

# STUDI MICENEI ED EGEO-ANATOLICI

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# PYLOS TA 716 AND MYCENAEAN RITUAL PARAPHERNALIA: A RECONSIDERATION

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*Thomas G. Palaima, Nicholas G. Blackwell*

## *Summary*

Pylos tablet Ta 716 is crucial for our reconstructing and understanding whatever ceremonial or ritual activities called into being the inventory of (1) fire-management instruments; (2) cooking, serving and consuming vessels; and (3) luxurious tables, chairs and stools that are recorded, in that order, in retrievable detail on the other twelve Ta series tablets (Palaima 2000; Tsagrakis 2012, 323; Varias 2016, 551-558). In their recent hypothetical reconstruction of ceremonies in the Palace of Nestor at Pylos, Farmer and Lane (*SMEA NS 2*, 2016, 41-79) do not take into account the full range of evidence needed to interpret the items on Ta 716 and they misrepresent or overlook the work of specialist scholars who contribute to a sound understanding of Ta 716 through the study of etymology, lexicography, iconography, Linear B texts, Mycenaean ideograms (signs for objects) and archaeological artifacts.

We here provide an accurate close reading of the full text of Ta 716 that is based on decades of work by other scholars. We identify and explain all three pairs of items on Ta 716 differently than Farmer and Lane (2016, 53) do, and we discuss Ta 716 as a historical document. The items inventoried on Ta 716 must be interpreted in relationship to one another. Farmer and Lane propose that the objects on Ta 716 are:

- (a) “patently” chains “around-the-throne” or “between-the-thrones”;
- (b) “patently” a pair of double axes, “the ubiquitous Minoan religious symbol”;
- (c) “two (short) swords”.

We argue from the unique lexical entries for these paired items, from the likewise unique iconography of the two associated ideograms, from the particular order of items in the text, from material correlates in the archaeological record, from ritual imagery on vases, and from comparative ritual practices that tablet Ta 716 records six items in all:

- (a) one pair of ritual bridles (perhaps bits, metal-reinforced nose bands or cavessons), specified as ‘with gold wrapping or plating’ ‘on this side and that’ and perhaps overlaid on toggles or cheek pieces, used to control sacrificial animals;
- (b) one pair of hammer axes or stunning axes used in the act of ritual slaying;
- (c) one pair of sacrificial knives.

This is not a case of picking which of two equally plausible lines of argument best suits our particular views of the Mycenaean past. We do have such a nearly unsolvable case of picking and choosing when it comes to the interpretation of the verb *te-ke* meaning either ‘appointed’ or ‘buried’ in the key introductory explanatory phrase of the heading line (Ta 711.1) for the entire Ta series of tablets (see our Conclusion). However, Ta 716 is more straightforward.

Taken together, our arguments call into question the reliability of the unusual ceremonial activities that Farmer and Lane (2016) propose.

## INTRODUCTION

The thirteen tablets of the Pylos Ta series have helped us to explore many aspects of human activities and behaviors at the Palace of Nestor at Pylos in the Late Helladic (LH) IIIB into IIIC period (see Vitale 2006, 190-191, 200 table 2 and Vitale, Stocker, Davis forthcoming for dating the destruction of the Palace of Nestor at Pylos to LH IIIC phase 1) ever since Michael Ventris read the tablets as “Greek inventories in the Minoan script” (Ventris 1954). The evidence provided in the Ta texts about high-value (in terms of materials, workmanship and religious and political symbolism) furniture, ceremonial vessels and ritual implements<sup>1</sup> is the basis for our reconstructions of ceremonies,

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<sup>1</sup> Some of these artifacts, particularly those in metal, are possibly precious sacred heirlooms. Cf. Palaima 2003a regarding Cretan tripods and cauldrons in the Ta series and in the Shaft Graves at Mycenae. Cf. Wiener 2013, 160-163 for Minoan predominance in metallurgical technology and Minoan exportation of bronze weaponry and bronze vessels throughout the Aegean from the 18th into the 15th centuries BCE.

including ranked communal feasting and associated processions and hierarchical seating, held at the Mycenaean palatial center at Pylos (Palaima 2004; 2012, 345-347 and notes 3-7).

Recently the inventory texts of the Ta series have been used by Farmer and Lane (2016, 41) as evidence for “developing a scenario” of “a particular investiture ceremony” “as one example of how close reading of both documents and inhabited spaces can be used to create middle-range theories for the exploration of agency, personhood, practice, and community” at the Palace of Nestor and elsewhere. Their program is laudably ambitious and contains many important insights. In particular, they use theoretical approaches in ways that allow us to explore new hypotheses about what the Mycenaeans might have been doing with their lives and why.

But their program has one main flaw. In discussing evidence relating to Linear B tablets, it does not adhere to fundamental principles of scholarship. In presenting new ideas and interpretations, we all are obliged to examine carefully past and current interpretations and ideas of other scholars and to understand and explain them accurately, particularly when proposing to replace them.

Linear B texts like those of the Pylos Ta series are particularly challenging because the evidence needed to interpret them can be linguistic, lexicographical, iconographical, palaeographical, archival, archaeological, historical, anthropological, culturally comparative and more (Palaima 2000, 236). Because of ambiguities in the ways in which Linear B signs are used to ‘spell’ words, we are often presented with a number of ways of reading a given Mycenaean sign-group. We advise readers to consult the *lemmata* in Aura Jorro (1985; 1993) for particular Mycenaean terms in order to get a sense of the wide range of interpretations proposed from 1953 onwards. Because Linear B tablets are inscriptions recording human activities in the real Mycenaean world, it is necessary to pay attention to their archaeological contexts and the archaeological correlates of the objects recorded on them as ideograms (signs for objects) or logograms in order to choose the most probable ‘reading’ among possible alternatives. (On the use of the terms ‘ideograms’ and/or ‘logograms’, see discussions in Melena 2014, 128-163; Thompson 2012, esp. 545-549, 560; Petrakis 2017 *passim*.)

Farmer and Lane correctly identify *close* reading of Linear B texts as a key tool of their scenario-building. *Close* reading implies *accurate* reading. Accurate reading requires taking care to consider all the evidence pertinent to reading the phonetic and ideographic/logographic contents of the tablets. If we read crucial texts wrong, the result is inescapable. Our reconstructions and scenarios will be wrong.

We are not referring here to differences of scholarly opinion based on evidence that has been examined with care. Differences of scholarly opinion are what force us to reexamine data, to look for and at new data, and to consider new perspectives and approaches.

What we are speaking about, and deeply concerned about, is not taking enough pains to see what the evidence really is, to report accurately what other scholars have thought and written about it, to address seriously the thoughts and scholarly arguments of others, and to weigh cautiously whether past scholarly interpretations are still valid or not.

Here we offer modifications or corrections to statements made in Farmer and Lane (2016) about the treatment of the Ta series, and particularly of Ta 716, in Palaima (2004). We also offer substantial new evidence concerning archaeological correlates, comparative ritual practices and the etymologies and lexicographical histories of the three key terms on the tablet.

The errors and omissions in Farmer and Lane (2016) mostly have to do with (1) neglecting to take into account the careful work of scholars whom Palaima (2004) cites; (2) claiming that Palaima (2004) ‘ignores’ facts that he explicitly includes in his article; or (3) that Palaima (2004) ‘imagines’ things that had already been observed by scholars specializing in etymology, lexicography, iconography and material remains; and (4) using categorical pronouncements in place of reasoned argument.

We offer our collaborative observations here in a collegial spirit and welcome further discussion of individual points. We also give updated views on what Ta 716 seems to mean. Given that we correct certain views advanced in Palaima (2004), we naturally stand to be corrected by other scholars. In building our case for Ta 716, we occasionally resort to textual and iconographical comparisons from periods well after the Late Bronze Age. We acknowledge

the potential methodological problem of using material from classical antiquity to reconstruct Mycenaean society. The use of such material here is justified by the absence or scarcity of Late Bronze Age texts and remains that shed light on Ta 716's *hapax* words and ideograms. Of the items listed on the tablet, a bridle-like object was the most difficult even for us to comprehend. To give readers an idea of what the Linear B word *pa-sa-ro* might refer to, we cite iconography from the Geometric and Archaic periods since parallels are lacking in Mycenaean imagery. We also cite instances as late as the Roman period of animal sacrifices that rely on stunning *and* cutting implements. These asynchronous parallels merely provide illustrations to augment our discussion of Ta 716 and are not the *raison d'être* for our interpretation.

## INTERPRETING AND EXPLAINING TA 716

So that there will be no possibility of misrepresenting their views, here is what Farmer and Lane (2016) have to say about Palaima (2004) and how Palaima, as a Linear B specialist, explained the contents of the Pylos Ta tablets within his general overview of Mycenaean feasting practices. Please note that Farmer and Lane nowhere in their article mention tablet Ta 716 and do not, therefore, interpret it as a discrete and significant text relating to Mycenaean ritual practices. Yet doing so is a *sine qua non* for understanding its contents and how it fits into the Ta series.

Farmer and Lane (2016, 53):

Palaima (2004) seems to ignore the obvious pairing of stools with thrones in Ta 707, 708, and 714, the remaining 12 of 21 (22?) stools catalogued separately, in order by type of decoration. His interpretation of *pa-sa-ro* as *psalon* “halter” is not only based on a dubious entry in Hesychios’ *Lexicon* (probably an error of *psalion*), but it also seems to avoid the basic sense of the root *psal(l)-/psel(l)-* “ring”, as a closed shape or link (cf. *psal[l]is* “rings, bands; vaults”; *psallion* “chain”; *psel[l]ion* “armlet” or “anklet”). Palaima follows Del Frio (1990) in reading *a-pi-to-ni-jo* as *amp<sup>h</sup>itornios* “carved, lathed all around”. One would expect *\*a-pi-to-no-to amp<sup>h</sup>itornōtos*, *\*a-pi-te-to-no-me-no amp<sup>h</sup>itetornōmenos*, or similar. *A-pi-to-ni-jo* in the context of *to-no* “thrones” is patently *amp<sup>h</sup>it<sup>h</sup>ornios* “around-the-throne” or “between-the-thrones” (cf. *ent<sup>h</sup>ronios* “enthroned”, *i.e.* “pertaining to one in a throne”). *Qi-se-pe-e [sic]* is dual *k<sup>w</sup>isp<sup>h</sup>ebe [sic]*, equivalent to later Greek *xip<sup>h</sup>ei* “two (short) swords”. The latter word, like its congeners (*e.g.* Egyptian *hpš* “khopesh”) is never used to mean “sacrificing knife” (as Greek *sp<sup>h</sup>agis* is). The inscribed double-axe is patently the ubiquitous Minoan religious symbol, not the ‘stunning axe’ he imagines. The latter may be found in representations of officiants carrying single-edge ‘Syrian’ axes or maces on Cretan seal-stones (Haysom 2010; Marinatos 1993, 5, 7, 127-130).

We have organized our thoughts and arguments here into a point-by-point commentary of what Farmer and Lane (2016) have to say about the evidence extracted from Pylos Ta 716. Since these points are interrelated and make up an overall interpretation, there will be some overlap and some repetition. We have tried to minimize both. We also offer here new evidence and new ideas pertinent to the overall interpretation of the Ta series.

To begin, since Farmer and Lane (2016) nowhere give the text of PY Ta 716 and omit this crucial text from their Appendix of Ta tablets, we give it here:

Ta 716 (S641 H 2) (Fig.1)

.1 pa-sa-ro , ku-ru-so , a-pi , to-ni-jo 2 wa-o \*232 2  
 .2 qi-si-pe-e \*234 2

Our translation

.1 bridle devices with golden laminate on both sides 2 *wa-o* HAMMER AXE 2  
 .2 sacrificial knives KNIFE 2





Fig. 1. PY Ta 716. Black-and-white photo taken by Émile Seraf in Athens in the 1960's. Labeled and enhanced at upper right for clarity by Kevin Pluta. Photo Archives of the Program in Aegean Scripts and Prehistory, University of Texas at Austin. Courtesy Department of Classics, University of Cincinnati.

Our discussion addresses the interpretation of three disputed words on the tablet: *pa-sa-ro*, *wa-o*, and *qi-si-pe-e*. The translation of *pa-sa-ro* is the most uncertain since there is no accompanying ideogram like the ideograms written next to *wa-o* and *qi-si-pe-e*.

#### POINT-BY-POINT COMMENTARY

(in what follows we use **bold characters** for emphasis)

##### *Regarding the interpretation of objects on other Ta tablets*

1. Farmer and Lane (2016, 53): “Palaima (2004) **seems to ignore the obvious pairing of stools with thrones in Ta 707, 708, and 714**, the remaining 12 of 21 (22?) stools catalogued separately, in order by type of decoration.”

Note: Palaima does not ignore this obvious pairing. Palaima (2004, 235) states:

It can be demonstrated that the Ta inventory itemizes 11 tables (*to-pe-za*), six thrones (*to-no*), and 16 stools (*ta-ra-nu-we*), all made of costly wood or stone and exquisitely constructed in combination with precious inlay materials and figural decorations. The numbers here may not be haphazard. There are 22 pieces of furniture for seating and 11 tables, which would allow for the kind of pairing observed in the iconographical record (albeit on ‘campstools’). **Three sets of matched throne and stool ensembles are identified (Ta 708.2-.3, Ta 707.1-.3).**

Because of an intervening partial entry on Ta 714.3, Palaima (2004) does not consider Ta 714 evidence for a secure ‘matched set’, although we agree with Farmer and Lane that it is likely that there is a “pairing of stools with thrones” on this tablet, too.

##### *Regarding the interpretation of pa-sa-ro on Ta 716*

2. Farmer and Lane (2016, 53): “His interpretation of *pa-sa-ro* as *psalon* ‘halter’ ...”

Note: Nowhere in Palaima (2004) does Palaima use the term ‘halter’ and certainly not of *pa-sa-ro*. For a clear and comprehensive glossary of the often confusing terminology for ancient elements of horse-controlling equipment, see Raulwing 2002; and for images of elaborate “ancient elements of harness or bridling,” see Littauer, Crouwel 2002a, 33 fig. 5 and pls. 100 and 112 (9th-c. BC neo-Assyrian) and pl. 145 (14th c. BC Tutankhamun).

Ventris and Chadwick (1973, 519-521) long ago used ‘halter’ in connection with *po-qe-wi-ja* = *phorg<sup>w</sup>ēwiai* (later Greek φορβειάι, nom. plur., from φέρβω). Ventris and Chadwick were using ‘halters’ to refer to what we would call ‘feeding sacks’ for horses and other livestock and their attachment equipment, in certain cases ropes that tie animals to feeding troughs or mangers. Lane (2011, 76) also translates *po-qe-wi-ja* as ‘halters’ in order to differentiate it from the term *a-ni-ja*, which he translates as ‘bridles’, although everywhere in Mycenaean *a-ni-ja* (Aura Jorro 1985, 66-67 *s.v.*) means ‘reins’ for chariot equipment. Xenophon in his treatise on horsemanship uses the term *phorbeia* (Eq. 5.1: τῆς ἐπιφατνιδίας φορβειᾶς) for the tying paraphernalia that secures a horse by its head to the manger where its food source is. This description resembles the portrayal of tethered horses on a Late Geometric amphora (see Fig. 2)

For this reason Palaima (2004) uses and we still further here support the use of ‘bridle’ for *pa-sa-ro* (see below § 4.) Here is what Palaima (2004, 234 note 101) says:

[It has been proposed that t]he *pa-sa-ro* listed non[-]ideographically on Ta 716 ..., along with the sacrificial knives and stunning axes, are ‘chains’. We can refine this now with our better understanding of the feasting context of the Ta series. **A gloss in Hesychius tells us that ψαλόν is a ‘kind of bridle’.** This is a direct reference to the **bridle bit** that restrains an animal. Cf. Chantraine 1968-1980, vol. 4.2, p. 1285, *s.v.* ψαλόν.

The ψάλιον in its normal use **is the ring or chain that passes under the chin of an animal and helps to restrain it** [along with the bit]. The use of the word to mean ‘chain’ generically is poetical. **On Pylos Ta 716 we have a pair of gold-leaf-covered (*i.e.*, ritual) bridle chains.** These go together with the two stunning axes (*wa-o*) and the two sacrificial knives (*qi-si-pe-e*) to make up two sets of ritual slaughtering implements for the sacrifice of the animals.

3. Farmer and Lane (2016, 53): “His interpretation of *pa-sa-ro* as *psalon* ‘halter’...also **seems to avoid the basic sense of the root *psal(l)-/psel(l)- ‘ring’***, as a closed shape or link (cf. *psal[l]is* ‘rings, bands; vaults’; *psallion* ‘chain’; *psel[l]ion* ‘armlet’ or ‘anklet’).”

They then go on to interpret (p. 62) the phrase *pa-sa-ro*, *ku-ru-so*, *a-pi*, *to-ni-jo* in Ta 716 as “‘chains around’ or ‘rings between the throne(s)’” and propose that these were used to tie together thrones and that “each [throne] could be equipped with its own dagger or short sword and double-axe.”

Note: In our view, this whole matter of what to call the paraphernalia that is recorded here as *pa-sa-ro* is confusing. Palaima (2004) used the word ‘chains’ because from quite early on (*e.g.*, Palmer 1963, 358 and 442 *s. pa-sa-ro* with an unfortunate typo ‘chairs’ [*sic*] for ‘chains’; Ventris, Chadwick 1973, 502; Ruipérez, Melena 1990, 175) ‘chains’ was the common translation of *pa-sa-ro* in the scholarly literature. And it still continues to be so (Melena 2014, 127; Bernabé, Luján 2008, 227; contrast Hiller 2011, 199, who, without explanation, translates *pa-sa-ro psallō* as ‘posts’; Piquero 2016, 771 gives: “sost. nom. du. *lpsalōl* ‘collane’, ‘catene’ [meno prob. *lpassaloi* ‘chiodi’]” *i.e.*, ‘necklaces’, ‘chains’, less probably – [we would now say impossibly] – ‘nails’).



Fig. 2. Late Geometric Amphora. 750 BCE-700 BCE. Attributed to Empedocles painter. Iris & B. Gerald Cantor Center for Visual Arts at Stanford University; Committee for Art Acquisitions Fund 1978.144.

Palaima (2004, 234 note 101) says, following Chantraine (see above § 2) on *psalon*, that we are dealing with “the **ring** or **chain** that passes under the chin of an animal and helps to restrain it.” This is an unfortunate choice of phrasing by Palaima, because it makes it seem as if what is being discussed here is a common ‘linked chain’. The term here is not referring to ‘linked chains’, but to bridle paraphernalia, including tying devices like those shown on the Late Geometric amphora referenced above (Fig. 2).

The terms in question are found in the three entries in Hesychius and the *lemma* ψαλόν in Chantraine (2009, 1238-1239) and in Beekes (2010, 1660). Here is Hesychius in the latest edition (with translation and explication by Palaima):

- Hesychius § 42 \*ψαλίους ἵππων· χαλινοῖς ἵππων· κωλυτηρίους (Eur. *Rhes.* 27)  
 § 43 \*ψάλιον· κωλυτήριον· χαλινός (Aesch. *Cho.* 962. Plat. *Leg.* 692a)  
 § 50 \*ψαλόν· εἶδος χαλινοῦ  
 § 42 \*ψαλίους ἵππων· bits [or bridles] of horses. restraining devices (Eur. *Rhes.* 27) (the form is in the dative plural)  
 § 43 \*ψάλιον· restraining device. bit[or bridle] (Aesch. *Cho.* 962. Plat. *Leg.* 692a) (the form is in the nominative singular neuter)  
 § 50 \*ψαλόν· a type of bit [or bridle] (the form is in the nominative singular neuter)

In later use (*LSJ* s. χαλινός) χαλινός can refer to the ‘bit’ and to ‘the bridle’, occasionally perhaps to the ‘reins’ (Beekes 2010, 1610 s. χαλινός). The latter term ‘bridle’ is used in the sense found in a now out-of-date English usage referring to what was accurately called a ‘headstall’, *i.e.*, the entire paraphernalia that serves as restraints for the heads of horses, and by extension for other animals. And all three glosses here in Hesychius are in agreement that ψάλιον and ψαλόν have to do with equipment for securing the head of an animal.

See Aristophanes, *Pax* 155-156 for a very close parallel to the phrase in Ta 716. In Aristophanes, the character Trygaeus is speaking to his dung beetle conceived comically as a substitute for the mythical winged horse Pegasus:

χρυσοχάλινον πάταγον ψαλίων / διακινήσας

‘having stirred up (διακινήσας) a gold-bridled (χρυσοχάλινον) clatter (πάταγον) of equine headstalls (ψαλίων)’ (trans. Palaima)

Farmer and Lane posit that the presumably related forms (*psal[l]is* ‘rings, bands; vaults’; *psallion* ‘chain’; *psel[l]ion*) have ‘ring’ as their basic meaning. This is misleading. It suggests that the objects to which these words refer have closed shapes and that the ‘chains’ consist of strings of inter-connected closed links. The supplement to the *LSJ* specifies (p. 317 s. ψέλιον) that the ‘armlet’ or ‘bracelet’ is “U-shaped in the form of an interrupted circle” (cf. Beekes, 2010, 1660 s. ψαλόν). And this form is “only a doublet of ψάλιον” and is used late and among Persians and Gauls (Herodotus, Polybius, and 3rd and 1st century BCE papyri).

We should make clear that occurrences of ψαλίς (ψελίς) ψέλιον (ψέλλιον) point to uses that are open ended, *i.e.*, not ‘closed rings’ and certainly not ‘chains’ plural *per se*. The Supplement to *LSJ* under ψάλις (*LSJ* Suppl, 317) makes it clear that whether it means a ‘cutting tool’ (‘scissors’ or better ‘shears’) or a ‘bracelet’, or a ‘band’ for affixing hangings to a column, or a ‘vaulted chamber’, the shape is an open-ended U. And that is what head-restraining ‘bridle’ equipment is when viewed topologically.

All that being said, the generic translation ‘chains’ for *pa-sa-ro*, as we have noted just above, prevails in Melena (2014, 127), Bernabé and Luján (2008, 227) and Piquero (2016, 771). But none of these scholars considers fully what kind of ‘chaining’ or ‘hindering’ devices these two *pa-sa-ro* are in the context of Ta 716.

4. Farmer and Lane (2016, 53): “His interpretation of *pa-sa-ro* as *psalon* ‘halter’ is...based on a dubious entry in Hesychios’ *Lexicon* (probably an error of *psalion*).”

Note: The entry *psalon* in Hesychius is not dubious. It is one of three still included in the latest edition of Hesychius (Hansen and Cunningham 2009, XVII-XVIII, 241) as seen just above. All three *lemma-ta* are asterisked as being from the “manuscripts and or families” of St. Cyril’s *Lexicon*, and the form *psalon* is accepted by Chantraine and his later editors (2009) and by Beekes (2010) as the basic *lemma* for this whole family of possibly related words. The form is also accepted by Melena (2014, 127).

Michael Meier-Brügger was in charge of editing this *lemma* for the new edition of Chantraine (2009). Meier-Brügger saw fit to let stand the explanation that Mycenaean *pa-sa-ro* is in fact ψαλόν. Working with words attested in the historical Greek lexicon *pa-sa-ro* = ψαλόν is in our opinion the strongest possible interpretation. Only one viable alternative proposal has ever been advanced, namely that *pa-sa-ro* = *passalos* means ‘boss’ or ‘peg’ or ‘nail’ (‘chiodo’). But it was proved early on to be linguistically impossible (Palmer 1963, 358; Ventris and Chadwick 1973, 569). Nonetheless, Del Frego (1990, 324, 330) still argued for *pa-sa-ro* = *passalō* in the dual number meaning ‘chiodi’. He now sees that it is impossible (Del Frego pers. comm. via email 25 July 2019).

Far from rejecting ψαλόν as a false form, Chantraine (2009, 1238-1239) rightly proposes that “[t]ous les éléments de vocabulaire en ψαλιο- et ψαλιδ- (avec doublets de timbre ε, et possibilité de métathèse dialectale ψ- > σπ-) reposit sur cette base qui désigne divers objets de forme arrondie.” Beekes (2010, 1660 s. ψαλόν) agrees: “Here belong all words with ψαλιο-, ψαλιδ-, (also with ε and σπ-).”

What Chantraine and Beekes are proposing would be the natural direction for the development of words. An original basic noun form in *-os* (masculine), *-ā* (feminine), or *-on* (neuter) – in the case of *pa-sa-ro*, the noun is ψαλόν neuter – then generates ‘adjectivally’ derived forms in *-ios* (masculine), *-iā* (feminine), or *-ion* (neuter). In this case the neuter adjectival form takes on a life of its own as a noun, essentially meaning ‘the thing relating to a *psalon*’.

The scholia to Euripides, *Phoenissae* 793 take the form ψαλίων appearing there as the genitive plural of an adjectival form. It would be ψάλιος, -ā, -on derived from ψαλόν. The chorus is addressing Ares, god of war:

ἄρμασι καὶ ψαλίων τετραβάμοσι μωνυχοπώλων  
ἰππέαις ἐπὶ χεύμασι βαίνων

A literal translation is:

[Ares] with chariots (ἄρμασι) and with four-footed (τετραβάμοσι)  
horse-drivings (ἰππέαις) of bridled (*i.e.*, tamed: ψαλίων)  
one-hooved foals (μωνυχοπώλων) going upon streams  
(ἐπὶ χεύμασι βαίνων) (trans. Palaima)

There is a *scholion* regarding ψαλίων in the *LSJ* Suppl 317:

ψάλιος, ὁ σημαίνει γὰρ ἢ μὲν (λέξις, sc. ψάλιος) τὸ τιθασευόμενος ἵππος.

Again translating literally:

“ψάλιος, the word (sc. ψάλιος) means the ‘domesticated horse’” (trans. Palaima)

The scholiast means that the word ψάλιος describes “a horse that has gotten used to the bridle.” ψάλιος is an adjectival form (from ψαλόν) in *-ios* (masculine), *-iā* (feminine), *-ion* (neuter) meaning

‘having to do with a bridle’ or ‘embridled’, *i.e.*, ‘subjected already to the bridle’, *i.e.*, ‘tamed’ or ‘domesticated’. *psalion* can also be taken, as Palmer (1963, 358) took it, as a diminutive of *psalon*.

Chantraine (2009, 1238-1239) and his editors, as we have seen in § 3, are clear that the entire range of items here has fundamentally to do with the ‘headstall’ or ‘caveçon’ that restrains an animal; it is ‘spécialement de caveçon’.

In their view ψάλιον, ψέλλιον, ψέλιον all have meanings derived from ‘anneau de caveçon’ ouverte en U, d’où le caveçon tout entier (trans. Palaima: the ‘ring of the headstall opened in a U-shape, from where [we get] the whole headstall altogether’). So, for example, ψέλιον is ‘an open bracelet’ or an ‘open necklace’ (Beekes 2010, 1660 translates ‘open ring’ worn by Persians or ‘open collar’ worn by Gauls).

To sum up, *pa-sa-ro* ψαλόν is a kind of ‘chain’ or ‘ring’ only in the sense that Chantraine and Meier-Brügger give to it: the restraining elements or individual ring elements of a bridle. For second millennium Near Eastern and Aegean iconographical and artifactual evidence for metal bits; leather and metallic nose bands (the latter being open U-shaped ‘rings’); circular perforated cheek pieces; the ring elements of caveçons through which the controlling reins are slipped; and nose rings and muzzles, see Littauer (2002, 488 fig. 1b, 493-496, 497-501, 498 fig. 6) and Littauer and Crowell (2002b, 516 n. 3 and fig. 1).

We queried Michael Meier-Brügger about this specific complex of vocabulary for which he was responsible in Chantraine 2009. Meier-Brügger explains (pers. comm. via email 29 July 2019) the complex of terms cautiously and provides a modern illustration of a *caveçon* or German *Kappzaum* (Fig. 3 to which we may compare a 6th-century BCE image of a horse with simple ‘headstall’, Fig. 4):

(1) ψαλ- “zurufen, rufen”, dazu ψαλμός etc. Meine Idee: < \*ps-l-, dabei \*ps- zu Verbum \*pes- “rub” (hethitisch belegt; dazu auch \*pes-ni-)

(2) ψαλόν (bereits myk. PY Ta 716.1 im Dual, aus Gold!), *pa-sa-ro ku-ru-so a-pi to-ni-jo* “?”, auf der gleichen Tafel noch zweimal zwei “Waffen”, *wa-o und qi-si-pe-e*, also was *pa-sa-ro*?

(3) ψάλιον (Xenophon+) “Kappzaum / caveçon“, Kinnkette, Zaum, Gebiss”

(4a) ψέλιον (Hdt.+) “Armband”

(4b) Variante mit ψιλ- Delos 3.Jh.v.+ (aber bereits ψίλιον χρύσεον in einer Weihinschrift eines griechischen Söldners [war unter Psammetichos I in Ägypten] in Priene, Ionisch, 7.Jh.v.: Inschrift publiziert von Olivier Masson 1988, 171-175 [*i.e.*, Masson and Yoyotte 1988, 171-175])

[Our note: For this inscription and the popularity of the ψέλιον, ψέλλιον, ψίλιον, ψίλλιον as a bracelet popular among the upper classes of Persian society and as a gift betokening esteem, we suggest consulting LSJ s. ψέλιον; Masson and Yoyotte 1988; and Barbaro 2018. We note that ψέλιον is considered unrelated to ψάλιον by Ammonius Grammaticus in his *περὶ ὁμοίων καὶ διαφορῶν λέξεων*.]

- (1) von (2)-(4) zu trennen!

- (2) ohne Zusammenhang mit (3) und (4)? Oder doch zusammen??

- (3) und (4) zusammen oder auch zu trennen? Wenn zusammen, wie genau a/e-Wechsel zwischen (3) *psal-* und (4) *psel-*?

- (4a) und (4b) mit e/i-Wechsel kein Problem.

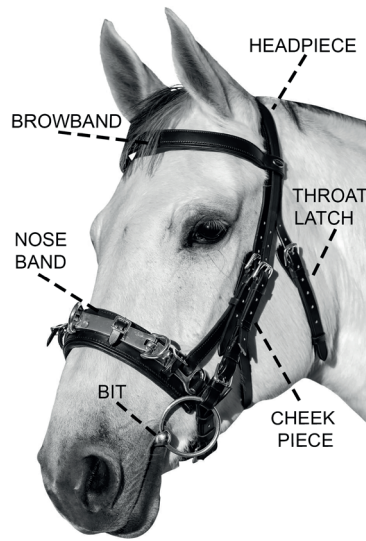


Fig. 3. Image of a modern bridle or headstall. Courtesy Michael Meier-Brügger. Labeled by Palaima and Blackwell.



Fig. 4. Image of a horse with simple 'headstall' mid-6th century BCE. Attic black-figure amphora. SH 1362 side A. State Collection of Antiquities and Glyptothek Munich. Photograph by Renate Kühling.

Meier-Brügger's position statement is clear and cautious. He explains that the main question that remains is whether ψαλόν and ψάλιον are *ohne Zusammenhang* or belong together as related forms. This should not be decided through *a priori* assumptions.

Having rejected the *lemma* ψαλόν as a false form without any justification, Farmer and Lane (2016, 52) nonetheless posit an entirely unattested form: “[*p*]salos/-ā (cf. *psallion*, *psallis*)” in its place and again emphasize that the interpretation of *psalon* as a ‘halter’ “seems to avoid the basic sense of the root *psal(l)-lpsel(l)-* ‘ring’, as a closed shape or link.” As we have already seen and shall now see further, it does not.

Beekes (2010, 1659, 1660 and 1662 *s.* ψάλιον ψαλίζ ψαλόν ψέλιον) glosses ψάλιον as ‘curb-chain’ *vel sim.* and then states (2010, 1659): “The gloss ψαλόν· εἶδος χαλινού ‘kind of bit’ (H[esychius]) is probably a mistake for ψάλιον.” But this is a tentative assertion, not an argument. And Beekes (2010, 1660) overrides this remark by himself using ψαλόν as the basic *lemma*. He does not athetize or otherwise demarcate ψαλόν as ‘false’, ‘uncertain’ or ‘dubious’, and he even gives the form as attested in the Mycenaean dialect as *pa-sa-ro* and, as we have seen, as the form from which all the words with forms relating to ψάλιο-, ψαλιδ- etc. that we have catalogued develop.

The form is indeed explicable and need not be a mistake, if we start with our earliest evidence, *i.e.*, Mycenaean *pa-sa-ro*, and proceed as Palmer (1963, 358) interprets the word when discussing Ta 716:

*pa-sa-ro* represents dual ψάλω, this being the basic form from which the later *diminutive* [italics ours] ψάλιον ‘chain’ was derived. The meaning ‘chain’ is compatible with ‘golden’, and this object must be further compatible with the adjacent words *a-pi to-ni-jo*. Only one equivalent suits and that is τόνιον, the diminutive of τόνος in the sense ‘plies’ or ‘strands’ of rope, etc.

The context of Ta 716, as we shall see below, reinforces the associations proposed by Hesychius and Chantraine and Beekes and the *LSJ* Supplement. Likewise, the universal use of ψάλιον later for the curb chains of the bridle, often associated with the χαλινός = ‘bit’, speaks against the well-argued proposal of Speciale (1999, 293) that the two *pa-sa-ro* in Ta 716 are decorative garlands or necklaces of gold used for the victims in sacrificial ceremonies (see Varias 2016, 554 ‘due collane d’oro [da mettere] intorno alle vittime [?]’ and Piquero 2016, 771 ‘collane’).

Finally here Beekes (2010, 1659) takes ψαλίς in its meaning as a ‘supporting ring’ and states: “ψαλίς might be connected with ψέλιον, and probably also with ψάλιον; for seemingly unconnected meanings ‘vault’ and ‘scissors’ no explanation has been found.”

But a satisfactory explanation has long existed and is the basis for the definitions of related terms in Chantraine and in the *LSJ* Supplement. A vault architecturally is an upside down U. In terms of enclosing space, it is *not* a closed circle or ring. The same can be said for metallic equine nose bands. And ancient scissors (better called ‘shears’) were so-called ‘spring scissors’, *i.e.*, two flat blades connected by a U-shaped band. When that band was squeezed, the blades crossed (cf. <https://www.metmuseum.org/art/collection/search/547870>). They, too, are ‘open-ended’ and U-shaped. These insights made many years ago explain the application of these related terms to items that seem, at first glance, disparate.

*Regarding the interpretation of a-pi, to-ni-jo on Ta 716*

5. Farmer and Lane (2016) 53: “Palaima follows Del Freo (1990) in reading *a-pi-to-ni-jo* as *amp<sup>b</sup>itornios* “carved, lathed all around”. One would expect \**a-pi-to-no-to amp<sup>b</sup>itornōtos*, \**a-pi-te-to-no-me-no amp<sup>b</sup>itetornōmenos*, or similar. *A-pi-to-ni-jo* in the context of *to-no* “thrones” is patently *amp<sup>b</sup>it<sup>b</sup>ornios* “around-the-throne” or “between-the-thrones” (cf. *en<sup>b</sup>ronios* “enthroned”, *i.e.* “pertaining to one in a throne”).”

Note: On the rhetorical use of the word ‘patently’, see § 6 below.

For the particular context of *a-pi-to-ni-jo* [precisely transcribed *a-pi, to-ni-jo*], see Pylos tablet Ta 716 (Fig. 1 above). Tablet Ta 716 was so unlike all the rest of the Ta tablets that it was not considered by modern scholars as securely part of the set of Ta tablets headed by Ta 711 until – as Del Freo (1990, 309-310, n. 88) reminds us – Palaima (1988) proved this according to archaeological-contextual and palaeographical considerations.

In fact Farmer and Lane (2016, 70) do not include Ta 716 in their closing appendix that gives the texts of the Ta series of tablets. The phrase *a-pi, to-ni-jo* does *not* occur in the context of the entries of *to-no* = *t<sup>b</sup>ornoī* < *t<sup>b</sup>ronoī* in the Ta tablet series. So there is no compelling reason from context to link *a-pi-to-ni-jo* with *to-no* interpreted as ‘thrones’.

Nonetheless, this is a popular explanation. See, for example, Bernabé and Luján (2008, 227) who admit that “other suggestions have been made.” Many of these other suggestions are critiqued by Del Freo (1990), who specifically points out the shortcomings of interpreting *a-pi, to-ni-jo* as *amp<sup>b</sup>it<sup>b</sup>orniō* (1990, 322-323). This interpretation is made primarily lexically. It is ready to hand and it works no matter how one interprets the two *pa-sa-ro*: ‘studs’, ‘nails’, ‘bosses’, ‘posts’, ‘necklaces’ or ‘garlands’ and ‘chains’ could all be ‘on both sides of’ or somehow ‘around’, ‘surrounding’ or ‘between’ a throne or thrones.

Our point about lack of context for connecting Ta 716 with the Ta tablets mentioning thrones and footstools is not a trivial point. One might argue that it is enough of a context to be part of the same set of thirteen tablets. However, in a series where the tablet-writer is grouping like things together for inventory purposes, he must have good reasons for grouping *pa-sa-ro* on a completely separate tablet with the two other entries here and not with the vases, fire utensils and furniture laid out systematically on the other twelve tablets. If these two *pa-sa-ro* belong with a throne or pair of thrones, why does the scribe not specify the throne or two thrones with which they belong? Why does he not list the *pa-sa-ro* together with them as he lists together other related items in the Ta series?

We should also note that the entire text of Ta 716 is unusual. All three main lexical items that define the objects being inventoried are *hapax*: *pa-sa-ro*, *wa-o* and *qi-si-pe-e*. And both ideograms \*232 and \*234 are *hapax*. Those two ideograms, we argue, are instruments used to stun and slay sacrificial victims. \*232 (see Figs. 5-7) is some kind of hammer or axe-like instrument. \*234 represents a special shape of knife. Del Freo (2016, 149) gives a careful drawing of the ideogram in his general chart of

ideograms. Compare Del Freo (2016, 153) for a sound translation: ‘coltello’. Hiller (2011, 199) reads this entry as ‘two sacrificing [?] knives’. Varias (2016, 554) reads it as ‘2 coltelli’ and elsewhere (2016, 557) comments that the shape of the ideogram suggests that \*234 is either a ‘pugnale’ or a ‘coltello’. See more below in § 6 and § 7.

The common translation of *qi-si-pe-e* \*234 as ‘swords’ (e.g., Melena 2014, 44; Bernabé, Luján 2008, 216) is purely lexical and uses the meaning of *ksiphos* in the historical period. But it does not take into account the specific form of the ideogram here or its archaeological correlates. Nor does it factor in that the common Mycenaean word for sword is \**pa-ka-no p<sup>b</sup>asganon*. This is *not* an imagining (see below), as a simple consultation of the sources cited in Palaima (2004) would prove.

Rewording what Palaima (2004, 236) said, we propose that we have here (1) two ceremonial gold-decorated bridle devices to control the animals during a sacrificial ritual; (2) two hammer axes to stun the heads and cleave the necks of the animals; and (3) two special knives to slit the throats of the animals. Again, keep in mind how unusual it is that all three of the lexical items grouped together on Ta 716 are *hapax* and that the two ideograms also are *hapax*. (See Speciale 1999, 292-293 and Varias 2016, 554-555 for viewing these three items as instruments of sacrifice, but identifying *pa-sa-ro* as ‘collane’ or ‘decorative necklaces or garlands’, i.e., ‘ornamenti con cui il toro era condotto al sacrificio’.) And also keep in mind how frequently information pertaining to Mycenaean sacrificial ceremonies is recorded (for a convenient overview of Linear B texts relating to sacrificial animals, see Killen 1994; Palaima 2004, 220-226; Weilhartner 2005; 2008). The phrase ‘two ceremonial gold bridle devices’ eliminates the ambiguity regarding ‘chains’ and ‘rings’ in the scholarly literature. Bridle devices can have ring elements through which the reins pass thus enabling the driver to control and direct the animals, but they are not in and of themselves ‘rings’ or ‘chains’ (Littauer 2002).

Although no evidence exists in the LH archaeological record for gold (or more precisely gilded, i.e., with constituent parts covered with a veneer of gold) bridle devices, there *are* remains of head gear (e.g., bits and bridle cheek pieces) needed to control a horse. Bronze horse ‘bits’ occur in two LH IIIB metal assemblages: the Paulogiannopoulou hoard from Boeotian Thebes and the Tsountas hoard from Mycenae (Blackwell 2018, online Appendix p. 7; Spyropoulos 1972, pls. 33β and 14ζ). From the early Mycenaean period, fragments of horse bridles exist. Bone disc cheek-pieces or ‘disc-toggles’ came to light in Mycenae’s Shaft Grave IV (Harding 2005, 297), while LH I Mitrou yielded bone toggle pieces with perforated holes for straps (Maran, Van de Moortel 2014, 533-535, figs. 6-8). The bone toggle pieces have carved decoration and would have been positioned on either side of a horse’s head where straps and reins are strung. Perhaps toggle pieces of a ritual bridle could have incorporated gold foil (or gilding) on its surface (though none exist in the archaeological record), leading to a description that the overall bridle has gold laminate *amp<sup>b</sup>i* (i.e., on the toggles or cheek pieces that are situated ‘on one side and the other’).

As for what might be expected morphologically for *a-pi to-ni-jo*, Palmer (1963, 358) proposed *amp<sup>b</sup>itoniō* (from τόνος < τείνω; a nominative dual compound adjective modifying *pa-sa-ro* = *psalō*), interpreted literally as ‘with strands [i.e., of rope] on this side and that’, i.e., ‘double stranded’. Think of a bridle that has ‘things for stretching, pulling’ on this side and that, things that are ritually decorated by covering the surface with a thin layer of gold. Del Freo (1990, 328-330) proposes *amp<sup>b</sup>itoniōi* (comitative dative) *k<sup>b</sup>rūsōi* (adjective of material) ‘con fasciatura d’oro’ = ‘with gold laminate or overlay or plating’ and cites the epic passage where the χρυσοχόος Λαέρκης (the ‘gold pourer’ Laerces, Homer, *Od.* 3.425-426) applies a veneer of gold to the horns of a sacrificial bull. Del Freo’s interpretation of the phrase *ku-ru-so*, *a-pi*, *to-ni-jo* as ‘with gold laminate’ strikes us as the soundest explanation and one that is in line with what Palmer suggested way back in 1963. A scribe recording items for inventorying would take care to note any precious materials covering or incorporated into the items in order to make sure that the items and their valuable components were returned intact, that nothing valuable went missing.



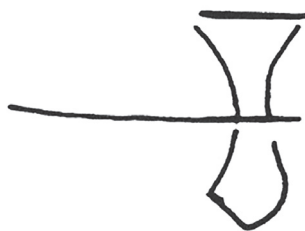


Fig. 5. Ideogram \*232 on PY Ta 716 as used by Speciale 1999, 294, figure 2.



Fig. 6. \*232 close up with *wa-o* on PY Ta 716. Snapshot of RTI image. Program in Aegean Scripts and Prehistory, University of Texas at Austin. Courtesy Department of Classics, University of Cincinnati.

*Regarding the interpretation of wa-o and ideogram \*232 on Ta 716*

6. Farmer and Lane (2016, 53): “The inscribed double-axe [\*232] is **patently** the ubiquitous Minoan religious symbol, not the ‘stunning axe’ he [Palaima] **imagines**.”

Note: On the rhetorical use of the word ‘patently’ to assert that a claim is obvious and requires no supporting argument, see § 5 above.

This, too, is a categorical statement with the adverb ‘patently’ used in place of careful study and thought. There is no reason that this ideogram, if a double axe, needs to represent a symbolic, ceremonial or even functional Minoan implement (for examples of serviceable double axes, see Evely 1993, 41-55; for its symbolic significance, see Haysom 2010). By the 14th-13th centuries BCE, the Mycenaeans employed practical double axes – that differed slightly from traditional Cretan forms – for construction activities (Blackwell 2020b, 218-223). Moreover, the religious association of the Cretan symbol is chiefly absent within the Mycenaean repertoire of double axes (Mylonas 1962, 407). Dakoronia (2016, 388-389) and Kounouklas (2016, 529), however, interpret late Mycenaean double axes from Kynos (East Lokris) as potential sacrificial tools (also see below for our discussion of a double axe-like depiction on a Kynos sherd). A more pressing issue than the functionality of Mycenaean double axes is the accurate identification of the *hapax* ideogram \*232.

Palaima (2004) did not ‘**imagine**’ that sign \*232 is something other than a double axe. Experts in the iconography of ideograms and corresponding artifacts in the archaeological record do not view this ideogram as a ‘**patent**’ double axe at all (see now Killen 1998, 422; Weihartner 2005, 139-140; Del Frio 2016, 153). Ideogram \*232 represents a double-sided implement with a central handle, but a stronger case exists for understanding the sign as something other than a double axe. We now offer further evidence and arguments.

At the outset, we should say that the Linear B word unit *wa-o* is opaque and offers no aid to interpretation, except in the suggestion that we might have here an implement with a specialized name, perhaps even of foreign derivation, corresponding to a specialized practice (cf. Aura Jorro 1993, 406, *s. wa-o*).

We also call attention to other important though still unpublished evidence. From the site of Agios Vasileios in Lakonia a Linear B tablet fragment preserves an entry of an ideogram with an upright shaft and two upper elements followed by the numerical entry ‘2’. It, like \*232, is a double-sided implement with a central handle. Its form, however, is distinctive. Accordingly, it has been classified (Melena 2014, 150 with a sketch of the ideogram) as \*235 SEC*uris*. Melena (*loc. cit.*) in differentiating \*235 from \*232 calls \*235 a ‘double axe’ and \*232 an ‘axe’.

Vassilis Petrakis (pers. comm. via email 13 April 2020) has kindly let us see a photograph of the tablet fragment (for now to be referred to as HV 6) and informed us of a second certain attestation of \*235 on another tablet fragment from Agios Vasileios. In our communication, Petrakis emphasized the

*symmetrical* nature of \*235's blade ends on either side of a distinct central haft. Such symmetry does not occur with the implement portrayed as \*232 on Pylos Ta 716. We concur with Petrakis and Melena that \*235 is significantly different in shape than \*232. We look forward to the results of the fuller study of sign \*235 by Petrakis and Adamantia Vasilogamvrou, who are in the process of publishing the important inscribed material from Agios Vasileios.

If Farmer and Lane had consulted the main sources cited in Palaima 2004 (*e.g.*, Speciale 1999, 294-296; Nikoloudis 2001, 21, 31, fig. 6) including what is still the 'bible' of how ideograms compare with objects in the archaeological record and with objects depicted in iconography (Vandenabeele, Olivier 1979) – none of which are listed in their extensive bibliography (Farmer, Lane 2016, 71-79) – they would have had to address what Vandenabeele and Olivier (1979, 61) conclude about ideogram \*232:

Le tracé de l'idéogramme rappelle, en effet, celui de la double hache *bien que les deux côtés de la hache proprement dite soient dissemblables.*

Toutefois toutes les doubles haches sont à tranchants symétriques. *L'identification de \*232 avec un double hache paraît donc aléatoire et il aurait peut-être mieux valu placer l'idéogramme parmi les non identifiés.* [Italics ours.]

Speciale (1999, 294, n. 34; see also Sacconi 1999, 287) further cites a personal communication from Olivier:

\*232 non pas double hache, mais instrument à la fois pour assommer (mazzapicchio) ['knock out' or 'stunning'] et pour débiter (ascia); en français, il y a un mot pour une "hache-marteau" ['hammer axe' = 'stunning axe'], c'est 'merlin'...

Fig. 5 gives the drawing that Speciale (1999) relied on. It is derived from Vandenabeele and Olivier (1979) and is reasonably accurate and seems to be used in the most recent presentation of the Linear B signary (Del Frio 2016, 153). It is clear enough so that someone looking at the image of \*232 could see that it did not have the symmetrical blades of a standard Cretan (or Mycenaean) 'double axe'.

Fig. 6 gives an RTI image of \*232, and Fig. 7 is a new drawing of \*232 on Ta 716 with the implement rotated upright. The improved RTI image lets us see that the lower element (on the tablet) has a short straight horizontal edge that runs parallel to the rule line.

Once we rotate the ideogram upright ninety degrees counter-clockwise (Fig. 7), we see that its form has the following characteristics. The ideogram's left element flanges outward considerably along its top and bottom edges, making its left end (whether a blade edge or not) about three times as long as the sign's central point (*e.g.*, the shaft hole area that secures a handle's attachment). The left end is also perfectly straight and not convex like many votive or large-scale bronze ceremonial Minoan double axes (*cf.* AR Zf 1 in *GORILA* 4, 162; Marinatos 1993, 5 fig. 4; Haysom 2010, 48-49 [for find contexts] and figs. 2, 4, 6, 7).

The right element of the ideogram does not flange outward continuously, but about 1/2 to 3/5 of the way out along its own upper and lower edges it is beveled, *i.e.*, it tapers inward. Its right edge, which is a straight line, is about the same length as the shaft hole area. (In Fig. 7, the line junctures of the ideogram's right side blur the straight line quality of its cutting edge. The tablet-writer Hand 2 in fact does not lift his stylus completely out of the clay at those junctures.) In its total length the right edge is approximately 2/5 of the length of the left edge.



Fig. 7. Drawing of \*232 based on RTI image. Thomas G. Palaima. Program in Aegean Scripts and Prehistory, University of Texas at Austin. Courtesy Department of Classics, University of Cincinnati.



Fig. 8 a, b. Two views of a shafted hammer-like (double hammer?) tool from the Athens Acropolis Hoard, EAM X 6909. Photographs by Nicholas Blackwell; © Acropolis Museum.

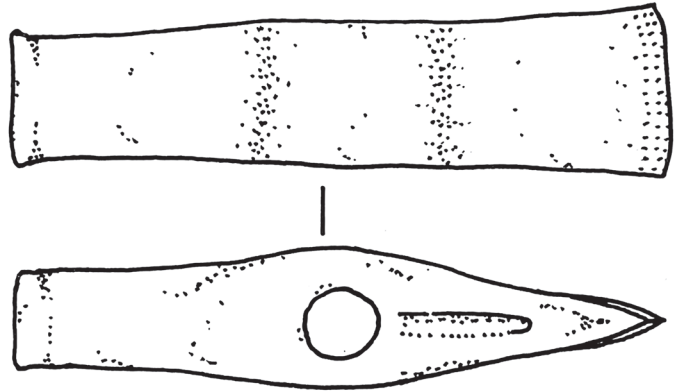


Fig. 9. Neopalatial hammer axe from the South House hoard at Knossos. After Evely 1993, fig. 44.11; by permission of author.

There is noticeable concavity to the upper and lower edges of the left element. The right element has very slight, if any, concavity or convexity along its upper and lower edges before the turning point.

One might interpret the ideogram as representing a worn-down double axe with one cutting edge having a significantly different use history than the other side. Palaima (2004, 114 n. 101), in fact, previously referred to these implements as Cretan heirlooms, a point discussed further below. While the striking ends of functional Minoan and Mycenaean double axes do occasionally preserve signs of unequal use, the differential form of ideogram \*232 from one side to the other is extreme.

We do not think these features relate to a worn-down and disproportionally used implement. Hand 2 is here writing an ideogram that will serve to identify *two* axe-like instruments, arguably with cultic functions. He is not rendering in drawing *one* much-used item stored as a keepsake or destined for recycling. Moreover, Hand 2 does not represent, for example, the tripods which are described lexically on tablet Ta 641 (cf. Vandenabeele and Olivier 1979, pl. CXXI B.2 .2 Ta 641.1β and .3 Ta 641.1γ) as having only ‘one foot’ *e-me po-de* and having ‘its legs burned away’ (Tsagrakis 2012, 331) by drawing the standard tripod ideogram altered with these physical defects. Hand 2 does ‘add’ or ‘subtract’ design elements like handles, since the scribe is using that feature as a grouping category for the *dipa* vases (Ta 641): ones with no ‘ears’, and ones with three or four ‘ears’. The peculiarities of \*232 look to us like design features and we think that is how the image of \*232 was viewed by Speciale and Olivier.

As quoted above, Speciale and Olivier just call \*232 a hammer axe or stunning axe, without seeking archaeological correlates. Metal hammer axes, though rare, do exist in the Aegean archaeological record, yet scholars typically understand these as tools for carpentry, masonry, or even metallurgical work and not as sacrificial instruments. Two examples from the Athens Acropolis hoard at the end of the 13th century BCE represent shafted, double-sided hammer-like objects (Blackwell 2018, 522, fig. 4, lower left corner). One implement is small (L = 5.2 cm) and has been understood as a hammer axe or a double hammer (Spyropoulos 1972, 73, entry 8b). Regardless of its specific interpretation, this object is a practical tool and too small for any association with sacrifice. The other shafted hammer-like item from the Athens hoard is much larger (L = 14.6 cm) (Spyropoulos 1972, 73 entry 8a) (Fig. 8a-b); one end is rectangular and flat while the other side comes to a point, albeit a blunt one that also could have been a hammer head.

Fig. 10. a. Terracotta figure (excavation number 68-1589) from the Mycenae cult center holding a hammer axe. © Mycenae Archive, Faculty of Classics Archives, University of Cambridge; b. Terracotta figure (excavation number 68-1589) from the Mycenae Cult Center holding a hammer axe, view from above; Moore and Tylour 1999, 339. © Mycenae Archive, Faculty of Classics Archives, University of Cambridge.



The Athenian implement, likely related to craftwork, is thus termed a double hammer. An object such as this one, however, would have been sturdy enough to serve as a stunning device, though the shape of this double hammer does not match the ideogram on Ta 716. Stronger parallels exist between ideogram \*232 and shafted, hammer-like implements from Crete (for a list of Minoan examples, see Evelyn 1993, 101). The closest match, albeit earlier in date, to the sign on Ta 716 is a Neopalatial hammer axe from the Knossos South House hoard (Evans 1928, 629, fig. 393a; see Fig. 9).

If \*232 were a metal hammer axe similar to the example from Knossos, the sign's long straight-edged left element might be the hammer or stunning component. This interpretation is limited by the two-dimensionality of the sign, and the ambiguity of the ideogram's left-end profile. Is it a blunt edge that facilitated typical hammer use? The ideogram's shorter-edged and non-concave element on its right side resembles an axe component. The longer straight edge (*i.e.*, the left side of \*232) seems better suited for stunning the forehead (or even the temples, see below) of a sacrificial animal. This would be consistent with Roman sacrificial iconography where the hammers used to stun the ox "have particularly large, heavy-looking heads" (Aldrete, 2014, 41 n. 38). The right edge of the implement in the ideogram would cut into the back of the neck of the animal precisely and sever the neck vertebrae. It is possible, however, to argue for a reverse procedure in stunning the animal and severing the vertebrae in its neck, *i.e.*, the longer edge for chopping, the shorter edge for targeted striking and stunning.

Hand 2 in writing Ta 716 does not specify what material this implement \*232 is made of. Since metal hammer axes are rare and not principally ritualistic items, it is possible that the hammer-axe implements recorded on the tablet were made of stone. This material ambiguity is not unusual, despite the fact that the scribe mentions in other entries various materials for the objects themselves and for inlaid decoration. He does this to differentiate one item, or one group of items, from another, so that the inventory can be checked later and the integrity of the items as well. He uses mainly the following categories (see Varias 2016, 554 for a succinct overview; Bernabé, Luján 2008, 202-205):

- a. physical condition (*e.g.*, 'missing legs', *i.e.*, literally 'with legs burned away' *a-pu*, *ke-ka-u-me-no*, *ke-re-a*<sub>2</sub> [Ta 711]);
- b. decorative motifs (*e.g.*, 'with spiral' *to-qi-de* and *to-qi-de-ja* [Ta 641, Ta 709, Ta 713 and 715]; 'with men and lions' *a-di-ri-ja-pi* and *re-wo-pi* [Ta 708]); 'with shells' *ko-ki-re-ja* [Ta 711]; 'with bull's head' *qo-u-ka-ra* [Ta 711]); and
- c. materials (various woods, rock crystal, *kuwanos*, ivory, gold, *e.g.*, *ku-te-se-jo*, *mi-ra*<sub>2</sub>, *pu-ko-so*, *we-a-re-ja*, *we-a<sub>2</sub>-re-jo*, *a<sub>2</sub>-ro* [ *ju-do-pi*, *ku-wa-no*, *e-re-pa-te*, *ku-ru-so* )



Fig. 11. a. Terracotta hammer-axe attachment (excavation number 68-1582) from the Mycenae Cult Center. © Mycenae Archive, Faculty of Classics Archives, University of Cambridge; b. Terracotta hammer-axe attachment (excavation number 68-1582) from the Mycenae Cult Center, view from above. © Mycenae Archive, Faculty of Classics Archives, University of Cambridge.



Fig. 12. Sacrificial scene with a hammer axe on a LH IIIC Middle krater fragment from Kynos (East Lokris). Modified from Dakoronia 2016, pl. CXIXa, by permission of author with authorization of the monograph series *Aegaeum*.

in order to catalogue items precisely. On Ta 716 he does not tell us the materials for the pairs of \*232 or \*234 (or even the main material for the pair of *pa-sa-ro*), because he does not have to differentiate each item in a pair one from the other.

Sacconi (1999, 286-287, fig. 6) considers four Trojan hammer axes manufactured from hard stone (“*asce a martello da Troia in varie pietre dure*”) as reasonable parallels for the shape of \*232, though these third-millennium hammer axes are not contemporary with the Ta tablets. And indeed Hägg (1998, 102) citing Platonos-Manti (1981, 74-83, esp. fig. 6 from the acropolis of Nauplia) offered this learned opinion concerning the “very few specimens” of “possible sacrificial instruments” then known in the Mycenaean archaeological record: “A group of mace-heads of stone, some of which were found in cultic contexts in the Aegean world, could similarly have been used in connection with animal sacrifice to stun the victims.”

While Platonos-Manti (1981) highlights several double-sided stone hammers or mace heads with a central shaft hole that might be associated with sacrificial activities, none of the examples have two different ends like the hammer axe represented by ideogram \*232. The pair of *wa-o* (\*232) thus might be of metal or stone, but they represent an implement distinctly different from a double axe. On their own, this word and sign are not necessarily cultic in nature but their relation to the other paraphernalia of Ta 716 suggests a sacrificial function. The hammer axe shape of the ideogram, regardless of material, could certainly fulfill a key role in animal sacrifice. Indeed, Sacconi (1999, 287) interprets \*232 as an ‘*ascia a martello cerimoniale*’. She likens it to sign 15 on the Phaistos disk which she identifies as a single-bladed hammer axe (Sacconi 1999, 287 and 286, fig. 5).

Depictions of shafted, double-ended implements – reminiscent of a hammer axe – exist in Mycenaean art and have ceremonial and sacrificial connotations. We thank Chrysanthi Gallou for highlighting these significant parallels to us. The most intriguing example is one of the large terracotta figures from the LH IIIB2 cult center at Mycenae that has its right arm raised and holds a double-sided implement (Fig. 10a). Moore (1988, 220, pl. 11a; Moore, Taylour 1999, 95, pl. 16b) identifies the



Fig. 13. Funerary and sacrificial scene with a figure holding a hammer axe (?) on a LH IIIC Middle krater from Agia Triada (Elis). After Montecchi 2016, 688, fig. 7; by permission of author and Casa Editrice Pandemos.

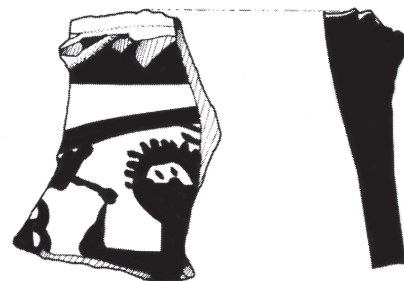


Fig. 14. Partial figure holding a hammer axe (?) on a LH IIIC Middle krater from Thebes (Boeotia). After Montecchi 2016, 689, fig. 8; by permission of author and Casa Editrice Pandemos.

terracotta implement from the Mycenae figure as “an axe-hammer” with one side in the “shape of a hammer head, whilst the longer one to the rear is flattened by squeezing to the shape of an axe.” The modeled implement is not a double axe, as the view from above the figure and implement confirms (Fig. 10b). A comparable terracotta hammer-axe attachment with an elongated handle shaft also came to light in the cult center (Fig. 11a) (Moore, Tylour 1999, 101-102, pl. 27a). Like the previous example, the modeled implement has distinctive edges that correspond best to hammer and axe profiles (Fig. 11b). Although this piece was not attached to a large figure at the time of its discovery, it likely was originally, judging by the aforementioned example and the arm and hand poses of other terracotta figures from the site. Moore (1988, 221; see also Moore, Tylour 1999, 79, 94-101) thus proposed that several of the Mycenae cult-center figures, who may be identified as “cult celebrants,” held three-dimensional representations of hammer axes and that they might relate to “some form of sacrificial activity.” This suggestion is strengthened by Mycenaean iconography from the mid-12th century (LH IIIC Middle), keeping in mind that Ta 716 is now dated to LH IIIC first phase (Vitale 2006, 190-191, 200 table 2; Vitale, Stocker, Davis forthcoming).

The best example of an illustrated double-ended sacrificial implement comes from a LH IIIC Middle pictorial krater sherd from Kynos (East Lokris) (Dakoronia 2016). The fragment portrays an animal sacrifice on or near a ship; one figure holds a goat by its horns. A double-ended axe-like implement is shown immediately above the goat’s horns and skull (Fig. 12) with its handle extending horizontally to the diagonal break line of the sherd on the right. The sherd is broken just beyond (to the right of) the sacrificial implement, making the scene incomplete. Dakoronia (2016, 388-389) understandably interpreted the sacrificial tool as a double axe, and compared the ritual implement’s representation to physical double axes found at Kynos (see also Kounouklas 2016, 529). Close inspection of the Kynos sherd, however, indicates that, much like \*232 on Ta 716, the double-sided implement has two distinct cutting or striking elements. The profile of the upper blade is nearly horizontal or flat and is beveled like \*232 on Ta 716, while the bottom side has a curved, double-axe-like edge (see arrows in Fig. 12). This difference is easy to miss, but it is significant. It is more appropriate to identify the implement as a hammer axe than a double axe. In fact, the sacrificial tool on the Kynos sherd offers the strongest comparison to ideogram \*232 on Ta 716.

Another sacrificial scene occurs on a krater from Agia Triada: Paliompoukouvina (Elis). It is dated to the LH IIIC Middle period. On it are depicted activities connected with a funeral, including an implied sacrifice (Fig. 13). A figure is portrayed holding a double-ended object (Schoinas 1999,

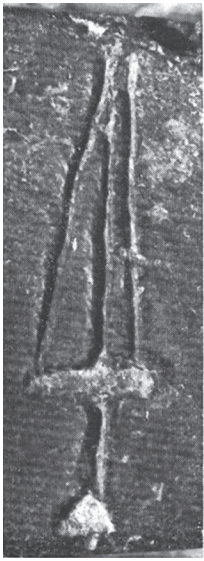


Fig. 15. \*233 PUG and drawing KN Ra 1541. After Vandenaebale and Olivier 1979, 49, fig. 24; by permission of Éditions Geuthner.



Fig. 16. Ideogram \*234 on PY Ta 716 as used by Speciale 1999, 294, figure 1.

257, fig. 1; Vikatou 2012, 365, fig. 737; Montecchi 2016, 688, fig. 7) similar to \*232 in the disproportion of its two elements. The *prothesis* scene (Fig. 13) includes an animal resting underneath the bier, mourners, a goat being led – perhaps by a rein or rope – toward the bier, and a figure raising his arms and holding the double-ended sacrificial implement. The presence of animals both already at and being brought to the funeral event implies that the implement-brandishing figure would soon officiate a funerary sacrifice. Montecchi (2016, 289-290, fig. 8) cites the Agia Triada krater scene as a strong parallel to a Theban LH IIIC Middle krater fragment (Fig. 14). A head and arm of an individual are depicted on the Theban piece, and the figure clutches a shafted, double-sided implement in his right hand. Montecchi (2016, 290) rightly emphasizes the common pose and implement on these pictorial kraters, and interprets the instrument as a probable sacrificial hammer axe, akin to the figures we discussed from the cult center at Mycenae.

While the Kynos sherd portrays a hammer axe, the brandished implements in the pictorial representations from Agia Triada (Elis) and Thebes (Boeotia) are more ambiguous. Both images do convey an individual holding a substantial double-sided implement with a central shaft hole, the latter implied by the handle's location. If not a hammer axe, the object in these scenes and the modeled attachments for the Mycenae figures may be a double hammer, similar to the metal version found in the Athens Acropolis hoard (Fig. 8a-b). As discussed above, an object like a robust double hammer could have functioned as a sacrificial instrument in a similar fashion to a hammer axe.

As with the entry of ideogram \*232 on Ta 716, we do not know the implied materiality of the double-sided implements on the LH IIIC kraters. Stone or bronze are reasonable possibilities. More relevant to our discussion here is the link between a double-sided implement – and one distinctly *not* a double axe – and Mycenaean ritual activity. That the Mycenae figures and various krater scenes are roughly contemporaneous with the Ta 716 tablet further solidifies the notion that a hammer axe or similar object was a component of the sacrificial paraphernalia in Late Bronze Age (LBA) Greece. Moreover, the figures from the cult center at Mycenae and associated artifacts (Room 19's amphora, hydria, cooking ware, kylikes, cups, bowls, dippers) and the images from Agia Triada (Elis) and Thebes (Boeotia) have been linked by the scholars who have studied them with ceremonies of feasting and eating, the natural activity to follow upon the sacrifice of animals (Moore and Taylour 1999, 79-80,

§§ 9, 10, 15; 84-85; 95; Montecchi 2016, 689-690).

On the stunning of animals as a preliminary for throat slitting, Aldrete (2014, 40-43 on Roman sacrificial ritual through time) argues that stunning with a hammer blow to the forehead was better for sacrificing smaller animals like sheep, goat, pigs and calves. He then gives a summary (p. 40): “while hammers were used on smaller beasts, for larger and more difficult or dangerous sacrificial animals, such as bulls, axes were the sacrificial implement of choice.” Nonetheless in two out of ten absolutely clear representations of a Roman sacrificial agent (*popa*) with implement raised to sacrifice an animal, the implement is clearly a hammer. Aldrete (2014, 42-43; and pers. comm. via email 6 Aug. 2019) clarifies that the animals are all horned bovids and presumably males, although genitalia are not always visible and female bovids of some species have horns.

For historical Greek practice, this description of ritual by Dionysius of Halicarnassus in *Antiquitates Romanae* 7.72.15 gives us the stages that concern us here and treats these Roman practices as derived from earlier traditional Greek practices, citing passages from Homer to support the parallels (Dion. Hal. 2.72.16):

χερηνιάμενοί τε γὰρ αὐτοὶ καὶ τὰ ἱερὰ καθαρῶ περιαγνίσαντες ὕδατι καὶ Δημητρίους καρπούς ἐπιρράναντες αὐτῶν ταῖς κεφαλαῖς, ἔπειτα κατευξάμενοι, θύειν τότε τοῖς ὑπηρέταις αὐτὰ ἐκέλευον. τῶν δ' οἱ μὲν ἐστῶτος ἔτι τοῦ θύματος σκυτάλη τοὺς κροτάφους ἔπαιον, οἱ δὲ πίπτοντος ὑπετίθεσαν τὰς σφαγίδας.

For they themselves [*i.e.*, the aforementioned highest sacrificial priests to whom this ritual is holy] having washed their hands and having thoroughly sanctified [περιαγνίσαντες] the sacred animals [τὰ ἱερὰ] with pure water [καθαρῶ...ὕδατι] and having sprinkled the grains of Demeter [Δημητρίους καρπούς] upon their [*i.e.*, the sacrificial animals'] heads, then having prayed, they were giving orders to their assistants [τοῖς ὑπηρέταις] then to sacrifice them [the animals]. But of these [assistants] some, while the sacrificial victim [τοῦ θύματος] was still standing [ἐστῶτος ἔτι], were striking [ἔπαιον] the sides of its forehead [*i.e.*, the ‘temples’ τοὺς κροτάφους] with a club [σκυτάλη], but others set their sacrificial knives [τὰς σφαγίδας] under [ὑπετίθεσαν] the falling victim [πίπτοντος]. (literal translation by Palaima)

This historical reference suggests that ritual practice does not always conform to best practice. Early methods of animal sacrifice can be perpetuated as traditional rituals even when more efficient methods of slaughtering animals have been discovered. As an analogy, the *lavabo* in a Roman Catholic High Mass involves not only incensing the priest, but also ritually ‘washing’ his hands with small amounts of ordinary water poured out of a small cruet. This is a far cry from truly purifying our hands by lathering them with modern antibacterial soap and scrubbing our hands together in hot water for at least twenty seconds.

We should also point out that five of the tripods on Ta 709 and Ta 711 are designated as *ke-re-si-jo*, *we-ke* ‘of Cretan workmanship’ = ‘di fabbricazione cretese’ (Melena 2014, 128; Piquero 2016, 764) and the damaged state of two of the tripods suggests heirloom items of considerable age and prior use (Palaima 2003a, 199-201). The same might apply to these ‘hammer axes’, especially since actual hammer-like objects are more common, though still rare, on Crete than on the Greek Mainland (though representations of such items, as discussed above, are evident in the LH IIIB-C periods). It is possible that these sacrificial implements, like the tripods on the other Ta tablets, were passed down through generations of ritual practice, though we readily acknowledge that the phrase *ke-re-si-jo*, *we-*



Fig. 17. \*234 close up with *qi-si-pe-e* on PY Ta 716. Snapshot of RTI image. Program in Aegean Scripts and Prehistory, University of Texas at Austin. Courtesy Department of Classics, University of Cincinnati.





Fig. 18. Single-edged knife with convex cutting edge from the Cyclopean tholos tomb at Mycenae, NAM 2818. Photograph by Nicholas Blackwell. Courtesy National Archaeological Museum, Athens; © Hellenic Ministry of Culture and Sports/Archaeological Receipts Fund.



Fig. 19. Single-edged knife with convex cutting edge from chamber tomb 78 at Mycenae, NAM 3083. Photograph by Nicholas Blackwell. Courtesy National Archaeological Museum, Athens; © Hellenic Ministry of Culture and Sports/Archaeological Receipts Fund.

*ke* does not occur on Ta 716, let alone directly with *wa-o* \*232. But again, remember that Hand 2 was differentiating these particular tripods ‘of Cretan workmanship’ from others that were not made in Crete. The pair of *wa-o* and the two \**qi-si-pe-e* require no such descriptive differentiation.

*Regarding the interpretation of qi-si-pe-e and ideogram \*234 on Ta 716*

7. Farmer and Lane (2016) 53: “*Qi-se-pe-e* [sic] is dual *k<sup>w</sup>isp<sup>b</sup>ehe* [sic], equivalent to later Greek *xip<sup>b</sup>ei* ‘two (short) swords’. The latter word, like its congeners (e.g. Egyptian *hpš* ‘khopesh’) is never used to mean ‘sacrificing knife’ (as Greek *sp<sup>b</sup>agis* is).”

Note: In Mycenaean texts the typical ideogram \*233 PUG for sword is associated with the word *pa-ka-na* (nom. plur. of later Greek neuter singular φάσγανον) (see Fig. 15 above for the typical form of \*233 \**pa-ka-no*; Weilhartner 2015, 265-266; see also Weilhartner 2017, 181-183 and Bernabé, Luján 2008, 216 for the variant *zo-wa* GUP; Petrakis 2017, 135 views both variants of \*233 as daggers). The term *qi-si-pe-e* appears as a *hapax* in Ta 716.2 and with a special *hapax* ideogram \*234 (Fig. 16) associated with it and followed by the number ‘2’. The context of the tablet is our only evidence for what the word \**ksiphos* means in the Mycenaean period. It should be our starting point. We should also add that Hand 2 is a very adept and accomplished scribe. Hand 2’s ideograms are very well and accurately drawn (Palaima 1988, 66-68).

Let us work from the image we have right next to this word-unit. Is it a sword or dagger? Take a look at ideogram \*234 associated with *qi-si-pe-e*, singular \**qi-si-po* (Fig. 16). It does not resemble \*233 PUG (Fig. 15). High-quality photographs of the forms of these two signs were given forty years ago in the standard handbook by Vandenabeele and Olivier (1979, 48-49 and pls. XXI-XXIII).

Is \**qi-si-po* then some other kind of sword or dagger? That question, too, has been asked and answered. As even Vandenabeele and Olivier (1979, 49 and their fig. 24) make clear, ideogram \*234 (Fig. 16) is difficult to reconcile with existing swords or daggers in the iconographical and archaeological record. More careful study of the shape of \*234 on Ta 716 makes that clearer than ever. \*234 (Fig. 17) is not at all a “rapier-like sword” as Ventris and Chadwick (1973, 502) suggest. Rather, as Speciale (1999, 295 n. 39) in her study of the identification of the sacrificial implements on Ta 716 concludes, referring to the early and still valid opinion of Snodgrass (1965, 108) in his specialist article on Linear

B tablets dealing with weaponry: “The ideogram... is like no known sword.” Hiller (1971, 82), too, citing Heubeck (1958), makes the same point: “Myk. *qi-si-po* meint, wie das Ideogramm vermuten lässt, ein grosser Messer...” He identifies \*234 as a *Messer* or ‘knife’.

The shape of \*234 is so un-like the sword ideogram in its curving blade edge at the right and straight left edge that Mylonas (1962, 406-407) proposed connecting the shape of \*234 with three curved blades, identified initially as knives, found in a cache of Late Mycenaean bronze tools and weapons (for more on the Mylonas hoard, see Blackwell 2018, 523-524, Appendix). Mylonas’ curved blades, possessing a single rivet hole in the tang, are sickles, an object form with good Mycenaean parallels and regularly found in other metal hoards (Blackwell 2011, 79-80; Blackwell 2018, Appendix; Blackwell 2020a, 527-528). Close autopsy and RTI imaging of tablet Ta 716 (Fig. 17) rule out entirely a sickle-shaped blade for \*234 as well as Mylonas’ link between his curved blades and the ideogram. But his point (Mylonas 1962, 407) is still well made. \*234 is not a known Mycenaean sword-type of the kind that in our opinion the standard ideogram \*233 represents. And that difference is the reason for the use of two distinct words: \**qi-si-po* (e.g., knife) vs. \**pa-ka-no* (sword).

While the sickles from the Mylonas hoard at Mycenae do not match \*234, the sign’s form resembles a large single-edged knife – an extant type within the Mycenaean archaeological record. The ideogram \*234 is single-bladed (the sharp curved edge at right), straight along its un-sharp top (or left in the ideogram) edge, and has an inconspicuous handle. Its cutting edge is convex in form, and somewhat resembles the *Schlachtmesser* blades found in the Shaft Graves at Mycenae and in early Mycenaean burial contexts throughout Messenia and Laconia (Tripathi 1988, 140-142, 184). The function of these massive knives – up to 70 cm in length – with straight backs, curved cutting edges, and long handles, often with rings at the end, is uncertain (Sandars 1956, 181-182). The blades may represent some combination of weapon, prestige item, or sacrificial implement. Despite a general similarity, ideogram \*234 on Ta 716, in our opinion, is not a representation of a *Schlachtmesser*. The handle of \*234 is short and does not resemble the typical *Schlachtmesser* ringed-handle. Furthermore, examples of the early Mycenaean blade are unknown from the LH III period. If the ideogram represented a *Schlachtmesser*, it would have been a centuries-old heirloom when Ta 716 was recorded at the Palace of Nestor. Better parallels for the ideogram exist in the repertoire of Mycenaean knives. Tsountas recovered a large knife (L = 44.5 cm) with a convex cutting edge from the Cyclopean tholos tomb at Mycenae, dated to the LH IIA period (Wace 1921-23, 290-291; French, Shelton 2005, 181); the impressive knife is on display in the National Archaeological Museum in Athens (NAM 2818; Fig. 18). A second example of this knife form (L = 42 cm) comes from chamber tomb 78 at Mycenae and is also on display in Athens (NAM 3083; Xenaki-Sakellariou 1985, 219, pl. 102; Fig. 19). Both knives are classified by Sandars (1956, 179, 193) in “Class 2” with nine other examples, primarily from tombs. These implements range in date from LH I to LH IIIB-C, illustrating the existence of this particular knife form throughout the LBA in contrast to the *Schlachtmesser* blades.

It is difficult, however, to ascertain a blade’s function from its particular shape. Metal knives are a common burial good in Mycenaean contexts (Blackwell 2020a, 528), making the appearance of these single-edged knives rather ordinary. The knife from the Cyclopean tholos tomb, however, held special significance since remnants of gold foil depicting curves or spirals adhered to one of its flanges (Sandars 1956, 179). The blade’s overall length and elongated, curved cutting edge led Wace (1921-1923, 290) to say that it is “shaped like a butcher’s knife.” The convex cutting edge may have facilitated cutting meat, though it is unclear if this shape offered any advantage over other knife forms. Suffice it to say here that ideogram \*234 is a discernible form of a Mycenaean knife. The sacrificial interpretation of ideogram \*234, however, is based primarily on the tablet’s overall context and on the order of items that it lists. It is not based on the curved blade shape *eo ipso*.

Bolstering our understanding of the ideogram as a ritual knife are several examples of animal sacrifice in the historical period where knives play an important role. In ancient Judaic ritual and also modern Orthodox Jewish ritual slaughter or *shechita*, the *halef* or *hallaf* or *halaf* or *sakin* is used in the ritual throat slitting of animals. The mandates are that the blade must be absolutely sharp and perfectly unmarred and free of nicks. In the modern period a *halef* is orthogonal and rectangular. Efficiency of throat-slitting is key. The knife has to be easy to wield and effective in cutting deeply into the animal's throat without catching or sticking. Palaima (2004, 236, and n. 112) cited the *halef* as a parallel. See the knife blades and the axe-like cleaver in the image of modern Israeli sacrificial ritual (<https://www.alimentarium.org/en/knowledge/ritual-slaughter>).

Mylonas (1962, 406) was able to cite the possibility put forward in the 1956 main text (p. 348) of Ventris and Chadwick (1973) that the “use of *-q-s-* for *x-* in ξίφος is surprising and unparalleled.” Mylonas follows their suggestion that “the Egyptian name *hpeš* might supply an etymology for ξίφος.” This is the same possible etymology put forward now by Farmer and Lane (2016, 53): “Egyptian *hps̄* ‘khopesh’.” However, the *khopesh* has a curved shape so in this period it would not be a suitable term to replace *p<sup>b</sup>asganon*, but it would be useful to define a curved knife used specially in sacrifice.

There is some thought that the later Greek word κοπίς for a ‘curved knife’ used by Thesalians and Anatolians and cited by Xenophon in his *Cyropaedia* might also come from this same Egyptian word. κοπίς is a kind of μάχαιρα that was more useful than a ξίφος for soldiers on horseback and could also be used with adjectival force modifying μάχαιρα ‘knife’ as in Euripides, *Cyclops* 241 in the context of a parody of ritual slaughter. (On the term itself, see Quesada Sanz 1994, who argues in detail how terms like ξίφος, μάχαιρα and κοπίς shift in meaning over time and according to regions and cultures. And on μάχαιρα as sacrificial knife, see Aristophanes *Pax* 948.)

In conclusion, judging by the evidence long available (and rightly interpreted by scholars whom Palaima cited in 2004) and by the new evidence added here (as interpreted by scholars whom we have here cited) in the Linear B texts, ideogram \*234 \*qi-si-po (= later Greek ξίφος) is not a ‘sword’ but a sacrificial ‘knife’. The burden of proof rests on Farmer and Lane to refute this strong consensus.

There are other instances where we have vocabulary changes between the Mycenaean period and the historical period. One conspicuous example will suffice. Vandenabeele and Olivier (1979, 221-224 with photos) explain with regard to the Mycenaean \*209<sup>VAS</sup> pi-je-ra<sub>3</sub>/p<sup>b</sup>v<sup>h</sup>elail and \*219<sup>VAS</sup> pi-a<sub>2</sub>-ra/p<sup>b</sup>ihalail (p. 222):

à l'époque classique, la φιάλη était un vase à boire; encore chez Homère (*ex. gr. Il. XXIII*, 270) et à l'époque mycénienne, il s'agissait d'un récipient beaucoup plus grande, destiné à aller sur le feu (d'où la traduction “boiling pan” de Ventris and Chadwick 1956, p. 325, que nous ne reprenons pas à notre compte, mais qui indique un des usages possibles du vase).

Furthermore, in Homer, *e.g., Il.* 3.271 a μάχαιρα (knife), not a ξίφος (sword), is used to slay lambs at a ceremony of oath-taking agreement before the combat of Paris and Menelaus (cf. Aristophanes *Pax* 948 cited above). Scenes of sacrifice in Homer often leave out what kinds of implements are used. Likewise, portrayals of the actual killing and of the sacrificial implements are rare in Greek art, regardless if from the Bronze Age, Archaic, or Classical period (Weilhartner 2016, 393-394; van Straten 1995, 103). Van Straten (1995, 105-106) also argues that the normal implement used in the slaying of animals is the sacrificial knife, swords being depicted in cases where the scene represented is of “a *sphagia* on the battlefield, immediately before a battle.” Contrast van Straten (1995, 267, 272) figure 117 [V397] and figure 118 [V422].

The Greek word σφαγίς for a ‘sacrificial knife’ is not found at all in Homer. It *is* in Euripides, *Electra* 811 and 1142. But it otherwise is late in use (*e.g.,* Dionysius of Halikarnassos 7.72.15 [see

text and translation here above § 6] and Polyaeus 3.9.40) and it is unattested in Mycenaean and early historical Greek. What is attested in Mycenaean Greek is the word and form on Ta 716: *\*qi-si-po* with the knife-shaped ideogram *\*234* in what we have argued is a ritual context.

A final important point here, however, especially given the proposal of an Egyptian origin of the Mycenaean term *\*qi-si-po*, is that a close parallel for the shape of the knife represented in ideogram *\*234* is found in an Egyptian relief sacrificial scene of a funerary ritual in the tomb of Ptahmose (Ptahmese), high priest of Amun under Amenhotep III, from the 14th c. BCE (Fig. 20).

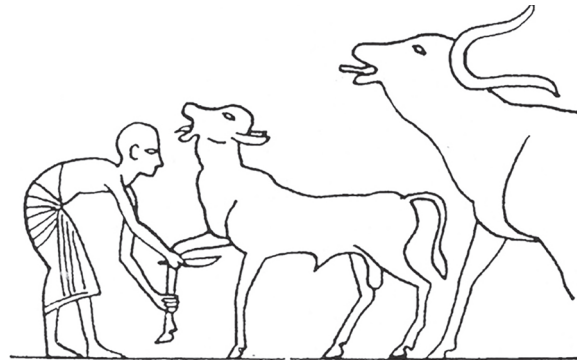


Fig. 20. Relief from the tomb of Ptahmose, high priest of Amun under Amenhotep III. ‘Sacrificiant’ holding sacrificial knife below front of calf. After Marinatos 2005, 204, fig. 4; by permission of author with authorization of editor of the monograph series *Orbis Biblicus et Orientalis*.

#### *Other comments about Farmer and Lane (2016)*

**8.a, b and c** Finally, we point out small, but meaningful errors.

Note: a. Farmer and Lane (2016) 53: “*Qi-se-pe-e* is dual *k<sup>w</sup>isp<sup>h</sup>ehe*, equivalent to later Greek *xiphei* ‘two (short) swords’.” The Linear B word-unit here is mis-transcribed and mis-reconstructed. It should read *qi-si-pe-e* | *k<sup>w</sup>si<sup>h</sup>ehel*, sg. | *\*k<sup>w</sup>si<sup>h</sup>osl*.

b. Reconstructing *pu<sub>2</sub>-ke-qi-ri* as *P<sup>h</sup>urkes<sup>w</sup>rins* requires some explanation, especially given the highly satisfactory reconstruction: *P<sup>h</sup>uge-g<sup>w</sup>rins* meaning “‘who escaped (ἔφυγε) the heavy (βρῦ), namely the spear, the evil or the stone” (García Ramón 2011, 224 with further references; Melena 2014, 31, 72; Varias 2016, 552). Nor is it at all certain that *pu<sub>2</sub>-ke-qi-ri* is the name of the scribe who wrote the texts of the Ta tablets (Bennet 2001, 31; Palaima 2003b, 175-177; Duhoux 2011, 113, 115; Steele 2011, 120-121; Pluta 2011, 281-284).

c. As we have mentioned, the closing Appendix (Farmer, Lane 2016, 69-70) that gives the transcribed texts of the tablets of the Ta series is derived from Ruijgh (1962). It leaves out entirely Ta 716! This omission *eo ipso* underscores the point about how different the contents of Ta 716 are from the items grouped and sorted and described on the other twelve tablets. In the early years of Mycenaeanology, Ta 716 was not considered part of the inventory set headed by Ta 711. This reinforces the disconnection of its contents from the other Ta tablets and the furniture, vases and fire implements they record in a systematic inventory. Ta 716 *is* an outlier of sorts and very special. We can now see that it has its own unique place in the inventory.

## CONCLUSION

On Pylos tablet Ta 716, Hand 2 makes an inventory of three pairs of implements that are arguably part of: (1) the ‘ceremony of investiture’ reconstructed by Farmer and Lane or (2) an unspecified sacrificial ritual or (3) a burial ceremony incorporating animal sacrifice (interpreting *te-ke* in Ta 711.1 according to an attested meaning of the verb τίθημι in Homer and later Greek: ‘to bury’) and subsequent feasting. Duhoux (2008, 316-317) rightly argues that interpreting the meaning of *te-ke* in Ta 711.1 as ‘buried’ cannot be excluded. (See most recently Varias 2016, 553 with a survey of five general lines of approach.) Palmer (1963, 338-363) is still worth reading and taking seriously, so long as we do not take the items recorded in the texts of the Ta tablets all together as a ‘tomb inventory’ but as paraphernalia for a sacrificial banqueting ceremony upon the death of a Pylian notable. Such paraphernalia would

have been returned to safe storage after their use, double-checking the objects and their condition against the tablet inventory records. The iconographical evidence dating to LH IIIC Middle from Agia Triada (Elis) and Thebes (Boeotia) for the use of double hammers or hammer axes and related paraphernalia in sacrificial ritual connected with funerary ceremonies makes it more difficult than ever to dismiss this alternative ‘funerary’ interpretation of the Ta series, especially given that the Ta tablets belong to LH IIIC first phase.

In whatever way we interpret this introductory phrase on Ta 711 and the occasion that called into being the inventory of objects in the other twelve Ta tablets, the text of Ta 716 with its *hapax* words and ideograms is key. (For quick, relatively recent surveys of various approaches to understanding the historical purpose of the Ta series, see Tsarakis 2012, 330-331; Varias 2016, 551-558.)

The six objects listed in three pairs on PY Ta 716 are peculiarly separated from the objects inventoried on the other twelve Ta tablets that Farmer and Lane (2016, 69-70) have given us in their appendix, according to Ruijgh’s organization by general categories. Before recording the entries for tripods in which meat can be boiled (Ta 709 and 641), the tablet-writer Hand 2, who is not necessarily one and the same with *pu<sub>2</sub>-ke-qi-ri* (Palaima 2003b, 175-177, 188; Palaima 2011, 121-123), catalogues fire implements. These include one kindler, two fire tongs, and two portable hearths (Ta 709) etc. The mention of fire tongs on the tablet is noteworthy because of their relative absence from the Mycenaean archaeological record – in contrast to their occurrence in Late Cypriot and Late Minoan contexts (Blackwell 2020a, 528). Metal tongs normally relate to metallurgical activity but these objects also could be associated with a cooking event, especially when the tripods, furniture, and sacrificial instruments are taken into consideration. Then come tablets that inventory tables (Ta 642, 713 and 715) and then ‘thrones’ and ‘stools’ (Ta 707, 708, 714). The last three tablets catalogue ‘stools’ exclusively in seven different categories (Ta 721, 722, 710).

What is missing then is not furniture for dignitaries to sit upon and eat at, not vessels to cook meat, not ceramic wares to hold or dispense foods or beverages, nor implements to see to it that fires for cooking are built and maintained well and used safely and effectively. What is missing are the implements that will be used ceremonially for leading animals to sacrifice, holding them there, and then sacrificing them.

These we would suggest are given in a chronological order of ritual use on Ta 716. First entered are the two ‘bridles’ *psalō* (*pa-sa-ro*) *vel sim*. They are described as ‘with gold banding or plating on this side and that’ using a comitative dative *amp<sup>h</sup>itonioi k<sup>h</sup>rūsōi* ‘con fasciatura d’oro’ (Del Frio 1990, 330). The bridles control the animals at the start of the process of sacrifice. Then listed are two specially shaped ‘axes’. The iconography of ideogram \*232; the depiction of sacrificial rituals on LH IIIC Middle kraters (notably the Kynos sherd); the archaeological realia; and sacrificing and slaughtering practices known from other periods lead to the hypothesis that these are ‘hammer axes’ (*wa-o*) that would be used to stun the sacrificial animals and/or cut into their necks. Then finally listed are two sacrificial knives (*qi-si-pe-e*), as determined by the shape of their ideogram \*234, by archaeological and iconographical correlates, and by the *hapax* term used to describe them. Ta 716 has peculiar terminology and peculiar ideograms; the order of objects on its list seems meaningful in relation to sacrificial procedures documented in later contexts. Bolstering our interpretation is archaeological evidence (*e.g.*, burnt animal bones) at the Palace of Nestor for state-sponsored animal sacrifices and feasts (see Stocker, Davis 2004, 190-193).

This reading of Ta 716, we suggest, makes better sense of the Mycenaean word-units and ideograms and their numbers than the interpretation of the individual items proposed by Farmer and Lane (2016, 52), namely that Ta 716 records two chains to be placed ‘around the throne’ or ‘between the thrones’ (*amp<sup>h</sup>it<sup>h</sup>orniō*) when no throne or pair of thrones is specially demarcated on Ta 716 or any other of the Ta tablets and the preponderance of evidence is that *pa-sa-ro* is to be read as ‘bridles’ *vel sim*. It makes better sense than what Farmer and Lane simply declare are “patently” ‘two double-axes’, when the items represented are not standard double-axes. And it certainly makes better sense than ‘two short swords or daggers’ when the ideogram is not a sword and not a dagger, but a knife with convincing archaeological correlates.

As for where Ta 716 belongs in the order of inventory in this series, Palaima (2000, 237) argued that it might be read after Ta 641 (listing tripods, *qe-to* and *dipa*) and before Ta 642 (listing tables). This would make sense in

terms of examining the items of sacrificial equipment along with the vessels and instruments for fire-making, cooking, eating and drinking, perhaps in their common storage or delivery areas, before moving on to the inventory of the tables and seating items. But it is equally possible that the important sacrificial paraphernalia on Ta 716 were viewed as in a separate category from the items on the other twelve tablets. They might have been stored and used separately. Hence the singular nature of Ta 716 as part of the Ta series.

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### *Abbreviations*

*GORILA 4* Godart L., Olivier J.P. 1982, *Recueil des inscriptions en linéaire A. Vol. 4: Autres documents* (Études Crétoises 21.4), Paris.  
*LSJ* Liddell H.G., Scott R. 1996, *A Greek-English Lexicon* revised and augmented by Stuart Jones H., McKenzie R. with Glare P.G.W., Thompson A.A. (eds), Revised Supplement (= *LSJ Suppl*), Oxford.

### *References*

- Aldrete G.S. 2014, Hammers, Axes, Bulls and Blood: Some Practical Aspects of Roman Animal Sacrifice, *JRS* 104, 28-50.  
 Aura Jorro F. 1985, *Diccionario micénico*, vol. 1, Madrid.  
 Aura Jorro F. 1993, *Diccionario micénico*, vol. 2, Madrid.  
 Barbaro N. 2018, Dedicat votiva del mercenario Pedon, *Axon* 2, 19-30.  
 Beekes R.S.P. 2010, *Etymological Dictionary of Greek*, vols. 1 and 2, Leiden-Boston.  
 Bennet J. 2001. Agency and Bureaucracy: Thoughts on the Nature and Extent of Administration in Bronze Age Pylos, in Voutsaki S., Killen J. (eds), *Economy and Politics in the Mycenaean Palace States* (*CPS Suppl.* Vol. 27), Cambridge, 25-37.

- Bernabé A., Luján E.R. 2008, Mycenaean Technology, in Duhoux Y., Morpurgo Davies A. (eds), *A Companion to Linear B: Mycenaean Texts and their World, Vol. 1* (Bibliothèque des Cahiers de l'Institut de Linguistique de Louvain 120), Louvain-la-Neuve, 201-233.
- Blackwell N.G. 2011, *Middle and Late Bronze Age Metal Tools from the Aegean, Eastern Mediterranean, and Anatolia: Implications for Cultural/Regional Interaction and Craftsmanship*, Ph.D. diss., Bryn Mawr College.
- Blackwell N.G. 2018, Contextualizing Mycenaean Hoards: Metal Control on the Greek Mainland at the End of the Bronze Age, *AJA* 122, 509-539.
- Blackwell N.G. 2020a, Tools, in Lemos I.S., Kotsonas A. (eds), *A Companion to the Archaeology of Early Greece and the Mediterranean. Blackwell Companions to the Ancient World*, Hoboken, NJ, 523-537.
- Blackwell N.G. 2020b, Exploring Late Bronze Age Stoneworking Connections Through Metal Tools: Evidence from Crete, Mainland Greece, and Cyprus, in Devolder M., Kreimerman I. (eds), *ASHLAR: Exploring the material of cut-stone masonry in the eastern Mediterranean Bronze Age* (Aegis 17), Louvain-la-Neuve, 215-240.
- Chantraine P. 1968-1980, *Dictionnaire étymologique de la langue grecque: Histoire des mots*, in four volumes, Paris.
- Chantraine P. 2009, *Dictionnaire étymologique de la langue grecque: Histoire des mots* (Librairie Klincksieck Série Linguistique Book 20) completed by Taillardat J., Masson O., Perpillou J.-L.; with Blanc A., de Lamberterie C., Perpillou J.-L. (eds), Supplement of the *Chroniques d'étymologie grecque* 1-10, Paris.
- Dakoronia F. 2016, Sacrifice on Board, in Alram-Stern E., Blakolmer F., Deger-Jalkotzy S., Laffineur R., Weilharter J. (eds), *Metaphysis: Ritual, Myth and Symbolism in the Aegean Bronze Age. Proceedings of the 15th International Aegean Conference, Vienna, Institute for Oriental and European Archaeology, Aegean and Anatolia Department, Austrian Academy of Sciences and Institute of Classical Archaeology, University of Vienna, 22-25 April 2014* (Aegaeum 39), Leuven-Liege, 387-392.
- Del Frio M. 1990, Miceneo *a-pi-to-ni-jo* e la serie Ta di Pilo, *SMEA* 28, 287-331.
- Del Frio M. 2016, La scrittura lineare B, in Del Frio M., Perna M. (eds), *Manuale di epigrafia micenea*, vol. 1, Padova, 123-166.
- Duhoux Y. 2008, Mycenaean Anthology, in Duhoux Y., Morpurgo Davies A. (eds), *A Companion to Linear B: Mycenaean Texts and their World, Vol. 1* (Bibliothèque des Cahiers de l'Institut de Linguistique de Louvain 120), Louvain-la-Neuve, 243-393.
- Duhoux Y. 2011, How Were the Mycenaean Scribes Taught? in Kyriakidis E. (ed.), *Proceedings of the International Colloquium "The Inner Workings of Mycenaean Bureaucracy"* (Pasiphae 5), Pisa-Rome, 86-118.
- Evans A. 1928, *The Palace of Minos at Knossos, II*, London.
- Evely D. 1993, *Minoan Crafts: Tools and Techniques: An Introduction. Volume 1* (SIMA 92.1), Göteborg.
- Farmer J.L., Lane M.F. 2016, The Ins and Outs of the Great Megaron: Symbol, Performance, and Elite Identities Around and Between Mycenaean Palaces, *SMEA NS* 2, 41-79.
- French E., Shelton K. 2005, Early Palatial Mycenae, in Dakouri-Hild A., Sherratt S. (eds), *Autochthon: Papers Presented to O.T.P.K. Dickinson on the Occasion of His Retirement, Institute of Classical Studies, University of London, 9 November 2005*, Oxford, 175-184.
- García Ramón J.L. 2011, Mycenaean Onomastics, in Duhoux Y., Morpurgo Davies A. (eds), *A Companion to Linear B: Mycenaean Texts and Their World, Vol. 2* (Bibliothèque des Cahiers de l'Institut de Linguistique de Louvain 127), Louvain-la-Neuve, 213-251.
- Hägg R. 1998, Ritual in Mycenaean Greece, in Graf F. (ed.), *Ansichten griechischer Rituale: Geburtstags-Symposium für Walter Burkert*, Stuttgart, 99-113.
- Hansen P.E., Cunningham I.C. 2009, *Hesychii Alexandrini Lexicon Volumen IV T-Ω* (Sammlung griechischer und lateinischer Grammatiker 11/4), Berlin-New York.
- Harding A. 2005, Horse-harness and the Origins of the Mycenaean Civilisation, in Dakouri-Hild A., Sherratt S. (eds), *Autochthon: Papers Presented to O. T. P. K. Dickinson on the Occasion of His Retirement* (BAR-IS 1432), Oxford, 296-300.
- Haysom M. 2010, The Double-axe: A Contextual Approach to the Understanding of a Cretan Symbol in the Neopalatial Period, *OJA* 29, 35-55.
- Heubeck A. 1958, Mykenisch *qi-si-po*, *Minos* 6, 55-60.
- Hiller S. 1971, Beinhaltet die Ta-Serie ein Kultinventar?, *Eirene* 9, 69-86.
- Hiller S. 2011, Mycenaean Religion and Cult, in Duhoux Y., Morpurgo Davies A. (eds), *A Companion to Linear B: Mycenaean Texts and their World, Vol. 2* (Bibliothèque des Cahiers de l'Institut de Linguistique de Louvain 127), Louvain-la-Neuve, 169-211.
- Killen J.T. 1994, Thebes Sealings, Knossos Tablets and Mycenaean State Banquets, *BICS* 39, 67-84.
- Killen J.T. 1998, The Pylos Ta Tablets Revisited, *BCH* 122, 421-422.

- Kounouklas P. 2016, Griffin at Kynos: How, Why, and When? in Alram-Stern E., Blakolmer F., Deger-Jalkotzy S., Laffineur R., Weilhartner J. (eds), *Metaphysis: Ritual, Myth and Symbolism in the Aegean Bronze Age. Proceedings of the 15th International Aegean Conference, Vienna, Institute for Oriental and European Archaeology, Aegean and Anatolia Department, Austrian Academy of Sciences and Institute of Classical Archaeology, University of Vienna, 22-25 April 2014 (Aegaeum 39)*, Leuven-Liege, 527-530.
- Lane M.F. 2011, Linear B *pe-re-ke-u*, *pe-re-ke*, and *pe-re-ko*: Contextual and Etymological Notes, *Kadmos* 50, 75-100.
- Littauer M.A. 2002, Bits and Pieces, in Raulwing P. (ed.), *Selected Writings on Chariots and Other Early Vehicles, Riding and Harness. M.A. Littauer & J.H. Crowel*, Leiden-Boston, 487-504.
- Littauer M.A., Crowel J.H. 2002a, Kampfwagen (Streitwagen) B. Archäologisch, in Raulwing P. (ed.), *Selected Writings on Chariots and Other Early Vehicles, Riding and Harness. M.A. Littauer & J.H. Crowel*, Leiden-Boston, 26-37.
- Littauer M.A., Crowel J.H. 2002b, A Pair of Horse Bits from the Second Millennium B.C. from Iraq, in Raulwing P. (ed.), *Selected Writings on Chariots and Other Early Vehicles, Riding and Harness. M.A. Littauer & J.H. Crowel*, Leiden-Boston, 515-518.
- Maran J., Van de Moortel A. 2014, A Horse-Bridle Piece with Carpatho-Danubian Connections from Late Helladic I Mitrou and the Emergence of a Warlike Elite in Greece During the Shaft Grave Period, *AJA* 118, 529-548.
- Marinatos N. 1993, *Minoan Religion: Ritual, Image, and Symbol*, Columbia, South Carolina.
- Marinatos N. 2005, Symbolic Forms of Sacrificial Imagery in the Eastern Mediterranean, in Hägg R., Alroth B. (eds), *Greek Sacrificial Ritual, Olympian and Chthonian* (Acta Instituti Atheniensis Regni Sueciae, Series in 8°, XVIII), Stockholm, 201-208.
- Masson O., Yoyotte J. 1988, Une inscription ionienne mentionnant Psammétique Ier, *Epigraphica Anatolica* 11, 171-179.
- Melena J.L. 2014, Mycenaean Writing, in Duhoux Y., Morpurgo Davies A. (eds), *A Companion to Linear B: Mycenaean Texts and Their World, Vol. 3* (Bibliothèque des Cahiers de l'Institut de Linguistique de Louvain 133), Louvain-la-Neuve, 1-186.
- Montecchi B. 2016, Scene di prothesis e di deposizione a Creta e sul continente greco in età micenea, in Longo F., Di Cesare R., Privitera S. (eds), *Δρόμοι: Studi sul mondo antico offerti a Emanuele Greco dagli allievi della Scuola Archeologica Italiana di Atene. Volume 2*, Atene-Paestum, 681-694.
- Moore A. 1988, The Large Monochrome Terracotta Figures from Mycenae: The Problem of Interpretation, in French E.B., Wardle K.A. (eds), *Problems in Greek Prehistory. Papers Presented at the Centenary Conference of the British School of Archaeology at Athens, Manchester, April 1986*, Bristol, 219-228.
- Moore A., Tylour W.D. 1999, *The Temple Complex: Well Built Mycenae. The Helleno-British Excavations Within the Citadel at Mycenae, 1959-1969. Fascicle 10*, Oxford.
- Mylonas G. 1962, Three Late Mycenaean Knives, *AJA* 66, 406-408.
- Nikoloudis S. 2001, Animal Sacrifice in the Mycenaean World, *JPR* 15, 11-31.
- Palaima T.G. 1988, *The Scribes of Pylos* (Incunabula Graeca 87), Rome.
- Palaima T.G. 2000, The Pylos Ta Series: From Michael Ventris to the New Millennium, *BICS* 44, 236-237.
- Palaima T.G. 2003a, The Inscribed Bronze 'Kessel' from Shaft Grave IV and Cretan Heirlooms of the Bronze Age Artist Named 'Aigeus' *vel sim.* in the Mycenaean Palatial Period, in Duhoux Y. (ed.), *BRICIAKA. A Tribute to W. C. Brice (Cretan Studies 9)*, Amsterdam, 187-201, pl. XXXI.
- Palaima T.G. 2003b, 'Archives' and 'Scribes' and Information Hierarchy in Mycenaean Greek Linear B Records, in Brosius M. (ed.), *Ancient Archives and Archival Traditions*, Oxford, 153-194, figs. 8.1-8.9.
- Palaima T.G. 2004, Sacrificial Feasting in the Linear B Documents, in Wright J.C. (ed.), *The Mycenaean Feast (Hesperia 73.2)*, Princeton, 97-126.
- Palaima T.G. 2011, Scribes, Scribal Hands and Palaeography, in Duhoux Y., Morpurgo Davies A. (eds), *A Companion to Linear B: Mycenaean Texts and Their World, Vol. 2* (Bibliothèque des Cahiers de l'Institut de Linguistique de Louvain 127), Louvain-la-Neuve, 33-136.
- Palaima T.G. 2012, Security and Insecurity as Tools of Power in Mycenaean Palatial Kingdoms, in Carlier P., de Lamberterie C., Egetmeyer M., Guilleux N., Rougemont F., Zurbach J. (eds), *Études mycéniennes 2010: Actes du XIIIe colloque international sur les textes égéens* (Biblioteca di "Pasiphae" 10), Pisa-Rome, 345-356.
- Palmer L.R. 1963, *The Interpretation of Mycenaean Greek Texts*, Oxford.
- Petrakis V. 2017, Figures of Speech? Observations on the Non-Phonographic Component in the Linear B Writing System, in Nosch M.-L., Enegren H.L. (eds), *Aegean Scripts. Proceedings of the 14th International Colloquium on Mycenaean Studies, Copenhagen, 2-5 September 2015* (Incunabula Graeca 105.1), Rome, 127-167.



- Piquero J. 2016, Glossario, in Del Freo M., Perna M. (eds), *Manuale di epigrafia micenea*, vol. 2, Padova, 753-782.
- Platonos-Manti M. 1981, Τελετουργικές σφύρες και ρόπαλα στο μινωϊκό κόσμο, *Archaiologike Ephemeris* 120, 74-83.
- Pluta K. 2011, *Aegean Bronze Age Literacy and Its Consequences*, Ph.D. diss., University of Texas at Austin.
- Quesada Sanz F. 1994, Máchaira, kopis, falcata, in De la Villa Polo J. (ed.), *Dona ferentes: homenaje a F. Torrent*, Madrid.
- Raulwing P. 2002, Glossary of Technical Terms, in Raulwing P. (ed.), *Selected Writings on Chariots and Other Early Vehicles, Riding and Harness. M.A. Littauer & J.H. Crouwel*, Leiden-Boston, XV-XX.
- Ruijgh C.J. 1962, *Tabellae mycenenses selectae* (Textus Minores 28), Leiden.
- Ruipérez M., Melena J.L. 1990, *Los griegos micénicos* (Biblioteca Historia 16), Madrid.
- Sacconi A. 1999, La tavoletta PY Ta 716 e le armi di rappresentanza nel mondo egeoo, in La Rosa V., Palermo D., Vagnetti L. (eds), *Epi ponton plazomenoi: Simposio italiano di Studi Egei dedicato a Luigi Bernabò Brea e Giovanni Pugliese Carratelli*, Rome, 285-289.
- Sandars N.K. 1956, The Antiquity of the One-edged Bronze Knife in the Aegean, *PPS* 21, 174-197.
- Schoinas C. 1999, Εικονιστική παράσταση σε όστρακα κρατήρα από την Αγία Τριάδα Ηλείας, in Frousou E. (ed.), *Η Περιφέρεια του Μυκηναϊκού κόσμου. Α' Διεθνές Διεπιστημονικό Συμπόσιο Λαμία, 25-29 Σεπτεμβρίου 1994*, Lamia, 257-262.
- Snodgrass A. 1965, The Linear B Arms and Armour Tablets – Again, *Kadmos* 4, 96-110.
- Speciale M.S. 1999, La tavoletta PY Ta 716 e i sacrifici di animali, in La Rosa V., Palermo D., Vagnetti L. (eds), *Epi ponton plazomenoi: Simposio italiano di Studi Egei dedicato a Luigi Bernabò Brea e Giovanni Pugliese Carratelli*, Rome, 291-297.
- Spyropoulos T. 1972, *Υστερομυκηναϊκοί Ελλαδικοί Θησαυροί*, Athens.
- Steele P. 2011, 'Legality' and Mycenaean Scribes, in Kyriakidis E. (ed.), *Proceedings of the International Colloquium "The Inner Workings of Mycenaean Bureaucracy"* (Pasiphae 5), Pisa-Rome, 119-126.
- Stocker S.R., Davis J.L. 2004, Animal Sacrifice, Archives, and Feasting at the Palace of Nestor, *Hesperia* 73, 179-195.
- Thompson R.J. 2012, In Defence of Ideograms, in Carlier P., de Lamberterie C., Egetmeyer M., Guilleux N., Rougemont F., Zurbach J. (eds), *Études mycéniennes 2010: Actes du XIIIe colloque international sur les textes égéens* (Biblioteca di "Pasiphae" 10), Pisa-Rome, 545-561.
- Tripathi D.N. 1988, *Bronzework of Mainland Greece from c. 2600 B.C. to c. 1450 B.C.*, Göteborg.
- Tsagrakis A. 2012, Furniture, Precious Items and Materials Recorded in the Linear B Archives, *SMEA* 54, 323-341.
- Van Straten F.T. 1995, *HIERA KALA: Images of Animal Sacrifice in Archaic and Classical Greece*, Leiden-New York-Köln.
- Vandenabeele F., Olivier J.-P. 1979, *Les idéogrammes archéologiques du linéaire B* (ÉtCrét 24), Paris.
- Varias C. 2016, Testi relativi a mobilio e vasi pregiati, in Del Freo M., Perna M. (eds), *Manuale di epigrafia micenea*, vol. 2, Padova, 551-565.
- Ventris M. 1954, Greek Inventories in the Minoan Script, *Archaeology* 7, 15-21.
- Ventris M., Chadwick J. 1973, *Documents in Mycenaean Greek*, 2nd ed., Cambridge.
- Vikatu O. 2012, Ηλεία. Ιστορικό και αρχαιολογικό περίγραμμα, in Vlachopoulos A. (ed.), *Πελοπόννησος*, Athens, 362-367.
- Vitale S. 2006, The LH IIIB-LH IIIC Transition on the Mycenaean Mainland: Ceramic Phases and Terminology, *Hesperia* 75, 2006, 177-204.
- Vitale S., Stocker S.R., Davis J.L. forthcoming, The Destructions of the Palace of Nestor at Pylos and Its LH IIIA Predecessor as a Methodological Case Study, in Jung R., Kardamaki E. (eds), *Synchronizing the Destructions of the Mycenaean Palaces*, Vienna.
- Wace A. 1921-1923, Excavations at Mycenae. IX. The Tholos Tombs, *BSA* 25, 283-402.
- Weilhartner J. 2005, *Mykenische Opfergaben nach Aussage der Linear B-Texte* (Mykenische Studien 18), Vienna.
- Weilhartner J. 2008, Some Observations on the Commodities in the Linear B Tablets Referring to Sacrificial Banquets, in Hitchcock L.A., Laffineur R., Crowley J. (eds), *Dais: The Aegean Feast. Proceedings of the 12th International Aegean Conference / 12e Rencontre égéenne internationale, University of Melbourne, Centre for Classics and Archaeology, 25-29 March 2008* (*Aegaeum* 29), Liège-Austin, 411-426.
- Weilhartner J. 2015, The Design of Linear B Logograms: Palaeographic Traditions and Visual Inspiration, in Weilhartner J., Ruppenstein F. (eds), *Tradition and Innovation in the Mycenaean Palatial Polities*, Vienna, 255-275.
- Weilhartner J. 2016, Textual Evidence for Burnt Animal Sacrifice and Other Rituals Involving the Use of Fire in Mycenaean Greece, in Alram-Stern E., Blakolmer F., Deger-Jalkotzy S., Laffineur R., Weilhartner J. (eds), *Metaphysis: Ritual, Myth and Symbolism in the Aegean Bronze Age. Proceedings of the 15th International Aegean Conference, Vienna, Institute for*

- Oriental and European Archaeology, Aegean and Anatolia Department, Austrian Academy of Sciences and Institute of Classical Archaeology, University of Vienna, 22-25 April 2014 (Aegaeum 39), Leuven-Liege, 387-392.*
- Weilhartner J. 2017, Les Idéogrammes Archéologiques: Does Variation Matter? in Nosch M.-L., Enegren H.L. (eds), *Aegean Scripts. Proceedings of the 14th International Colloquium on Mycenaean Studies, Copenhagen, 2-5 September 2015* (Incunabula Graeca CV, 1), Rome, 169-192.
- Wiener M. 2013, Realities of Power: The Minoan Thalassocracy in Historical Perspective, in Koehl R.B. (ed.), *AMILLA The Quest for Excellence. Studies Presented to Guenter Kopcke in Celebration of His 75th Birthday*, Philadelphia, 149-173.
- Xénaki-Sakellariou A. 1985. *Οι θαλαμωτοί Τάφοι των Μυκηνών: Ανασκαφής Χρ. Τσουντα (1887 – 1898) / Les Tombes à chambre de Mycènes: fouilles de Chr. Tsountas (1887-1898)*, Paris.

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