— or technical vocabulary: e.g., *56-*ra-ku-ja* which is used to describe the emerald blue color of cloth on KN Ld 587.2 (cf. Hesych. βαρακίς; γλαύκινον ἱμάτιον, Akk. *barrāqtu*, Hebr. *bāreqet*). This term is a loan word probably borrowed from Semitic into Minoan and then from Minoan into Greek in order to describe a special color of cloth. Consider, by comparison, French 'ecru' or 'taupe' in English.

In the last example, as in others, alternative treatments of the same lexical item give clues to the phonetic value of the rare sign and indicate how such words could have been – and were – spelled using signs from the core of the Linear B script. *56-*ra-ku-ja* is found spelled *pa-ra-ku-ja* on KN Ld 575.b by the same scribe (Hand 116) in the same series of cloth tablets at Knossos. This makes it clear that sign *56 was retained in order to provide a phonetic precision in representing certain foreign or 'Minoan' sounds that could have been otherwise accommodated by signs of the core of the Linear B syllabary. At Pylos four times in the Ta series, spelling with *pa*- prevails in a related term: *pa-ra-ku-we*. At Knossos on tablet Sp 4451 an adjective of material *pa-ra-ku-we-jo* shares spelling with *pa*-. Likewise one finds alternative spellings of a personal name: *ka-ra*.*56-*so* (PY E- series) vs. *ka-ra-pa-so* (PY Jn 389 and MY Oi 705.3).

The instances of *56 at Pylos are interesting for several reasons. The personal name is written with the retained sign both by Hand 41 on tablet Eo 269 and by Hand 1 on tablet En 659. This indicates that, however rarely used, the sign existed in the standard repertory of two major scribes whose work defines the main palaeographic Classes iii and i respectively, and they could produce the sign when the context of important records, like the landholding documents of the religious district of *pa-ki-ja-ne*, called for exact identification of an individual with a non-Greek 'Minoan' personal name. If one assumes, as is reasonable, that this category of 'extra' signs was retained at first by 'scribes' on Crete who were to some degree bilingual and became biscriptual as well, then the evidence in the Pylos tablets reveals that a type of graphic 'bilingualism' lasted to the very end of the Mycenaean palatial period, i.e., at least two centuries. Signs *22 and *56 were retained and used predominantly within a Cretan context, but not by all scribes writing Linear B in Crete, nor even absolutely consistently by individual scribes (e.g., Hand 116). The variation within the work of Hand 116 may be due to the oral or written source(s) of the information he was recording, i.e., how he heard or read the technical term before writing it down at different times on different tablets. We can only speculate whether the instances of spelling with *pa* vs. *56 at Knossos and on the mainland offer evidence of Greek-speaking scribes who did not hear non-Greek phonetic subtleties, or had not acquired or retained in their repertories certain signs which would have been, strictly speaking, superfluous for recording Greek.

Another innovation in the Linear B system is the mid-vowel series. Linear A has a 3-vowel system, using *a*, *u*, and *i*. As is usual in such a case, the vowels are maximally distinct in the vowel space, consisting of a high front, a low, and a high back vowel.¹⁴ Linear B added a mid-back-vowel series with *o* and another with *e*. Many of the Linear B *o*- signs and a lesser

number of the *e*- signs were newly invented.¹⁵ Nonetheless, in both columns there was some retention and reassignment of Linear A signs to express sounds the Greeks deemed important.¹⁶

Another category of extra signs in Linear B are those that are termed doublets and complexes. Doublet signs are those that can be replaced by a single other sign, and therefore serve in some sense to disambiguate. On present evidence they occur only for the low vowel *a* in the five-vowel system of Greek. Sign *25 represents the phonetic value *ha*, with aspiration resulting from the loss of intervocalic and initial sigma, as in *pa-we-a₂* (= *pharweha* < **pharwesa*) and *a₂-te-ro* (= *hateron* < **sm-tero-n*). Note that this represents an intermediate stage of the change, before medial aspiration is lost as well. Sign *43, or *a₃*, represents the diphthong *ai*, in initial position. This is a striking exception to the Mycenaean orthographic practice which does not express¹⁷ the so-called palatal *i*-offglide in diphthongs. The situation with sign *85 is parallel: it is the same vowel *a*, but with a so-called labial *u*-offglide. It is equivalent to the diphthong *au*, and is used almost universally in initial position.¹⁸ This, too, is surprising, since normal Mycenaean practice spells out separately the *u* element in the other diphthongs *ou* and *eu*. However, the same sign is represented in Linear A, and perhaps was retained because it was perceived to be convenient for representing a relatively frequent or prominent initial diphthong in Greek, such as names beginning with *au-to*, like *au-to-te-qa-jo*. The same argument for retention from Linear A has been proposed for sign *25 and sign *43, but this is unlikely in light of the fact that neither of these signs exists in the extant corpus of Linear A inscriptions.

Complex signs are signs which represent syllable initial Consonant + Glide combinations, generally referred to as palatalized and labialized series. The signs in these series that are readily identifiable from frequent occurrence and spelling alternations are: *rja*, *rjo*, *tja* and *pte* (which is generally agreed now to come from *pje*¹⁹) and *nwa*, *dwe*, *dwo*, and *two*,

15 The Linear B core signs for *do*, *jo*, *mo*, *no*, *qo*, *so*, *wo*, *pe* and *we* are inventions.

16 It has been further postulated that the predominance of exceptional signs in the Linear B *a* series is the result of the transformation of Linear A into Linear B, whereby the old Linear A *a* class was kept fairly much intact, while the special Minoan *i* and *-u* series were used to fill out the Mycenaean *-e* and *-o* series. This approach to explaining the peculiarities of the Linear B syllabary is sensible, but it is also problematical. It makes some sense when applied to the idiosyncratic distinction in Linear B (in contrast to the Cypriote syllabary) between *d* and *t*, but not between *l* and *r*. Thus it has been proposed that Linear A had a single liquid series /*r*/, a single dental series /*t*/, and single series for a sound between /*l*/ and /*d*/. This would explain the existence of the special Mycenaean *d*-series and the confusion in Linear B spelling at Knossos: *da-pu₂-ri-to-jo* = *Laburinthoio*. It also is intriguing to note that six of the eleven signs shared by Linear B and the Cypriote syllabary belong to the dental or liquid class: Cypriote *ta/da*, *ti/di*, *to/do*, *la*, *lo*, *ri* corresponding to Linear B *da*, *ti*, *to*, *la/ra*, *lo/ro*, *li/ri*. Moreover, despite the weakness in the Minoan *e* and *o* series, only one of the six Linear B signs for dentals and liquids with *e* and *o* vowels is invented: *do*.

17 Except in rare cases like *ko-to-i-na* (KN Uf 981, 1022, 1031) and *pa-i-to* and its derivatives. It should be noted that spellings like *pa-i-to* and the presumed personal name *56-*i-ti*, *56-*ti*,]* 56-*i-ti-je* [furnish evidence that the preservation of signs for *a* with palatal and labial off-glides is consistent with the conjectured 'Minoan' factor in preserving like palatalized and labialized consonantal series. Normally the diphthongal *i* would not be written: e.g., *56-*ti* is a 'normal' spelling, whereas *56-*i-ti* represents diphthongal *i* abnormally in a 'Minoan' word.

18 There are only two possible exceptions to the use of *85 to represent the initial *au* diphthong: *a-u-qe* (KN Sd 4402.a) which is a contextually certain misspelling for *o-u-qe* (with possible 'Minoan' confusion of *a* and *o*, the latter sound being unrepresented in Linear A) and *a-u-ta-na*, which is a contextless lexical item on KN Xd 7649.

19 M. LEJEUNE, "Doublets et complexes," in L.R. PALMER and J. CHADWICK (eds), *Mycenaean Studies* (1966) 135-137, deduced that the one seemingly exceptional sign *pte* resulted from a phonological development within Greek from *pje* > *pte*. Explaining away this conspicuous anomaly supported the theory that the complex signs resulted from Linear A which had two additional consonant series: one palatalized, one labialized. However, the majority of doublet and complex signs are inventions in Linear B, i.e., they are not attested in Linear A: *ha*, *ai*, *dwe*, *dwo*, *nwa*(?), *rjo*, *two* and signs like *63, *64, *87 for which tentative values of *dwi*, *twi*, and *twe* have been proposed. Particularly disconcerting is the fact that the signs for *ha*, *ai*, *nwa* (?), *dwi* and *twi* are Linear B inventions, since these vowel series (*a* and *i*) are strong in Linear A. Also troubling is that, so far as we know, no attempt was made to balance out the Linear B script by, for example, creating or retaining signs for *he* and *ho*, *ei* and *oi*, *eu* and *ou*.

and perhaps *twa* in sign *82. The sign *dwo* is particularly interesting. The sign itself is in fact a visual pun, since it consists of two *wo* signs placed side by side in mirror imaging – in other (Greek) words: *dwo wo*'s. This whimsical compounding to create a needed sign tells us three things: first, that someone, and someone with a clever sense of humor, was consciously monkeying with the writing system; second, that the complex sign was created after the simple one – it gives us information, that is, about the chronology of invention; third, that whoever was adjusting the sign repertory was doing so from a Greek perspective – both the sign *wo* and the sign *dwo* are invented in Linear B. Furthermore, José Melena suggests that sign *63 may represent *dwi* and sign *64 may represent *twi*, and sign *79 = *wjo*.²⁰ L.R. Palmer, in proposing that the complex signs resulted from the existence in Linear A of three consonant series (plain, palatalized, and labialized), asserts that retaining such distinctions in Linear B was "superfluous for Greek."²¹

Viewing these signs as superfluous is unconvincing since many of these complex signs are innovations in Linear B, and scribes were unlikely to create out of the blue elements of the script that were in essence frills. It seems more profitable to look for a motivation for the development of these signs by the writers of Linear B, and we can start by looking at sign distribution. Of over 50 instances of labialized complex signs, nearly half occur in anthroponyms. Approximately 15 further uses of these complex signs are in fragments, and so unfortunately are not informative. The remaining instances of the labialized complex signs occur where a stem ending in a dental, whether voiceless, voiced, or nasal, co-occurs with either the adjectival suffix *-went*-²² or the perfect participial suffix *-wos-* or *-wot-*. These numbers are completely proportionate to the overall lexicon of Linear B: approximately 70% of all sign groups are anthroponyms or toponyms; perhaps 20% are fragments, and the remaining small amount are actual Greek words. The rate of occurrence of these signs is therefore statistically significant; and it is remarkable that almost all such occurrences cross a morpheme boundary between stem and suffix. Rather than being "superfluous for Greek," it seems then that these signs were created to act as concise means for expressing commonly occurring morphological combinations.

We suspect that the same distribution holds true here for the palatalized complex signs.²³ Probably these occur most often crossing morpheme boundaries: for example, in words with the *-iō* verbal suffix. We could crunch the numbers here, too, but for the fact that the verbal system is severely underrepresented in the extant Linear B documents. But that does not mean that the creators of the script did not take into account key features of their normal living language, such as the verbal system, in figuring out how to represent speech in written characters. If the script was created, as seems likely, in an administrative environment, its creators certainly would have been familiar with the palatalized consonants arising from the *-ios* ethnic and material adjective suffix and the *-iā* noun suffix which appear so frequently in Linear B documents having to do with people and material objects. A closer look should be taken, too, at the Linear B *z-* series. We do not know what exactly signs of this series represented at the time the script was in use,²⁴ but, like *pte*, they are likely to be somehow connected with palatalized consonants, since, for example, *za* in *to-pe-za* and *zo* in *me-zo-e* represent developments from *dja* and *gjo* respectively.

This account of the invention of some of the complex signs as motivated by convenience and utility brings us back to our starting point, the defense of Linear B as a writing system. Here let us look again at some further remarks from Kirk's Commentary on the *Iliad*:²⁵

20 In addition to other well-argued hypotheses: *86 = *dwa*, *83 = *nwe*, *19 = *nwo*. Cf. MELENA (*supra* n. 13) 203.

21 PALMER (*supra* n. 6) 31.

22 For a discussion of the *-went-* suffix, cf. Y. DUHOUX, "Linéaire B crétois et continental," in ILIEVSKI and CREPAJAC (*supra* n. 13) 113-114. Greek also has an productive toponymic suffix in *-wont-*.

23 Consider *rjo*, *rai* (both invented) and *tja* and *rja* (both retained from Linear A) and the frequency in Mycenaean Greek of ethnics and material adjectives in *-ios*, *iā* (e.g., *po-pu-rjo* = πορφύριος).

24 Cf. A. MORPURGO DAVIES, "Mycenaean and Greek Language," in A. MORPURGO DAVIES and Y. DUHOUX (eds), *Linear B: A 1984 Survey* (1985) 79-80. They are either palatalized consonants or affricates.

25 KIRK (*supra* n. 1) 14.

"The truth is that Ancient Greece acquired a fully practicable writing system (which the Linear B script never was) unusually late in its general cultural development, in the transition from non-literacy to literacy in other observable cultures."

"Truth" is rather a strong way to refer to this clearly subjective statement, and Kirk never tells us the writing systems to which he is comparing Linear B. In fact, the prevailing scripts at this time (and at comparable stages of cultural development) were syllabaries. Let us not forget that Cypro-Minoan (derived ultimately from Linear A) preceded the more streamlined Cypriote Syllabary. To cite a contemporary script used to write an Indo-European language in a multiethnic cultural setting, Hittite was written with an extremely complicated cuneiform system that used phonetic signs, ideograms, Sumerograms, and Akkadograms.²⁶ The core of phonetic signs used for Hittite was very large since it included closed syllables as well as open syllables. Despite this fully extended core, Hittite writing is notoriously ambiguous and often does not represent the spoken value of Hittite at all – for example, we still do not know the word for 'woman' since it always appears as the Sumerogram 'SAL'. The point we wish to stress is that cuneiform Hittite probably did not represent spoken Hittite any better – or any worse – than Linear B represented spoken Mycenaean Greek. Furthermore, a simplistic statement like Kirk's can only be made anachronistically, looking at earlier writing through the filter of the alphabet, next to which, of course, other writing systems appear at a disadvantage.

The invention of the alphabet revolutionized writing and made it much more flexible and useful. But just as we cannot blame the early settlers of the West for traveling by so inconvenient a method as wagon and horse, we cannot blame the Mycenaeans for not thinking up the alphabet. Writing for the Mycenaeans – at least the writing which is preserved today – was to keep accounts, and Linear B was an efficient and convenient system for this purpose, and it was so used for two centuries or more. The creators and developers of the Linear B script were influenced by certain features present in the Linear A system, but they seem also to have been guided by considerable understanding of the phonemic and morphological structure of the Greek language, which led them judiciously to retain, and even elaborate upon, well-motivated *non-core* features like palatalized and labialized consonant signs and a few signs for special 'Minoan' phonemes (*mba* and *mbi*). In its final administrative year the Palace of Nestor at Pylos had ca. 30 scribes capable of using the script with considerable ease and subtlety for texts of varying administrative and cultural importance.²⁷ Given the ethos of the oral poetic tradition,²⁸ it is unlikely that Linear B was ever employed as a mnemonic instrument for transmitting epic literature. But it could have been used effectively for 'higher' literate purposes of the sort represented in the Hittite corpus: ritual texts, legal texts, even official letters. Our point is not to claim that it was, but that the writing system itself posed no impediment to doing so. In this case judgements on structural beauty are formed from the point of view of the beholder. *wo-ro-do* 1,²⁹ one might say, in any other representation would smell as sweet.

Thomas G. PALAIMA and Elizabeth SIKKENG

26 Cf. G.B. GRAGG, "Hittite Cuneiform," in DANIELS and BRIGHT (*supra* n. 6) 65-70.

27 T.G. PALAIMA, *The Scribes of Pylos* (1988).

28 Cf. K. ROBB, *Literacy and Paideia in Ancient Greece* (1994).

29 Trans. "A rose" (*wo-ro-do* = *ῥόδον* = *ῥόδον* = 'rose').

Table 1. Structure of Linear B and Sign Correspondences with Linear A

BOLD indicates that the sign representing a particular value appears in Linear B, but not in Linear A
 Ø indicates that a particular consonant + vowel combination was not needed for representing Greek in the Mycenaean period

Consonant	CORE				
	VOWEL <i>a</i>	VOWEL <i>e</i>	VOWEL <i>i</i>	VOWEL <i>o</i>	VOWEL <i>u</i>
PURE	a	e	i	o	u
<i>d-</i>	da	de	di	do	du
<i>t-</i>	ta	te	ti	to	tu
<i>p-</i>	pa	pe	pi	po	pu
<i>k-</i>	ka	<i>*44</i> ke	ki	ko	ku
<i>n-</i>	na	ne	ni	no	nu
<i>m-</i>	ma	me	mi	mo	mu
<i>q-</i>	qa	qe	qi	qo	Ø
<i>r-</i>	ra	re	ri	ro	ru
<i>s-</i>	sa	se	si	so	su
<i>w-</i>	wa	we	wi	wo	Ø
<i>j-</i>	ja	je	Ø	jo	ju
<i>z-</i>	za	ze	Ø	zo	zu
NON-CORE or ADDITIONAL SIGNS					
<u>DIPHTHONGS</u>	a3 (ai)	ra3 (rai)	au		
<u>ASPIRATE</u>	a2 (ha)				
<u>PALATALIZED</u>	ta2 (tja)				
		pte (<*pje)			
	ra2 (rja)			ro2 (rjo)	
<u>LABIALIZED</u>		dwe		dwo	
	nwa	nwe			
	twa	twe		two	
<u>'MINOAN'</u>	<i>*56</i> (mba)		<i>*22</i> (mbi)		pu2
<u>UNASSIGNED</u>	<i>*18, *19, *34, *35, *47, *49, *63, *64</i> (twi?), <i>*79, *83, *86, *87, *89</i>				

Table 2. Structure of the Classical Cypriote Syllabary and Sign Correspondences with Linear B

BOLD indicates that the sign representing a particular value appears in Linear B
 The value of the Linear B sign, if it differs from the Cypriote Syllabic value, is given in parentheses

Consonant	CORE				
	VOWEL <i>a</i>	VOWEL <i>e</i>	VOWEL <i>i</i>	VOWEL <i>o</i>	VOWEL <i>u</i>
PURE	a	e	i	o	u
<i>t</i>	ta (LB = da)	te	ti	to	tu
<i>p</i>	pa	pe	pi	po	pu
<i>k</i>	ka	ke	ki	ko	ku
<i>n</i>	na	ne	ni	no	nu
<i>m</i>	ma	me	mi	mo	mu
<i>r</i>	ra	re	ri	ro	ru
<i>l</i>	la (LB = ra)	le	li	lo (LB = ro)	lu
<i>s</i>	sa	se	si	so	su
<i>w</i>	wa	we	wi	wo	Ø
<i>j</i>	ja	je	Ø	jo	-
<i>z</i>	za	-	-	zo	Ø
<i>ks</i>	-	kse	-	-	-