

## **Pre-Hellenic Language(s) of Crete: Debate and Discussion**

**Comments on the Paper by Yves Duhoux in *The Journal Of Indo-European Studies* Volume 26:1&2, Spring/Summer 1998, 1-40**

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### **Prologue**

In the latest volume of the *Journal of Indo-European Studies* 26:1&2 (1998), 1-40, Yves Duhoux gives the most up to date report on the state of research concerning the Pre-Hellenic language(s) of Crete. This article has quite rightly brought again to the attention of Indo-European scholars a subject of Aegean philology which refuses to go away. The editors of the journal are to be congratulated for allowing one of the trio of Belgian experts (Godart, Olivier, Duhoux) on the Minoan scripts to explain clearly the problem faced by those who are studying the Pre-Hellenic language(s) of Crete.

The present author offers the following debate and discussion on Yves Duhoux's paper in a spirit of constructive criticism and international collaboration in the sincere wish that a greater explanation of the problems involved and a greater understanding of the evidence for the Minoan language made available to a wider audience, and not a chosen few, may illuminate this century old problem concerning the nature of the Minoan language.

In the debate and discussion which follows, Yves Duhoux's article is analysed while the present author points out where differences in opinion occur. In addition new material is brought to bear on old questions. The paper is organised on the lines of Yves Duhoux's well-articulated account under the

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\*The research upon which this article is based was carried out while the author held a Post-Doctoral Research Fellowship at Heraklion Archaeological Museum and the University of Crete, 1992-1994. The author's research findings were first published in G.Owens, *Kritika Daidalika, Evidence for the Minoan Language, Selected Essays in Memory of James Hooker on the Archaeology, Epigraphy and Philology of Minoan and Mycenaean Crete*, Hakkert Publishing, Amsterdam, 1997. The author expresses his gratitude to Kalliope Nikolidaki for her assistance in the preparation of this article.

same sub-headings. Any progress that has been made in the field of Minoan philology is due in large part to the linguistic work of Yves Duhoux, as distinct from the equally valuable epigraphic work of his compatriots. Yves Duhoux's pioneering work, by systematically tackling problems, has enabled a new generation of researchers to build upon his work and to question it constructively. His latest article in the *Journal of Indo-European Studies* demands attention and debate. This the present author has attempted to do in the discussion which follows.

### 1. Introduction

Duhoux's introductory comments set the scene well for what is to follow, concerning the earliest population of Crete from whom the Minoans were descended and who were the cultural predecessors of the Minoan language.<sup>1</sup> Duhoux then informs the reader that "within about 500 years there are not less than four different scripts known", i.e., Cretan "Hieroglyphics", Linear A, Phaistos Disk and Axe of Arkalochori.<sup>2</sup> It is the opinion of the present author that matters are fortunately not this complicated. It will be discussed in the sections which follow that there are probably two differing scripts on Crete in the pre-Linear B period, c. 2000-1400 B.C., namely Cretan "Hieroglyphics" (including the Phaistos Disk, Arkalochori Axe and the Malia Stone Block) and Linear A.<sup>3</sup> The present author has suggested that it may be more accurate to talk of the Middle Minoan Script (Cretan "Hieroglyphics" etc.) and Late Minoan Script (Linear A) for the pre-Linear B inscriptions on Crete which together provide evidence for the Minoan language. For after all it is the language which is to be ultimately studied as a script is just a tool to write any language.

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<sup>1</sup>See C. Broodbank and T. Strasser, Migrant Farmers and the Neolithic Colonization of Crete, *Antiquity* 65:247, 1991, 233-245 and C. Renfrew, Who Were the Minoans? Towards a Population History of Crete?, *Cretan Studies 5, Studies Hood*, 1995, 1-27 for a full discussion of this subject.

<sup>2</sup>Duhoux has simplified, a little, the view of Hooker which identified seven writing systems. See J. T. Hooker, *The Origin of the Linear B Script, Minoan Supplement* 8, 1979, 16-19.

<sup>3</sup>Indeed the exact relation between these two pre-Linear B scripts is a matter of debate as a result of the publication of the "CHIC" and "GORILA" corpora. See G. Owens, The Common Origin of Cretan "Hieroglyphs" and Linear A?, *Kadmos* 35:2, 1996, 105-110.

The author will further discuss these corpora as evidence for the Minoan language along with Eteocretan and contemporary Egyptian evidence, but not later recorded Cretan onomastics and vocabulary in accordance with Duhoux nor the non-Greek, i.e., Pre-Hellenic and loanwords, found in Linear B which Duhoux did not consider.

Since the decipherment of Linear B in 1952 by Michael Ventris as recording the Mycenaean stage of the Greek language, Indo-European scholars have had access to inscriptions recording the Greek language some 500-700 years before Homer's epics in the eighth century B.C. The next challenge facing Aegean philologists is to try to understand the Minoan inscriptions c. 2000-1400 B.C., up to 6 centuries before the Linear B records of Knossos, the earliest inscriptions from Europe, and as will be argued, in contrast to Duhoux, perhaps containing the earliest evidence for an Indo-European language.<sup>4</sup>

Here differences of opinion as regards Duhoux's conclusions will be noted as points of debate for making progress in the task ahead, the eventual understanding of the Minoan language. It should also be noted that bibliographical references will be included in the footnotes and not in a separate bibliography. Before commencing a discussion of the scripts of Minoan Crete it is necessary to correct one unfortunate "faux pas" of Duhoux. It is a mistake to "use the name of the scripts (e.g. Linear A) as a conventional denomination for the language they used to write". This is not a convention nor is it correct. It is dangerously misleading. Scripts and languages are two separate entities and must remain so<sup>5</sup>. In the following the Minoan scripts are discussed as evidence for the Minoan language.

## 2. Cretan "Hieroglyphic" Script (C.H.)

The c. 277 inscriptions and c. 1569 signs of this script have now been published in the "CHIC" volume by Godart, Olivier and Poursat, in a work which is somewhat unwieldy but, *contra*

<sup>4</sup>It should be noted that the present author's full publication of research appeared as "The Structure of the Minoan Language" in *Kritika Daidalika*, 1997, 103-140 and which was accepted for a revised re-publication in the present Journal.

<sup>5</sup>The present author has seen his name written in both Latin and Greek characters whereas it is Welsh, and he has seen Knossos written in both Linear B and Japanese Katakana syllabic scripts.

Duhoux, is usable as a single volume containing all the published Cretan “Hieroglyphic” inscriptions. Duhoux also believes that this script is only found east of Haghia Triada as well as in Kythera and Samothraki. This is probably a misconception due to archaeological chance, for discoveries of this script (admittedly in small quantities) from Monastiraki (Amari), Pangalochori (West Crete), Kythera, Samothraki and Tel Haror (Negev, Israel) suggest it was known all over the island and beyond.<sup>6</sup> There are generally less archaeological sites (palaces, villas, peak-sanctuaries, towns etc.) in the west of the island and this is due to there being less extensive plains supporting habitation. There are no areas in West Crete to compare with the Mesara, Pediadha or Siteia plain where the important site of Petras is located. This last site has recently produced an important “Cretan Hieroglyphic” archive along with Linear A inscriptions.<sup>7</sup> As Duhoux points out “Hieroglyphic” is a misleading term but as “Pictographic” is also wrong then the reader is left with Middle Minoan Script (as advocated by the present author above) or Cretan “Hieroglyphic” as has now been in use for a century. The present author also believes that the Phaistos Disk and Arkalochori Axe, along with the Malia Stone Block, belong to this category of inscriptions, as will be argued below. Duhoux’s most valuable comments on each section are in regard to linguistic and statistical observations. He correctly points out that Cretan “Hieroglyphic” sign-groups/words show prefixes, suffixes, roots and reduplication. Duhoux’s appliance of Mackay’s statistical methods for calculating the number of signs in a syllabic script will be considered in the present author’s conclusion (2.7) to the discussion of Minoan scripts as evidence for the Minoan language.

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<sup>6</sup>See L. Godart and Y. Tzedakis, *Temoignes Archeologiques et Epigraphiques en Crete Occidentale du Neolithique au Minoen Recent IIIB*, 1992 and E. D. Oren, A Minoan Graffito from Tel Haror, *Cretan Studies* 5, 1996, 91-118 with a thorough discussion of the signs on the graffito by J.-P. Olivier, 99-109.

<sup>7</sup>See M. Tsipopoulou and E. Hallager, Inscriptions with Hieroglyphs and Linear A from Petras, Siteia, *SMEA* 37, 1996, 7-46 and A New Hieroglyphic Archive from Petras, Siteia, *Kadmos* 35:2, 1996, 164-167 for a prompt initial publication of these finds which were also discussed at the 8<sup>th</sup> Cretological Congress, Heraklion 1996. This material must be incorporated into the Minoan corpus.

## 2.2. Linear A (L.A.)

The 1427 inscriptions with 7147 signs of this script have been published by Godart and Olivier in the 5 volume GORILA corpus (1976-1985) with an excellent Index in volume 5. In addition in the decade following the publication of the Index another 55+ inscriptions with 212+ signs have been discovered.<sup>8</sup> In Duhoux's discussion he makes reference to Linear A inscriptions from out of Crete in places such as Miletus and Israel. To these should be added finds — and this is new — from Olympia and Troy.<sup>9</sup> Mention should also be made of the painted inscription of a female figurine from a tomb at Poros dated to LMIIA, i.e., during the Linear B period. This records a variant of the best attested term of the Minoan Libation Formula, RI-QE-TI-A-SA-SA-RA-A325, demonstrating the continuation of the Minoan language into the Mycenaean period. This is of course to be expected but does tend to get overlooked in a too simplistic consideration of the Bronze Age.<sup>10</sup> Such finds and publications are leading to a more complete picture concerning Linear A.

Mention should also be made of a recent find in Margiana in Central Asia which may be relevant. The excavator found 26 clay tokens with the same scratched sign that bears a remarkable resemblance to sign AB 77 found on approximately 150 nodules from Haghia Triadha in Minoan Crete (HT Wa 1322-1470). The 26 tokens from Margiana were found in a group near the main entrance of the complex in a way that calls to mind the find place of the 44 nodules inscribed with Linear B from Thebes in Mycenaean Greece. It is still early to draw conclusions but this site and its finds raise many problems, not least the possibility of a connection with the Bronze Age Aegean and its administrative practices.<sup>11</sup>

<sup>8</sup>See "GORILA 6" G. Owens Record of Inscriptions in Linear A (1985-1995), *Kritika Daidalika*, 1997, 237-245 for Post-GORILA 5 inscriptions which still continue to be found.

<sup>9</sup>See G. Owens, Linear A in the Aegean: The Further Travels of the Minoan Script, A Study of the 30+ Extra-Cretan Minoan Inscriptions, *Aegaeum* 20, 1999, 583-597 and pl. CXXIV for a full discussion including the new finds. The author is grateful to Belgian colleagues for this information.

<sup>10</sup>See N. Dimopoulou, J.-P. Olivier et G. Rethimiotakis, Une statuette en argile avec inscription en lineaire A de Poros/Irakliou, *BCH* 117:2, 1993, 501-521.

<sup>11</sup>See V. Sarianidi, *Margiana and Protozoroastrism*, 1998, 88-89 and fig. 41:1-2 for a discussion of this site and its finds and see Chr. Piteros, J.-P. Olivier et J. L. Melena, Les Inscriptions en Lineaire B des Nodules de Thebes, *BCH* 114,

Duhoux demonstrates that Linear A sign-groups/words show prefixes, suffixes, roots and reduplication while his appliance of Mackay's statistical methods for calculating the number of signs in a syllabic script will also be considered below (2.7).

### 2.3. Phaistos Disk (Ph.D.)

In a discussion of this most (in)famous Minoan inscription, Duhoux gives a good general description of the Phaistos Disk, which the present author agrees to be dated from the First Palace period, i.e., pre-1600 B.C., as it was found with Kamares ware. This is in contrast to Godart (1995) who seems to ignore the plentiful Minoan comparanda for the Disk which he published in the GORILA corpus but who appears to be suggesting a later date for the Phaistos Disk by drawing comparisons with Linear B ideograms. Duhoux is however inaccurate in calling the Phaistos Disk a roundel, as this term is applied to small round clay tokens which played a role in Minoan administration.<sup>12</sup> He is however correct in calling attention to the spiral nature of the inscription, known also on a gold ring from Mavrospelio at Knossos (KN Zf 13), a point made by Godart who also stressed that the find place of the Phaistos Disk is similar to the temple repositories of Knossos where the Snake Goddess was found, perhaps suggesting a religious context. Such a context is supported by the deliberate baking of the disk, to preserve a text, as opposed to the accidental baking of the ephemeral clay tablets. Duhoux, however, ignores the missing sign (DOG=A8) identified as the dotted triangle with a diacritical mark below<sup>13</sup>. This means that the Phaistos Disk has a text of 18 verses which on present evidence can be divided into 4 stanzas

Total - 18 Verses

A-B-C-D-E-F-F-E-F-G-H-I-J-B-J-B-J-B

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1990, 103-184 for the Thebes sealings in question.

<sup>12</sup>See G. Owens, The Phaistos Disk -The Enigma of the Minoan Script, *Kritika Daidalika*, 1997, Part 1:B, 39-99 for an extensive discussion with references to this most intriguing of Cretan inscriptions. The present author believes the Phaistos Disk (Ph.D.) may be the first "CD-ROM", Clay Disk — Read Only Minos!, "...qu'il permis de rire entre mycenologues".

<sup>13</sup>The classification of sign-groups established by the Belgian trio of experts (Duhoux-Olivier-Godart=DOG), i.e., from the periphery to the centre, and side A to side B, is followed here as opposed to the opposite erroneous reading of Arthur Evans. In addition see A. Bradshaw, The imprinting of the Phaistos Disk, *Kadmos* 15, 1976, 1-17 for a discussion of the missing sign.

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3 Non-Rhyming Verses	A-B-C-
6 Rhyming Verses	-D-E-F-F-E-F-
3 Non-Rhyming Verses	-G-H-I-
6 Rhyming Verses	-J-B-J-B-J-B

When it comes to reading the Phaistos Disk, a comparison of the Phaistos Disk and related inscriptions (Malia Stone Block and Arkalochori Axe, see below) with other scripts of Bronze Age Crete results in more than half of the signs being assigned syllabic values. Thus it is possible to “read” the Phaistos Disk to a certain extent due to the shared signs with other Cretan scripts but the problem is to “understand” it. The Phaistos Disk belongs to the family of Minoan scripts being most closely epigraphically related to the signs on the seals of the Cretan “Hieroglyphic” script. Where some signs are different in execution from their Linear counterparts this can be attributed to their being stamped, i.e., printed from a font more than 3000 years before the Gutenberg Bible.

In addition to clear evidence for its Minoan character and for rhyming, the text of the Phaistos Disk is characterised by prefixes, suffixes, roots and the very frequent reduplication of signs.

#### 2.4. Arkalochori Axe (A.A.)

The Arkalochori Axe contains 15 signs executed in a manner similar to that of the Phaistos Disk and the Malia Stone Block (M.S.B. = CHIC #328) and all three inscriptions are to be found in Heraklion Museum. They show many epigraphic similarities and the Arkalochori Axe and Malia Stone Block act as an epigraphic bridge between the Phaistos Disk and Cretan “Hieroglyphic” scripts. The present author agrees with Duhoux, *contra* Godart, that the Arkalochori Axe bears a true inscription for the following reasons: it was found with two Linear A inscriptions on axes which are now in Boston Museum (AR Zf 1 and 2, I-DA-MA-TE) and more than half its 15 signs can be assigned sound values. Indeed some of the signs -I-NA- and -DA- are well known from Linear A inscriptions, such as I-NA-I-DA on IO ZA 11, and -I-DI-NA- is also found in an Egyptian inscription recording words of the Keftiu. About these matters (I-DA-MA-TE, I-NA-I-DA, etc.) more will be said below. Of some importance is also the fact that one sign on this axe, the head in profile with distinctive hairstyle (“punk”), is found twice literally

heading the column and it occurs on the Phaistos Disk in initial position 90% of the time. Such a high percentage for initial position can only be matched by the double-axe, "A", in the Minoan and Mycenaean scripts. This level of initial position also holds for the alpha in alphabetic Greek inscriptions. As well as suggesting something about the nature of the Minoan inscriptions this observation may also indicate that the 15 signs of the Arkalochori Axe inscription constitute three words.

### 2.5. Eteocretan Inscriptions

This corpus of material is admittedly limited, equivalent to approximately the first 13 lines of the *Iliad*, but does provide evidence for the Minoan language. It was Bennet (1987: 87) who stated "that East Crete, notably Praisos, is the proverbial home of the Eteocretans who — if anyone did — may have preserved the Minoan language from the Bronze to the Iron Age". But Duhoux (1982: 262) had earlier concluded that "Cet ensemble de concordances fait que l'Indo-Européen présente une parente typologique indéniable avec l'Eteocretoise". Some 80 years earlier, R. S. Conway (1902: 156) had subjected the inscriptions to analysis and had established 12 correspondances between Eteocretan and 5 Indo-European languages resulting in his extremely perceptive concluding question: "Was an Indo-European language spoken in Asia Minor and in the Mediterranean basin in the Minoan Age?". This question was raised in print in 1902 just two years after Evans began excavations at Knossos and 15 years before Hrozný's decipherment of Hittite as Indo-European in 1917.<sup>14</sup>

### 2.6. Egypt and the Keftiu

This corpus is also limited but should be considered as it too provides evidence for the Minoan language. In the classic work on the subject by Vercoutter were published 27 inscriptions which refer to the Keftiu (Biblical Caphtor has been identified as Crete) and 28 which refer to the Islands of the Great Green Sea. These inscriptions refer to "Horus Keftiu", medicinal herbs for the Keftiu illness, mummification, Keftiu ships carrying timber, a vase made in Keftiu style, a stone

<sup>14</sup>See J. Bennet, The Wild Country East of Dikte: The Problem of East Crete in the LMIII period, *Minos* XX-XXII, *Studies Chadwick*, 1987, 77-88; Y. Duhoux, *L'eteocretoise — Les Textes — La Langue*, 1992; R. S. Conway, The Pre-Hellenic Inscriptions of Praisos, *ABSA* 8, 1902, 125-156 and G. Owens, Evidence for the Minoan Language (3): Eteocretan Inscriptions, *Kritika Daidalika*, 1997, 25-32.



material designated as Keftiu and a number of geographical lists. Two of these texts (Vercoutter 4 and 16) express words in the Keftiu/Minoan language, namely Keftiu words for their land including a word vocalised as I-DI-NA(I), perhaps a reference to Crete as the land of Ida, one of the holy mountains of Crete which is found a number of times in Linear A as I-NA-I-DA (Ioukta Za 11), and an incantation for those with the Keftiu illness. In addition another inscription has since come to light listing Aegean place names. These three texts constitute the Egyptian evidence for the Minoan language, allowing Keftiu/Minoan words to be literally “read”, even if not yet “understood”.<sup>15</sup> It is to be hoped that there will be more discoveries of inscriptions at places where Minoans came into contact with speakers of other languages such as Olympia in Mycenaean Greece, Miletos and Troy in Asia Minor, sites such as Ras Shamra/Ugarit and Tel-Kabri and Tel-Haror in the Levant and in Egypt in places such as Tell el Daba in the Nile Delta. From such places where different linguistic groups traded, mixed and married there must be the possibility of bilingual inscriptions being found.

## 2.7. Conclusions

There now follow some tentative remarks concerning the scripts of Minoan Crete and other sources of evidence for the Minoan language before proceeding to a tentative interpretation of texts and identification of the language. It will be useful to recap the evidence to date.

GORILA 1-5	(1976-1985)	1427 Inscriptions	7147 Signs
GORILA 6:1	(1985-1995)	55+	212+
GORILA 6:2	(1995-1998)	25+	87+ <sup>16</sup>
Total Linear A 1998 =		1507+ Inscriptions	7447+ Signs
CHIC=GORILA7?	(1996)	276+ Inscriptions	1554+ Signs
PLUS CHIC=PETRAS	(1996)	19+	??+?
POST CHIC	(1996-1998)	5+	11+ <sup>17</sup>

<sup>15</sup>See J. Vercoutter, *L’Egypt et le Monde Egeen Pre-Hellenique*, 1956, M. Astour, Aegean Place Names in an Egyptian Inscription, *AJA* 70, 1966, 313-317 and G. Owens, Evidence for the Minoan Language (4): Egypt and the Keftiu, *Kritika Daidalika*, 1997, 33-37.

<sup>16</sup>See G. Owens, Catalogue of Published and Announced Inscriptions in Linear A (1985-1998), forthcoming, for the present total of *c.* 80+ inscriptions and *c.* 300+ signs since 1985.

<sup>17</sup>See G. Owens, C’est Post-CHIC, 5 “Cretan Hieroglyphic” Inscriptions (1996-

Total CHIC	1996 =	300+ Inscriptions	1565+ Signs
Ph.D/M.S.B./A.A.			
Phaistos Disk		1	242
Malia Stone Block		1	15
Arkalochori Axe		1	15
Total =		3 Inscriptions	272 Signs
TOTAL =		1810 Inscriptions and	9284 Signs

This enlarged database and a tentative identification of just one pre-Linear B script on Crete will allow the Cretan «Hieroglyphic» corpus to be amalgamated with the Linear A corpus. This will result in an increase of over 20% in the size of the Minoan corpus. This increase in data will have taken research one important step closer to the possibility of a future decipherment of Linear A and identification of the Minoan language. These inscriptions constitute the available evidence for the Minoan language along with the relevant Eteocretan and Egyptian inscriptions.

As discussed above Duhoux's most valuable comments on each section are in regard to statistical and linguistic observations. Firstly, Duhoux's appliance of Mackay's statistical methods for calculating the number of signs in a syllabic script which no longer exists also leads to interesting observations.<sup>18</sup> Mackay arrived at the formula

$$\frac{L^2}{(L-M)} - L = T$$

where L represents the existing number of signs of the script, M the number of different syllabic signs existing and T the predicted Total number of signs in the script. Applying this formula gives the following results:

Cretan «Hieroglyphic» = 1565 signs with 79 certain different syllabic signs:

$$(1565^2 / (1565 - 79)) - 1565 = 83.20 + 15\% = c. 95$$

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1998), 1999, forthcoming.

<sup>18</sup>See Y. Duhoux, Une Analyse Linguistique du Lineaire A, *BCILL* 14, 1978, 65-129, especially 117-119 for a discussion of Mackay's article in *Statistical Methods in Linguistics* IV, 1965, 15-25.

Linear A = 7437 signs with 75 certain different syllabic signs<sup>19</sup>:

$$(7437^2 / (7437 - 75)) - 7437 = 75.76 + 15\% = c. 87$$

Ph.D/M.S.B./A.A. = 272 signs with 56 certain different syllabic signs:

$$(272^2 - 272 / (272 - 56)) = 70.53 + 15\% = c. 81$$

The margin of error detected by Duhoux in this formula when compared to deciphered syllabic scripts, i.e., Linear B and Classical Cypriot, was 15%, which when applied to the Minoan corpus gives the following results: Cretan «Hieroglyphics» had *c.* 95 syllabic signs, Linear A had *c.* 87 and the Phaistos Disk and related inscriptions had *c.* 81 syllabic signs, while Linear B had 87, three of which were never used on Crete. It is most likely that the syllabary for the script(s) of Minoan and Mycenaean Crete consisted of *c.* 80-95 signs. Given the present data there is an observable similarity between the syllabaries of Linear B, Linear A and Cretan «Hieroglyphic» inscriptions including the Phaistos Disk.

Secondly, Duhoux correctly points out that Cretan «Hieroglyphic», Linear A and Phaistos Disk sign-groups/words show prefixes, suffixes and identifiable roots. The Arkalochori Axe is too short to allow such observations. All of the above listed features are also to be found in Linear B writing the Mycenaean Greek language. An interesting phenomenon is that of reduplication which has been observed to be a feature of Anatolian and more generally of Indo-European languages. Reduplication is a strong feature of the scripts of Minoan Crete. Such observations may point to some level of relationship between the language of Cretan «Hieroglyphic», Linear A and the Phaistos Disk, and perhaps to some relationship between these corpora expressing the Minoan language and the Mycenaean Greek language of Linear B.

### 3.1. Decipherment

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<sup>19</sup>The syllabary for Linear A is constituted by the 65 AB signs plus the 10 A signs which are definitely syllabic signs in Linear A. The regional variations, i.e., those signs found at only one site and the signs which are not used syllabically have been excluded.

Linear A offers the best chance for future understanding as it constitutes more than 80% of the evidence for the Minoan language. In addition it is now possible to read Linear A in *c.* 87% of its entirety as a working hypothesis using Linear B sound values.<sup>20</sup>

The statistical studies which have been carried out have demonstrated a decreasingly smaller difference in the phonetic pattern of the language expressed by Linear A and Linear B, i.e., how frequently the syllabograms appeared in initial, medial or final position based upon an ever larger database. In 1974 Packard demonstrated a phonetic difference between the Minoan and Mycenaean languages of 19.00% +/- 02.82, while in 1989 Duhoux demonstrated a phonetic difference of 14.34% +/- 01.41, and Owens in 1996, utilizing a database twice the size of that available to Packard, demonstrated a phonetic difference of *c.* 10.90% +/- 01.80. This re-inforced Packard's tentative conclusions that the Minoan language is probably not unrelated to Mycenaean Greek (i.e., it belongs to the Indo-European family of languages). The present author has suggested the difference between the languages will not lessen further as the epigraphic difference between the latest stage of Linear A (LMIB) and the earliest stage of Linear B (LMIIIA1) stands at *c.* 13%.<sup>21</sup> This is the difference between Linear A and Linear B, and between the languages they express respectively. The difference between English and French is 10-15%.

### 3.2. Interpretation of the Texts

In the tentative interpretation which follows Linear A signs are read with Linear B sound values with the caveat that although this is a strong working hypothesis it has not been proved conclusively for each and every sign. Changes do occur when a script is adopted and adapted to the needs of another language as happened with Linear B at Late Minoan Knossos. Linear B, however, remains the only starting point for a study of

<sup>20</sup>See D. Packard, *Minoan Linear A*, 1974, Y. Duhoux, *Le Lineaire A: Problemes de Dechiffrement*, *BCILL* 49, 1989, 59-119 and G. Owens, «Computer Techniques in the Study of the Minoan Linear A Script» (1971-1996) *Back to the future?*, *Kritika Daidalika*, 1997, 175-186, for a discussion of the methods applied and the results obtained.

<sup>21</sup>See G. Owens, *The Date of the Linear B Archicve from the «Room of the Chariot Tablets» at Knossos — LMII or LMIIIA1?*, *Talanta* 26-27, 1994-95, 28-49 for a discussion of the historical background to the change from Linear A to Linear B at Late Minoan Knossos.

Linear A. It is now possible to a large degree to «read» Minoan inscriptions, is it possible however to understand the Minoan language?<sup>22</sup> Thanks to Duhoux and his compatriots the Minoan inscriptions can be «read» and quite rightly they have been made known to a wider audience of Indo-European scholars who are invited/challenged to review the new evidence of an old problem to see whether they can «understand» the texts.

In the following discussion, the present author will limit himself to three examples in an attempt to interpret the Minoan inscriptions by considering the best preserved religious text (IO Za 2), evidence for Minoan Demeter, and words from the archive of Haghia Triada. These and further interpretations were given by the present author in 1995, 1996 and 1997 (see *Structure of the Minoan Language* for full details and references) and are here repeated in the hope that one's elders and betters may shed light on the problem.

i) IO Za 2

LINE .1 A-TA-I-PE-WE-JA . JA-DI-KI-TU . JA-SA-SA-RA-[ME .  
U-NA-KA-NA-]SI . I-PI-NA-MA .

LINE 2 SI-RU-TE . TA-NA-RA-TE-U-TI-NU . I-DA-[I-NA  
«Astarte (?), Lady of Mount Dikte,  
May You Give Victory, Ipinama,  
Destroyer, They Supplicate (?), of Holy Mount Ida»

This Minoan religious inscription preserves 8 words with 32 signs, while 5 can be restored with certainty and 2-3 can be tentatively restored. This is the best evidence for the Minoan language containing all the terms of the Minoan Libation Formula. Any interpretation such as that offered here must satisfy both a linguistic analysis and a contextual one.

ii) Minoan Demeter

In 1954 N. Boufides applied Linear B sound values to two double-axes from the cave of Arkalochori (AR Zf 1 and 2) inscribed in Linear A, and in the repeated word I-DA-MA-TE claimed to have identified the Minoan goddess Demeter. In 1993 I. Sakellarakis discovered a Linear A inscription on Kythera (KY Za 2) which reads as DA-MA-TE. In 1996 the

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<sup>22</sup> The problem is akin to a speaker of an Indo-European language being given a Basque, Finnish or Turkish newspaper which can literally be read as the script is familiar but is it understood?

present author discussed these finds along with Minoan evidence for *Ida* and *Dikte*, two holy oronyms of Crete, which appear in the Minoan Libation Formula, and suggested they be explained by a combination of Minoan iconography and Indo-European etymology as stemming from I-E. *\*(w)id* 'to see' and I-E. *\*dik* 'to show' respectively. This could perhaps explain *Demeter* as 'mother' of *Ida*, one of the mountains where the epiphany of the goddess occurred. Although the etymology and derivation of her name are still being debated, as in antiquity, *Demeter* has a Minoan origin in Linear A and the second part of her name is -MA-TE, mother.<sup>23</sup>

iii) Administrative Terms from Haghia Triada

KU-RO, KU-RA, KU-RAI	Total
PO-TO-KU-RO	Grand-Total
DA-KA, KI-RI-TAI, SI-TU	Wheat, Barley, Grain
I-RYA	Olive-Oil
SI-KA	Figs

These words have been interpreted by context in the Minoan archive of Haghia Triada. Of great importance is the word for total, KU-RO for masculine objects and KU-RA or KU-RAI for feminine. Regardless of the origin of the word (Indo-European or a Semitic loan word in origin?), the way it is used and declined by gender is most illuminative. In addition PO-TO-KU-RO has been identified as Grand-Total. The other listed words can be equated with the staple products of the Cretan agricultural economy. They would seem to indicate that either all these words are loan words in Mycenaean Greek or that there was some relation between the languages of Mycenaean Greece and Minoan Crete.

### 3.3. Identification of the Language(s) Used

In his consideration of the language of Minoan Crete, Duhoux unnecessarily complicates the already difficult epigraphic situation by exaggerating the number of scripts in

<sup>23</sup> See N. Boufides, Inscribed Axes from Arkalochori, Crete, *Archaeologiki Ephemeris* 1953-54, 1954, 61-74; I. Sakellarakis et J.-P. Olivier, Un vase en pierre avec inscription en lineaire A du sanctuaire de sommet Minoen de Cythere, *BCH* 118:2, 1994, 343-351; G. Owens, New Evidence for Minoan 'Demeter', *Kadmos* 35:2, 1996, 172-175; and Y. Duhoux, LA>B da-ma-te=Demeter? Sur la langue du lineaire A, *Minos* 29-30, 1997, 289-294.

use and neglecting the fact that the two traditions of the Minoan script (Cretan «Hieroglyphic» and Linear A) usually have chronological differences and owe their external differences more to the material on which they are written (clay or stone). Duhoux also complicates the linguistic situation by dwelling on Homer's reference (*Odyssey* xix 172-177) to a Crete with many languages including Eteocretan. Since this clearly refers to the Iron Age it is not relevant to Pre-Hellenic languages of Bronze Age Crete. Post Bronze Age Crete must also have had speakers of the Dorian and Arcadian dialects but this is not relevant to a consideration of the Minoan language. On the other hand the Minoan Libation Formula demonstrates a linguistic 'koine' over the island and is also to be seen in the Aegean. Duhoux also misleadingly suggests that Cretan «Hieroglyphics» could be the ancestor of Eteocretan. There can be no connection between these scripts, since one is syllabic and the other alphabetic, but there may be a connection between the language(s) they express. It has also been seen that Duhoux's appliance of Mackay's formula is unnecessarily vague and that there is a high level of similarity between the numbers of signs in the syllabic scripts of Minoan and Mycenaean Crete. This suggests to the present author that there probably was a linguistic, as well as epigraphic and cultural, unity on the island of Crete in the Minoan period. The seemingly local differences may be due to geographical variations in dialect on an island as long as Crete. The people of Petras/Siteia (East Crete) do and probably have always spoken differently from those in Knossos/Heraklion (North Central Crete) and Phaistos/Mesara (south Central Crete), Armenoi/Rethymno and Nerokourou/Khania (West Crete).<sup>24</sup>

In looking for possible cognate language(s) Duhoux in great detail considers connections between Anatolia and Crete and various theories concerning the spread of Indo-European languages including Renfrew's theory that the languages spread with Neolithic farmers from Anatolia c. 7000 B.C. This has been the subject of much discussion and will continue to be so.<sup>25</sup>

<sup>24</sup> See N. Kontosopoulou, *Linguistic Atlas of Crete*, Crete University Press, 1988, for a record of the rich linguistic diversity to be found within the 'Great Island'

<sup>25</sup> See C. Renfrew, *Archaeology and Language*, 1987 and J. P. Mallory *et alii* for a critical review and detailed discussion of this work in *Antiquity* 62, 1988, 607-609 and 564-595 and for the most recent discussion of research and for the

What is more directly relevant to the subject however than a lengthy discussion of the hypothetical language spoken at Catal Hüyük is a consideration of possible cognate languages based on evidence for the Minoan language. Duhoux correctly stresses that any interpretation must explain not only items of vocabulary but the structure of the language and even complete votive sentences such as that given above which must make sense within their archaeological context (Ventris' decipherment was proved without doubt by the tripod tablet PY Ta 641). Duhoux concludes with a reference to the words for Total and Grand-Total (discussed above) and to the Etruscan language (the original belief of the young Michael Ventris for the language of Linear B).

#### 4. Future Perspectives

The future, with more finds and publications of Minoan inscriptions, can only be brighter. The task of present scholars is to re-examine old theories and to formulate new ones always based upon new epigraphic evidence. But the present generation must try to take research one step further and follow the example of Duhoux in trying to identify the Minoan language. The evidence for the Minoan language has never been so well laid out or so plentiful. The most likely explanation for the nature of the Minoan language is that it does indeed belong to the Indo-European family of languages as has been claimed on and off for nearly a century. What is needed is closer analysis, again, by Indo-European scholars. It is

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latest word on the Minoan language see C. Renfrew, *Word of Minos: The Minoan contribution to Mycenaean Greek and the Linguistic Geography of the Aegean Bronze Age*, Mycenaean Seminar given in London (5-11-97), summary in *BICS* 42, 1998, 225. A revised version of this paper appeared under the same title in the *Cambridge Archaeological Journal* 8,2, October 1998, 239-264. In particular see Renfrew's thorough discussion with invaluable personal communications on the subject from the late John Chadwick and an appraisal of the present author's views on the Indo-European nature of the Minoan language (p.259) "The suggestion that Minoan should be regarded as an Indo-European language has indeed been put forward by a number of scholars, more recently Owens (1996, 194). He accepts the likelihood that the Minoan language of the Late Bronze Age was the descendent of the Proto-Minoan spoken by the first, Neolithic inhabitants of Crete, brought by them from western Anatolia. His position is thus to be distinguished from that of scholars such as Palmer (1958; 1965) who relate the Minoan language to the Luwian of the later Bronze Age of western Anatolia, the presence of which in Crete would be the product of more recent population movements".

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the belief of the present author that all available evidence must be utilized in trying to understand the Minoan language, predominantly but not exclusively through the Linear A inscriptions, which offer the best hope for a future understanding of the Minoan language.

Indo-European scholars are invited/challenged to answer one question, as a 'spondai' to the memory of the late Dr. John Chadwick. Is the language of Bronze Age Crete as recorded in Minoan inscriptions (c. 2000-1400 B.C.) to be identified as Indo-European?