Cretan Hieroglyphics
The Ornamental and Ritual Version
of the Cretan Protolinear Script

The Cretan Hieroglyphic script is conventionally classified as one of the five Aegean scripts, along with Linear-A, Linear-B and the two Cypriot Syllabaries, namely the Cypro-Minoan and the Cypriot Greek Syllabary, the latter ones being regarded as such because of their pictographic and phonetic similarities to the former ones. Cretan Hieroglyphics are encountered in the Aegean Sea area during the 2nd millennium BC. Their relationship to Linear-A is still in dispute, while the conveyed language (or languages) is still considered unknown. The authors argue herein that the Cretan Hieroglyphic script is simply a decorative version of Linear-A (or, more precisely, of the lost Cretan Protolinear script that is the ancestor of all the Aegean scripts) which was used mainly by the seal-makers or for ritual usage. The conveyed language must be a conservative form of Sumerian, as Cretan Hieroglyphic is strictly associated with the original and mainstream Minoan culture and religion – in contrast to Linear-A which was used for several other languages – while the phonetic values of signs have the same Sumerian origin as in Cretan Protolinear.

Introduction

The three syllabaries that were used in the Aegean area during the 2nd millennium BC were the Cretan Hieroglyphics, Linear-A and Linear-B. The latter conveys Mycenaean Greek, which is the oldest known written form of Greek, encountered after the 15th century BC. Linear-A is still regarded as a direct descendant of the Cretan Hieroglyphics, conveying the unknown language or languages of the Minoans (Davis 2010).

The Cretan Hieroglyphics are considered the earliest script found, since the first inscriptions are dated to the end of the 3rd millennium BC (Olivier 1986), with their bulk mainly coming from Knossos and Malia (Younger 1999; Duhoux 1998). Cretan Hieroglyphic signs are found on 360 objects, with more than half of the inscriptions on seals, while the rest of them on “archival material” according to Olivier (1990). A list of 97 signs is available online (Younger 2012a) and in Godart & Olivier (1996). A lexicon is also available online (Younger 2013), containing 576 entries (“words”) of the inscriptions. The script is also regarded as a syllabary because its signs are too few for a logographic system and too many for an alphabet (Morpurgo Davies & Olivier 2012; Karali 2007; Fischer 2004). The estimated phonetic patterns belong to the V and CV type (Davis 2010), but the conveyed language and the origins of this system are considered unknown (Olivier 1990). Based on anthroponyms, some inscriptions, tentatively read, resemble Luwian according to Woudhuizen (2004), which is not out of the question since the seals were used to stamp packages of commercial goods as a trademark (Olivier 1986), but still that is not really convincing, since the inscriptions have been “read” quite subjectively, while the phonetic values of the signs and variant forms of signs are conjectured but not verified.

Before examining the nature of Cretan Hieroglyphs, a brief presentation of Linear-A is useful. A sample of syllabograms relating to very few Cretan Hieroglyphic signs to equivalent ones of Linear-A will be presented in a following section (Table 1).
Linear-A

Linear-A inscriptions have been discovered mainly in Crete. A number of them have been also discovered around the Aegean area (Argos, Drama, Kea, Kythera, Melos, Miletus, Mycenae, Samothrace, Thera, Tiryns and Troy) and a few of them were found outside the Aegean area: Amisos of Pontus; Monte Morrone of Italy (Woudhuizen 2009); Tel Haror (Oren et al. 1996) and Tel Lachish (Finkelberg et al. 1996) of Israel; Margiana of Central Asia (Sarianidi 1998, pp. 88-89). These 1427 inscriptions have been found on seals, roundels and clay tablets of administrative nature (Davis 2010). The syllabic part of the script includes 75 signs (Olivier 1986) of the V and CV syllabic pattern (Kenanidis & Papakitsos 2015a). Standard editions of Linear-A corpus are available online by Younger (2015), by Raison & Pope (1994) and by Godart & Olivier (1976–85: GORILA).

There are many proposals about the underlying language or languages of Linear-A, because of the difficulty to recognize the conveyed languages, since they are very poorly known and neither the script is known, although reasonable speculations are possible from the comparison to Linear-B and the Cypriot Syllabary (Kenanidis & Papakitsos 2015a). These proposed languages are:

- the Semitic/Akkadian (Woudhuizen 2005; Gordon 1981),
- the Proto-Aeolic (Tsikritis 2006; Anistoriton 2001),
- the Pelasgian/Proto-Ionic (as an Indo-European one closely related but not identical to Proto-Greek, see: Owens 2007, 2000; Faucounau 2001),
- a Proto-Indo-European (Hicks 2005),
- a non-Greek language closely related to Hittite (Davis 1964, p. 106),
- the Lycian (Kazansky 2012) and
- several different languages, making use of an originally Sumerian script (Papakitsos & Kenanidis 2015; Kenanidis & Papakitsos 2015a; Kenanidis 2013, 1992).

Some more proposals can be also found, concerning other languages like the Etruscan (Perono Cacciafoco 2014).

Many of the previous proposals about the underlying languages are (in a significant extent) based on divinities’ names, toponyms and anthroponyms. The divinities’ names make a lot of sense about an ethnicity, because of cultural reasons, but only anthroponyms are no sufficient evidence to reveal much about the conveyed language. The better studied Linear-B, which is related to Linear-A (Christidis 2005, p. 81), conveys indisputably Mycenaean Greek (Ventris & Chadwick 1973), although the anthroponyms on the discovered inscriptions cannot be very often regarded as Greek in a convincing manner (Hooker 1994. p. 125-126; Billigmeier 1970).

Commentary

The previous proposals about the underlying languages of Linear-A do not necessarily exclude each other, since Crete in the 2nd millennium is a multilingual society in which the different languages are recorded (Morpurgo Davies & Olivier 2012). Those languages could be written with the same writing systems in use at that time, namely Linear-A/Cretan Hieroglyphic scripts. While Cretan Hieroglyphics can be regarded as the decorative and ritual form of that writing system (Kenanidis 2013; Olivier 1990), the parent script has been suggested to be the Cretan Protolinear one (Kenanidis & Papakitsos 2015a; Kenanidis 2013, 1992; Willetts 1977, p. 100), which the rest of the Aegean scripts evolved from. This

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hypothesis is reasonable for several reasons. It has been documented that the inventors of the Protolinear script were a nation speaking a dialect close to the Archaic Sumerian language (Kenanidis & Papakitsos 2015a), at least due to the existence of a relevant scribal guild (Kenanidis & Papakitsos 2015a; Finkelberg 1998; Hooker 1979).

A very small sample of the pictographic resemblance and relationship between the two scripts is presented in Table 1 (Icons of Linear-A from: Younger 2012b; icons of double axe and of religious building of Cretan Hieroglyphics from: Younger 2012a). An archaeolinguistic review in chronological order of the important documentation for the previous hypothesis is presented in the next section.

**Table 1.**

<table>
<thead>
<tr>
<th>Linear-A</th>
<th>Cretan Hieroglyphic</th>
<th>Phonetic Value : Meaning {Comments}</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB 37</td>
<td><img src="AB37.png" alt="Image" /></td>
<td>ti : arrow / life</td>
</tr>
<tr>
<td></td>
<td></td>
<td>{ti(l) in Sumerian, derived from gišti ‘arrow’}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Kenanidis &amp; Papakitsos 2015a, p. 336)</td>
</tr>
<tr>
<td>AB 08</td>
<td><img src="AB08.png" alt="Image" /></td>
<td>a : symbol of the supreme deity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>{A supreme deity of the Sumerians was “An”}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Ibid., p. 338)</td>
</tr>
<tr>
<td>AB 26</td>
<td><img src="AB26.png" alt="Image" /></td>
<td>ru : prop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>{the prop appears as “ur2 / uru8” in cuneiform Sumerian}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Ibid., p. 340)</td>
</tr>
<tr>
<td>AB 29</td>
<td><img src="AB29.png" alt="Image" /></td>
<td>pu : all fruit-bearing trees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>{“cultivated fruit-bearing tree” was “pu2” in cuneiform Sumerian}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Ibid., p. 342)</td>
</tr>
<tr>
<td>AB 38</td>
<td><img src="AB38.png" alt="Image" /></td>
<td>e : religious or administrative building</td>
</tr>
<tr>
<td></td>
<td></td>
<td>{named e($) in cuneiform Sumerian}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Ibid., p. 341)</td>
</tr>
</tbody>
</table>

**Archaeolinguistic Review**

[1] Willetts (1977) first suggested the existence of a Cretan Protolinear script, in order to explain various inconsistencies of the evolutionary process for the Aegean linear scripts. It has been recognized that the creation of the Aegean scripts does not constitute a simple evolutionary process from the Cretan Hieroglyphics through Linear A until Linear-B (Hooker 1994; Evans 1909). Much later, there were inscriptions found in various places (Samothrace, Tel Haror, Tel Lachish and Troy) that both linear scripts (A and B) have to be taken into account for their interpretation (Finkelberg 1998).
[2] In the next year, Duhoux (1978) observed that Linear-A is “agglutinative rather than conjugating” (just like the Sumerian language), because of the high number of affixes it contains (in 59% of the words) compared to Linear-B (12% respectively). None of the proposed underlying languages (see section Linear-A) is agglutinative except the Sumerian (Kenanidis & Papakitsos 2013). This would suit a theory that Linear-A conveys a Sumerian language, but note that the nature of the “Linear-A language” could not by any means be verified, because the extant Linear-A inscriptions are too few for such a purpose and they consist mainly of personal names, while actually Duhoux could not read the inscriptions unless by conjecturing through similarities, often superficial, with Linear-B, and even he could not know which parts of the words are affixes, as the language of Linear-A is unknown and we cannot even say that it conveys one language only.

[3] Hooker (1979) suggested the existence of a scribal guild, based on the relatively few number of different hand-writings that are observed on Linear-B tablets (111 different “hands” according to: Hooker 1994, p. 90). There are also older indications of different scribal schools/styles (Bennett 1966). Later on, this suggestion was also supported by Finkelberg (1998). This idea (the scribal guild), extended in the past, may explain why and how a relatively limited number of Sumerian scribes and seals-makers could have created a writing system (Cretan Protolinear, hence Linear-A, Cretan Hieroglyphics and Linear-B) in order to write down the different languages of the Aegean area (Kenanidis & Papakitsos 2015a). Those professionals could have been easily hired from the Sumerian communities of the Levant (according to Rohl 1999).

[4] Olivier (1986) made a few statements which are crucial for our hypothesis: “Without doubt, the Minoans at the beginning of the second millennium did not ‘re-invent’ writing independently, even if they were well able to take their first steps in this direction without knowledge of the Mesopotamian or Egyptian systems. However, starting with ideas from elsewhere, they created an original and astonishingly uncomplicated system for recording the sounds of their language by means of signs. […] A priori, no language attested in the third or second millennium from the eastern Mediterranean or its surrounding areas can be excluded […] the languages spoken by people from the coasts of Asia Minor or Syro-Palestine must be favoured. […] Between 3000/2600 and 1450, the period of the birth and development of Cretan Hieroglyphic and Linear A, […] the introduction of a language known to us from elsewhere is unlikely.”

[5] After an idea since 1978 and almost 10 years of research, Kenanidis (1992) published (in Modern Greek) a study connecting the phonetic values of the linear scripts’ syllabograms to common or culturally important words of the Archaic Sumerian language, through the rebus principle. This study extensively refers to the Cretan Protolinear script, considering as the only survived samples of it three inscriptions on: a clay seal (Karageorghis & Masson 1968); a fragment of vessel with three syllabograms (Kenanidis 1992, p. 3) that is officially regarded as a Linear-B inscription; and a part of an Eteocretan inscription (Duhoux 1982, pp. 95-111: Illustration 27) that, because of its late construction (300 BC), its authenticity had to be argued for (Kenanidis & Papakitsos 2015b).

[6] Weingarten (1994) argues for an administrative system in Crete (using seals and record keeping) that would have been directly imported from the Near East.

[8] Schoep (1999, p. 266) can not rule out the existence of a common ancestor for Cretan Hieroglyphics and Linear-A, based on the common signs. The two writing systems probably serve different needs (e.g. decorative and ritual vs. administrative).

[9] Glarner (2002) observes that many characters from Linear-A are identical to the archaic archetypes of the Mesopotamian Cuneiform. Yet, the relationship was rejected as impossible because of the large distance between the two areas (Mesopotamia and Crete). The rejection was very premature considering the next points:

- All that we know about the Sumerians is from what was written on the existing cuneiform tablets. There are hundreds of thousands of such tablets but only about 10% have been read so far (BAS-Library 2005; Watkins & Snyder 2003). There are still many thousands of tablets in the store rooms of museums but there are not enough experts to read them.

- Historical evidence written on the deciphered part of the existing cuneiform tablets was ignored: The tablets of Mari (18th century BC), stating that “the hand of Sargon” had reached places beyond the “upper sea” (Mediterranean) as far as the island of copper (Cyprus) and “Kaptara”, the most ancient reference to Crete (Strange 1982; Drandakis 1956); Before the era of Sargon the Great (24th-23rd centuries BC), the earliest reports extend the rule of the Sumerian kingdoms to the Mediterranean coast since the 28th century BC, during the reign of Meskiaggasher, king of Uruk (Jacobsen 1939). The same wide regional coverage appears during the reign of Lugalananemundu (2525-2500 BC), king of Adab (Guiseopi and Willis 2003).

- The period of the Uruk expansion was not known (Sundsdal 2011; Algaze 2005a,b), while Kramer (1963) was also ignored: “…by the third millennium BC, there is good reason to believe that Sumerian culture and civilization had penetrated, at least to some extent, as far East as India and as far West as the Mediterranean, as far South as Ancient Ethiopia and as far North as the Caspian”.

- Migration, a phenomenon as ancient, wide and intense as the human kind, is not adequately studied (for a discussion see: van Dommelen 2014).

[10] Castleden (2002, p. 100) observed that some signs of Cretan Hieroglyphics resemble symbols from a Mesopotamian script pre-dating cuneiform, suggesting that this writing system was imported from East.

[11] According to Fischer (2004, p.34), the rebus principle (see [5]) had been originally invented by the Sumerians. Their influence expanded to Indus Valley, Iran, Nile and probably Balkans (as he suspects and we argue for as well).

[12] Woudhuizen (2005) interpreted Linear-A as a linearization of the Akkadian cuneiform signs. This is supportive for the herein argument, since every sign in written Akkadian has a Sumerian origin. However, the natural process for a script is to evolve from pictorial signs (like the Sumerian pre-cuneiform) into non-recognizable forms (like the late cuneiform) and not the reverse (e.g. see: Karnava 2015). So, we make the reverse proposal herein: both the early Aegean scripts and Cuneiform were two evolutionary branches of the same trunk (Sumerian pre-cuneiform signs). The former branch followed an “analogic” path via drawn lines, while the latter a “digitalized” one (impressed strokes), thus starting to depict the icons in a more abstract and quick manner.

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Davis (2011) published an astonishing table of pre-alphabetic signs that presents the palaeoepigraphic relationship of many archaic scripts, including the Sumerian Proto-cuneiform, the Indus script, the Anatolian Hieroglyphs, the Egyptian, the Proto-Elamite and four of the Aegean scripts. Forty-two signs of the latter scripts (some repeated) are identical to equivalent Sumerian ones (Proto-cuneiform).

Kenanidis (2013) released his revised and augmented study (see [5]) on Cretan Protolinear and the Minoan/Eteocretan language (in Modern Greek). In 209 pages, this is the most comprehensive and documented work that relates the Archaic Sumerian language to the creation of the Aegean scripts, including the Cypriot syllabaries. The work includes a description of the Sumerian language and its typology (Kenanidis & Papakitsos 2013). The 120 syllabograms (a sacred, or at least round, number for the Sumerians, see: p. 9) of the Cretan Protolinear are presented and commented, reconstructed from the Linear-A and Linear-B syllabograms along with a few of conventionally unidentified signs. The etymology of many Greek words from the Aegean substratum is also presented.

Davis (2014) made the following statements about Linear-A (see also: [2]): “As for Linear A itself: the language behind the script appears to contain a fairly standard phonemic inventory, though there are hints of additional, more exotic phonemes. The morphology of the language appears to involve affixation, a typical mode of inflection in human languages. The presence of significant prefixing tends to rule out PIE as a parent language, while the word-internal vowel alternations typical of Afroasiatic verbal inflection are nowhere to be found in this script. In the end, Linear A appears most likely to represent a non-IE, non-Afroasiatic language, perhaps with agglutinative tendencies, and perhaps with VSO word order.” If not for the same reasons as explained in [2] above, this could well be supportive for our argument, since the only well-known and sufficiently documented and studied agglutinative language of Eastern Mediterranean and Near East area in the 3rd - 2nd millennia BC was none other but the Sumerian. The documents and studies about the other probably agglutinative language, the Hurrian (Diakonov & Starostin 1986), are much less numerous, while the phonetic values of the Aegean scripts clearly denote their Sumerian origin (Kenanidis 2013, 1992). However, Kenanidis & Papakitsos (2015, p. 339) are of the opinion that the largest part of the extant Linear-A corpus conveys a Semitic (probably Akkadian) language, with few inscriptions conveying Luwian, and hardly any extant inscriptions convey Sumerian which was the language of the inventors of the Cretan Protolinear script.

The palaeographic and phonetic comparison of 30 syllabograms (comprising 1/3 of Linear-B’s and 35% of Linear-A’s syllabic repertoire) to the Sumerian pictography and language has been presented, proving the Sumerian origin of the Aegean scripts beyond statistical doubt (Kenanidis & Papakitsos 2015a; Papakitsos & Kenanidis 2015). Applying the rebus principle, it is demonstrated that the phonetic value of each syllabogram is the equivalent monosyllabic word of Archaic Sumerian for the object depicted by this sign.

**Decipherment Example**

We may proceed now to the presentation of a “semi”-decipherment example that is based on the hypothesis of the Sumerian origin of the Cretan Hieroglyphic and Protolinear scripts. In Figure 1, we may see two seals (Kenanidis 2013), initiating with the same sequence of two signs that are numbered ‘038’ and ‘010’ in the Hieroglyphic Lexicon (YHL) of Younger (2013). This sequence (“038-010”) appears six times in YHL, inscribed on 41 artifacts. We will firstly analyze the phonetic value and meaning of each sign.

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The first sign (‘038’) appears in many forms in Cretan Hieroglyphics, presented in Figure 2 (Kenanidis 2013). It represented an ingot of non-noble metal that referred to the Archaic Sumerian word de(m) = {metal / furnace of the metal-worker} or de(ŋ) = {heat treatment of metals} and consequently the syllable ‘de’, noting that the last consonant of a word ending with a closed syllable was always silenced (e.g., Kenanidis & Papakitsos 2013, p. 37, rule 5.0.33). This sign appears also as an ideogram of Linear-B, numbered 140 and interpreted as “bronze” (the most common of metals of that era), and in Linear-A, numbered 327 (Figure 2). Alternatively, the syllable ‘de’ was denoted by the metal-worker’s furnace icon (sketch), both in Linear-A and in Linear-B, numbered 45. This syllabogram has a similar form to the equivalent pre-Cuneiform one, depicting the furnace of the metal-worker and named, in Cuneiform, after the metal-worker himself, who was called “simug” (Figure 3). For a most detailed analysis see Kenanidis (2013, pp. 64-67).

Figure 1.

![Figure 1](http://www.anistor.gr/index.html)
The second sign (‘010’) depicts a leg. The legs in Sumerian of the Cuneiform are encountered as “gir”, which was pronounced ŋe(r), (“me-ri” in Emesal). Because of the Emesal form, it is confirmed that the original initial consonant was ‘ŋ’ (Kenanidis & Papa kitsos 2013, p. 35, rule 5.0.13). As legs were called ŋe(r) in Archaic Sumerian, the sketch denoted the syllable ‘ŋe’.

Consequently, the block of the two signs (“038-010”) denoted the most common Sumerian word: deŋer = {God}. In Figure one, the first form from the left reads “deŋe” (the final –r dropped like all word final consonants in Sumerian), the second form reads “deŋero” (here with the Sumerian genitive suffix –o(k), which is –a(k) in Cuneiform), and the third form (first from the right) reads “de-ŋe-i” which stands for deŋej, as a silenced final –r usually left a –j in its place (that –j written, of course, with the syllabic sign “i”, depicting “a plant”; actually “de-ŋe-i” (for deŋej) is the most common form of the word “deŋer” on the Cretan Hieroglyphic seals). Along with the accompanying affixes or words on the seals, such inscriptions mentioning “deŋej(r)” refer to the personal deity of the seal owner, or to God in a pantheistic or even monotheistic sense, considering different deities as manifestations of the only God. It is beyond the scope of this work to comment on the Minoan concept of “God” in detail. However, it is worth examining one seal (Godart & Olivier 1996), which has attracted the attention of many researchers since A. Evans (1909):

Figure 4.

The second (middle) and third (right) sides of the prism bear words common on seals (we read them as “qorui” and “(he?)rajo” respectively, goru- (see also the word in table 1 above, 4th line, 2nd column) meaning “protection”, (he?)rajo might have meant “(the deity) looks upon me” or the like); the most interesting in this seal, however, is the first (left) side where the three most common signs “de-ŋe-i” circle around the image of a cat: “de” is below, “ŋe” on the left, “i” at the top, and “ŋo” on the right, so the 4 signs forming the word “deŋejŋo”.


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would really make it a cat; it resembles a cat’s but it is still a calf’s face). We know that the great Goddess of the Minoans is associated with the cat, since there are representations of the Goddess with a cat on her head. Now we can interpret this image as follows: “deŋoŋo” clearly means “my (personal) deity” (-ŋo being the original form of the Sumerian suffix known as “-Ţu”, meaning “my” in Cuneiform). So, does the image mean “the cat is my deity”? Of course not, because the cat is the symbol of the Minoan Goddess, and not the Goddess herself. So the meaning of the image is “the great (well known to the Minoans) Goddess is my personal deity”. Knowing the origin of the sign “ma” (“amâ(r)” = a calf) we can understand what name of the Goddess is given here: as “ama” meant “mother” in Sumerian, the calf’s face sign was taken to imply “ama” (mother) and not “ma” as usually, and it was modified so as to fit into the body of a cat (symbol of the Goddess), therefore this side of the prism is an ingenious rebus conveying the meaning: “the Mother (Goddess) is my personal deity”.

Conclusions

In the present essay, it has been demonstrated that some signs of the Cretan Hieroglyphic script can be pictorially related to equivalent ones of Linear-A and Linear-B scripts. This relationship can be also extended to the equivalent phonetic values of the signs, since Cretan Hieroglyphic is a different manifestation of the lost Cretan Protolinear script, serving different purposes. The phonetic values of the signs match the equivalent Archaic Sumerian words for the objects depicted by those signs. Considering the nature of the Cretan Hieroglyphic inscriptions as seal-labels, the theory of the Sumerian origin of the script may provide reasonable interpretations.

Acknowledgements

The authors would like to thank the French School of Athens. Its digital archives were invaluable for the study of Linear-A and Cretan Hieroglyphics.

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