

The Structure of the Minoan Language*

Gareth Owens

Heraklion

INTRODUCTION

Linear B was deciphered by Michael Ventris on 1st June 1952 (Work-Note 20) as recording Mycenaean Greek. In the 1950's and 1960's the attention of many scholars naturally turned to the earlier script of Linear A and the Minoan Language and the possibility that it might be Indo-European. Two of the first serious proponents of the Indo-European theory were Palmer and Huxley.¹ The following two decades

*This research is respectfully dedicated to the memory of Michael Ventris on the occasion of the 40th Anniversary of the publication of *Documents in Mycenaean Greek* (1956). In Greece, a Memorial Service is held 40 days after the death of the deceased and then every year. 40 years after the untimely death of Michael Ventris his achievement is not forgotten.

This research was made possible by a "Council of Europe" Post-Doctoral Research Fellowship (1992-1994) awarded by the Hellenic Ministry of Education and State Scholarship Foundation (IKY), which I gratefully acknowledge. I would like to thank the following individuals who have assisted my research in Greece: Dr. V. Aravantinos, Dr. S. Constantinidi, Ms. S. M'Barek, Prof. J. L. Melena and Prof. M. M. Nikolidakis; as well as Professors Babiniotis, Magoulas, Proponas and Charalambakis of Athens University for their constructive criticism. In addition I thank my colleagues at the 'Daedalic' Technological Educational Institute of Heraklion (TEI/H) on Crete. I would also like to thank my wife and muse Kalliope for her assistance at all stages of my research and in the preparation of this article (31-77-11). I am, of course, responsible for any shortcomings and the views expressed.

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 article first appeared in G. Owens, *Kritika Daidalika, Studies Hooker*, 1997, 103-140 and the article was subsequently revised in 1998 and the bibliography expanded to take account of new works.

¹See L. R. Palmer "Luvian and Linear A" in *Transactions of the Philological Society* 1958, 75-100 and G. Huxley "Crete and the Luwians" 1961 for two early identifications of the Minoan language as Indo-European in the decade following the decipherment of Linear B. See G. Owens, *Evidence for the Minoan Language (1): the Minoan Libation Formula, Cretan Studies 5, Studies Hood*, 1996, 163-206 for the present author's first detailed discussion of this subject.

Volume 27, Number 1 & 2, Spring/Summer 1999

saw much needed study and publication of Minoan inscriptions. In the 1970's and 1980's a number of works discussed various observations which could be made about the Minoan language. The evidence put forward was the result of archaeological, linguistic and computer research. In the last two decades it has been suggested that the Minoan language could be Indo-European. The 1980's saw a number of works, unavailable to previous scholars, which have greatly aided a more comprehensive study of the Minoan language from archaeological, epigraphic and linguistic viewpoints. These works include Renfrew "Archaeology and Language" (1987) GORILA 1-5 "Godart et Olivier Récueil des Inscriptions en Lineaire A 1-5" (1985) and Szemernyi "Einführung in die vergleichende Sprachwissenschaft" (1980).

In previous articles reference has been made to the work of scholars who suggested that the Minoan language may be Indo-European (see EVIDENCE 1-4 for detailed bibliographical references). This present study, undertaken in the 1990's, is a new approach to an old problem. In this research the Indo-European theory has been implemented, both in explaining the individual terms which constitute the Minoan Libation Formula and in interpreting the substantially complete religious inscriptions themselves. The method given above interprets the Minoan language of the Linear A religious inscriptions within their archaeological context. In addition several words from a known administrative agricultural context from Haghia Triada are also considered. This work is very much a synthesis. It is based on the previous articles on Evidence for the Minoan Language which themselves built upon the previous century of scholarship as regards the archaeology, epigraphy and philology of Minoan Crete. This present article is a study of the structure of the Minoan language and is presented here in the hope that the observations made will be of interest to Indo-European linguists.

It is now necessary to summarize the evidence for the Indo-European nature of the Minoan language c.2000-1425 B.C. This will be discussed below under the subjects of phonology, morphology and vocabulary. Then the position occupied by the Minoan language within the Indo-European family of languages will be considered. The nature of the Linear A evidence is sparse and incomplete but the above systematic approach allows observations to be made.

The Journal of Indo-European Studies

To tackle the Minoan inscriptions, with any hope of success, it is necessary to know something of the sound values of the Linear A script, the nature of the Minoan language and the archaeological context.² All of these criteria can now be met, to some degree, for the Minoan inscriptions and thus a detailed discussion of the Minoan language can now be put forward. Below are listed the main 25 Minoan words which can be interpreted by context and which can reveal the structure of the Minoan language. They are here presented with Linear B sound values, a working hypothesis which will be more critically discussed below.³

In this present study the recent advances made in archaeology, epigraphy and linguistics are applied to a specific case-study limited in time and space (whatever that might mean to Cosmologists), i.e., the Minoan language of Second Millenium Crete.

EVIDENCE FOR THE MINOAN LANGUAGE

i) The Minoan libation formula A-J

A	STEM	A/JA-TA-I-PE-
	SUFFIX	-DE-KE, -WA-E, -WA-JA, U-JA
	VARIANTS	A-TA-DE, JA-NA-TI-PE-WA-JA, I-PE-WA-JA
B	STEM	A/JA-DI-KI-
	SUFFIX	-TE-TE-DU-[.]-DA, -TE-TE-DU-PU2-RE, -TE, -TU
	VARIANTS	A-DI-DA-KI-TI-PA-KU, DI-DI-KA-DE

²See M. Pope "Decipherment", 1975, for a history of successful decipherments and the prerequisite criteria. These are now being met for Minoan Linear A, i.e., more data, a knowledge of sound values and some knowledge of the nature of the language, and most importantly the context in which inscriptions should be studied.

³The Linear A sign-groups are transliterated according to Linear B sound values, with the frequently expressed caveat that this is extremely likely but not yet definitely proved for every sign. See D. Packard, "Minoan Linear A", 1974; L. Godart, "Du Lineaire A aud Lineaire B", in *Homages a Henri van Effenterre*, 1984, 121-128, J.-P. Olivier, "'Lire' Le Lineaire A", in *Le Monde Grec*, 1975, 441-449 and Y. Duhoux, "Le Lineaire A: Problemes de Dechiffrement", in *Problems in Decipherment BCILL* 49, 59-119. The GORILA corpus (1976-1985) has made it possible for the Linear A inscriptions to be systematically studied and for conclusions to be drawn. Post-1985 Linear A inscriptions are given in "GORILA 6", *Kritika Daidalika*, 1997, 237-243.

C	STEM	A/JA-SA-SA-RA-
	SUFFIX	-ME, -MA-NA
	VARIANTS	A-SA-MU-NE, JA-SA-RA-A-NA-NE, JA-SA-A321 [A-SA, RI-QE-TI-A-SA-SA-RA-A325
D	STEM	U-NA-KA-NA-
	SUFFIX	-SI
	VARIANT	U-NA-A
	INFIX ?	U-NA-RU-KA-NA-TI, U-NA-RU-KA-NA-JA-SI, U-NA-RU-KA[
E	STEM	I-PI-NA-
	SUFFIX	-MI-NA -MA
F	TERM	SI-RU-TE
	VARIANT	SI-RU-DU
G	STEM	TA-NA
	SUFFIX	-I-PE-U-TI-NU, -I-PE-TI, -DI-TE[.]-KE, -RA-TE-U-TI-NU
	VARIANT	TA-NU-NI-KI-NA
H	TERM	I-DA
	STEM	I-DA-
	SUFFIX	-A, -MI, -MA-TE
	PREFIX	I-NA-
	VARIANT]JA-U-PA-MA-I-DA-PE-DI, DA-MA-TE
I	STEM	I-NA-
	SUFFIX	-JA-PA- QA, -J A-RE-TA [] QA, -TA-I-W02-DI- S I-KA, -I-DA
J	STEM	I-JA-
	SUFFIX	-PA, -RE-DI-JA, -TE

ii) X- OTHER WORDS OCCURRING MORE THAN ONCE

JA-TI-TU-KU	LAZb 1 (TWICE)
A-KO-A-NE	PK Za 11 AND PK Za 12
TU-ME-I	PK Za 8 AND PK Za 14
A-JA	SY Za 2 AND PE Zc 2
(DU-)PU ² -RE(-JA)	ZA Zb 34 AND PK Zb 16 etc.
KI, KI-RU	KE Zb 3 AND MI Zb 1
RI/WE-QE-TI	PO Zg 1 AND PL Zf 1
KE-SI-TE etc.	MA Ze 11 AND KN Ze 45 AND KN Ze 49

iii) THE ARCHIVE OF HAGHIA TRIADA

KU-RO, KU-RA, KU-RAI
 PO-TO- KU-RO
 DA-KA, KI-RI-TAI, SI-TU
 I-RA²
 SI-KA

RESUME OF THE TERMS OF THE MIIYOAN MNGUAGE

TERM—MEANING—*I.-E.

i) THE MINOAN LIBATION FORMULA

A	A-J A/JA-TA-I-PE-WA-JA MEANING = Initial reference to feminine noun (-WA-JA) connected with A-TA and strength (I-PE).	*wis- (?) strength/force (?) Astarte (?)
B	A/JA-DI-KI-TE/TU MEANING = Diktaean = mountain where the epiphany occurred	*dik- make clear, reveal, show
C	A/JA-SA-SA-RA-ME MEANING =	Asasara/Ishassara (My) Lady, Great Mother Goddess
D	U-NA-KA-NA-SI MEANING = MORPHOLOGY = May you give victory, success	*nik- victory, success verb 2nd person singular you...
E	I-PI-NA-MI-NA MEANING =	*wis- *men- Strength/Anger
F	SI-RU-TE MEANING =	*ker- Destroyer
G	TA-NA- MEANING = MORPHOLOGY =	*ten-? (stretch out/supplicate ?) verb 3rd person plural they...
H	I-DA MEANING = Ida = mountain where the epiphany occurred	*wid- see
I/J	I-NA-/I-JA-' MEANING =	*eis- holy/sacred

ii) X - OTHER WORDS OCCURRING MORE THAN ONCE

JA-TI-TU-KU	= *I.-E.	= *dik-	= reveal	(cf. Term B)
A-JA	= *I.-E.	= *?	= ?	(cf. Term H)
(DU-)PU2-RE(-JA)	= *I.-E.	= *?	= ?	(cf. Term B)
A-KO-A-NE	= *I.-E.	= *akka	= mother	(cf. Term C)
TU ME-I	= *I.-E.	= *tum-	= hill	(cf. Term C)

Volume 27, Number 1 & 2, Spring/Summer 1999

RI/WE-QE-TI	= *I.-E.	= *?	= ?	(cf. Term C)
KI-RU	= *I.-E.	= *kul-	= cup ?	
KE-SI-TE etc.	= *I.-E.	= *k-s-t	= nomen agentis custodian?	

iii) *THE ARCHIVE OF HAGHIA TRIADA*

KU-RO, KURA, KU-RAI	= Total
PO -TO- KU-PO	= Grand-Total
DA-KA, KI-RI-TAI, SI-TU	= Wheat, Barley, Grain
I-RA ²	= Olive-oil
SI-KA	= Figs

i) MLF A-J = 10 words; ii) MLF X = 8 words; iii) HT = 7 words.
Total = 25

2) PHONOLOGY

- i) Szemerényi's Reconstructed System for Proto-Indo-European
- ii) The Transference of Sound Values from Linear B to Linear A
- iii) Laryngeals
- iv) A Reconstructed System for the Minoan Language

i) Szemerényi's Reconstructed System for Proto-Indo-European

Obstruents	p	ph	b	bh
	t	th	d	dh
	(k'	k'h	g'	g'h?)
	k	kh	g	gh
	kw	kwh	gw	gwh

Resonants	y	w		
	m	n		
	l			
	r			

Syllabic Liquids and Nasals	n	m	ñ	m̄
	o	o	o	o
	l	r	l̄	r̄
	o	o	o	o

Vowels and Diphthongs

i	u	ī	ū	ei	oi	eu	ou
e	ə	o	ē	ō	ai	au	
a			á				

The Journal of Indo-European Studies

One to Three Laryngeals

This is now the generally accepted reconstructed system for the phonology of Proto-Indo-European. Scholars have been working on this subject for more than a century and the discoveries of Hittite, Mycenaean Greek and Tocharian have greatly modified the Indo-European data base; allowing the reconstruction to be based on more languages than previously, and importantly on earlier languages, as both Hittite and Mycenaean Greek can be dated to c. 1400. There are, of course, still unresolved problems in reconstructing Proto-Indo-European phonology but new evidence is continually illuminating the likely nature of this language and the present state of knowledge, as recently laid out by Szemerényi, is given above. It has also been pointed out that such a study must recognize the diachronic development of Proto-Indo-European and the Indo-European groups. A reconstructed system can not be applied rigidly to all languages at all times. The linguistic data for the languages is uneven and it is now clear that some languages split off from Proto-Indo-European before others. This is especially true for Hittite, and as shall be seen below, may also apply to Minoan.⁴

ii) The Transference of Sound Values From Linear B to Linear A

In 1975, Olivier was able to demonstrate that 10 homomorphic AB signs could be identified as having the same sound value in both scripts. This was demonstrated by similar sign-groups occurring in both scripts. Olivier showed that the phonetic values established by Ventris for Linear B could be applied for certain to 10 signs found in Linear A, i.e., DA, I, JA, KI, PI, RI, RO, TA, TE and SU. In 1984, Godart developed Olivier's work and extended it to include 3 more signs, i.e., the same 10 as Olivier plus PA, SE and TO. In 1989, Duhoux again listed homomorphic signs that appeared in similar sign-groups in both Linear A and B. His list included 30 Signs, i.e., PA, TU, PO, RO, KE, NA, DA, JA, TO, E, A, RA, PI, SI, SU, NI, QA, RI, TA, WA, MI, SE, TI, ME, QE, TE, MA, U, I and KI. These 30 sound values, while still constituting less than half of the Linear

⁴See C. Renfrew "Archaeology and Language", 1987, chapter 5, 99-119 Language and Language Change for a review of the subject and discussion as to why the traditional family tree model of languages is no longer appropriate.

A syllabary, are nevertheless important in showing that the syllabary is basically the same as that of Linear B. Among these 30 sound values are 4 of the 5 vowels, i.e., A, E, I and U; as well as 12 of the 13 consonants, i.e., D, J, K, M, N, P, Q, R, S, T and W. Thirty of the sixty basic sound values of Linear B can be demonstrated to have existed in Linear A. Furthermore, this enables these signs to be arranged in a Provisional Syllabic Grid and many of the remaining sound values for which there are homomorphic signs to be hypothesized. This is shown in Table 1. The main deficiencies in the Provisional Syllabic Grid for Linear A are the weakness (but not lack) of the Consonant+O series; the lack of a certain match between Linear B and Linear A in regard to the Z+Vowel series; and in regard to the non-basic, i.e., doublet and complex signs. In Table 1 are presented a Revised Syllabic Grid for Linear B and a Provisional Syllabic Grid for LMIB Linear A as a working hypothesis by which to approach the Linear A inscriptions and the Minoan language.⁵

Among the non-basic signs it can be seen that Linear A is strong in doublet and complex signs of Consonant (+W)+A, and strong in the doublet P+Vowel 2 series, which has been identified as a "non-Greek consonant ... from the Minoan substratum".⁶ There are 10 LMIB Linear A syllabic signs that do not have a homomorphic counterpart in Linear B. i.e., A301, 305-6, 310, 312, 314-5, 318 and 321-2. Of these 10 Linear A signs, A301 occurs 27 times as a Syllabic sign, while the other 9 signs occur 40 times in total. Thus the chance of establishing the value of A301 is higher than that of the other syllabic signs. It is here suggested that A301 represents one of the basic sound values missing from the Provisional Syllabic Grid (and excluding the deficient -O series) i.e., PE or WE. It is of course possible that some AB signs had different sound values in Linear A and B, as for example happened with the letters H, P and X when the Romans adopted the Hellenic Alphabet via the Etruscans. Likewise the letters C, G, H, J, W and Y in English have not always had these values.

When a script travels, changes occur to cover the needs of the new language. The Linear script on Crete, however, did not

⁵See G. Owens, "The Untransliterated Syllabograms of Linear B - 40 Years on", summary of the Michael Ventris Memorial Lecture 1992, in *BICS* 39, 1992, 265-266.

⁶See J. L. Melena, "On Untransliterated Syllabograms *56 and *22", *Tractata Mycenaea*, 1987, 203-232.

travel, rather it developed to accomodate another language. As stated above, this present study is limited in time and space, i.e., Bronze Age Crete.

Another approach to test the validity of transferring sound values from Linear B to Linear A is the computer assisted statistical approach. In 1974, Packard's statistical analysis was based on the frequency of each sign in Linear A and Linear B in initial, medial and final position. This information showed a level of similarity between how homomorphic signs behave in regard to their position within a sign group, in both Linear A and B. Packard compiled all of the information available to him in 1974 and from this drew conclusions, based on the data, concerning the phonetic relationship between the languages conveyed by Linear B and Linear A.⁷

Packard's study was a thorough analysis of all syllabic signs, both Consonant+Vowel and Pure Vowel sound values. This enabled him to demonstrate the difference between the languages expressed by Linear A and Linear B as approximately 20%. The original observations of Packard were extremely perceptive and have been proved correct 25 years later by an enlarged database subjected to the same methods. Sometimes it is indeed instructive to trace steps backwards to discover the way forward. This increasingly smaller percentage difference between the phonetic patterns of the languages expressed by Linear A and Linear B scripts on Crete is suggestive of a high level of relativity between them.

Packard (1974) demonstrated a correlation of 19.00% \pm 2.82. Duhoux (1989) demonstrated a correlation of 14.34% \pm 1.41. In 1996 this correlation now stands at 10.90% \pm 1.80. This trend, towards correlation and similarity, can be demonstrated by means of a graph plotting the error bars showing the \pm % range of the allowed regions. The observed trend is demonstrated even more clearly by the fact that the error bars do not overlap at all in their allowed regions.

⁷See D. Packard "Minoan Linear A", 1974, and G. Owens "'Computer Techniques in the Study of the Minoan Linear Script A' (1971-1996) Back to the Future?", *Kritika Daidalika*, 1997, 175-186, for a discussion of the computing and statistical techniques employed in checking the validity of transferring the sound values of Linear B to Linear A.

A/B

01-02-03-04-05-06-07-08-09-10-11-12-13-14-15-16-17-18-19-20-21-22

PACKARD 1974 [=====]DUHOUX 1989 [=====]OWENS 1996 [=====]

VERY SIMILAR

DISSIMILAR

In conclusion it is possible to say that the correlation between the sound values of Linear A and Linear B now stands at a difference of 10.90% \pm 1.80%. It is predicted that this figure will not drastically change as a result of new discoveries. In view of the more than 100% increase in the database since 1974, and in view of the lack of overlap between the error bars, the relation and correlation between Linear A and Linear B as demonstrated by OWENS 1996 can be statistically shown to be in the region of 09-13%.

The percentage difference of the phonetic patterns is approximately the same as the difference in the number of signs used in the Linear A and Linear B scripts, LMIB Linear A consisted of 65 AB signs and 10 A signs, while LMIIIA1 RCT Linear B most probably consisted of 65 AB signs and 16 B signs.⁸ The AB signs constitute over 87% of both the LMIB and LMIIIA1 syllabaries at Knossos. Thus the epigraphic difference between the latest stage of Linear A and the earliest stage of Linear B is approximately the same as the difference between the phonetic patterns of the languages expressed by Linear A and Linear B. This, it is suggested, is the extent to which the Linear A and Linear B scripts differ and thus the sound values of Linear B can be applied to Linear A as a working hypothesis and thus almost 90% of Linear A can be read with certainty.

iii) Laryngeals

Mention has also been made of the possibility of laryngeals in the Minoan language. The presence of these sounds in early Indo-European had been suspected last century in order to explain certain points of Indo-European phonology, but as they had fallen from use by the time of the written records of the First Millenium, their existence had not been proved. The

⁸See G. Owens, "The Date of the Linear B Archive from the 'Room of the Chariot Tablets' at Knossos — LMII or LMIIIA1", *Talanta, Proceedings of the Dutch Archaeological and Historical Society*, XXVI-XXVII, 1994-1995, 29-48, for a full discussion of the dating of the RCT archive.

decipherment this century of Hittite, however, as early Indo-European c. 1400 B.C., verified the existence of these postulated sounds in words such as Hittite *hanti* cognate to Latin *ante*, and Hittite *newahh* cognate to Latin *novare*. In the conservative Hittite language of the Second Millennium, laryngeals were pronounced. This may also have been the case in Minoan. This may explain why many sign-groups in Linear A begin with A/JA-, which are perhaps similar to the laryngeal *h* in Hittite.⁹ It is possible that this phenomenon reflects the presence of laryngeals in this early stage of the Minoan Indo-European language c.2000-1425 B.C. The existence of laryngeals may indicate the early nature of the Minoan language, as with Hittite where the more extreme archaism suggests that if it is not a "sister" of Proto-Indo-European, it is at least a "daughter" that split off from Proto-Indo-European long before the latter started to disintegrate. This analogy equally applies to Minoan.

iv) A Reconstructed System for the Minoan Language

The sounds of the Minoan language, as expressed by the writing conventions of the Linear A syllabic script, can be mostly read using the sound values of Linear B which shares c. 90% of its signs with the latest stage of Linear A from which it developed (Table 1). This Provisional Syllabic Grid for Linear A provides the phonemes which scholars have posited for an early Indo-European language, including the possibility of laryngeals. The only noticeable difference is in the attestation of vowels and the series consonant+E and consonant+O. These are weakly attested, although importantly they do, however, exist, unlike in Hittite, Vedic and Avestan. This phenomenon may owe something to the position of Minoan within the Indo-European family of languages and will be discussed below.

3) *MORPHOLOGY*

- i) Szemerényi's Reconstructed System for Proto-Indo-European
- ii) Minoan Case Endings
- iii) Minoan Verbal Endings
- iv) Minoan Syntax and Word-Order

⁹The identification of laryngeals in Minoan, and how it relates to Hittite and Luwian, may have great importance for the source and date of the Minoan Indo-European language, and is indicative of its antiquity.

i) *Szemerényi's Reconstructed System for Proto-Indo-European*

Reconstructed Case Endings

	Sg.	Pl.	Du.
Nom.	-s, -Ø	-es	
Voc.	-Ø	-es	-e, -ī/-i
Acc.	-m/-m̄	-ns/-n̄s	
Gen.	-es/-os/-s	-om/-ōm	-ous? -ōs?
Abl.	-es/-os/-s; -ed/-od	-bh(y)os, -mos	-bhyō, -mō
Dat.	-ei	-bh(y)os,-mos	-bhyō,-mō
Loc	-i	-su	-ou
Inst.	-e/-o, -bhi/-mi	-bhis/-mis, -ōis	-bhyō, mō

Above are given the complete set of possibilities for the Proto-Indo-European noun. No language has all of them. The question of gender in Proto-Indo-European and the evidence for it in Minoan will be discussed below.

Reconstructed Verbal Endings

	Primary	Secondary
1st sg	-mi	-m
2nd sg	-si	-s
3rd sg	-ti	-t
3rd pl	-nti	-nt

The Structure of the Indo-European Verb = Stem + Mood + Ending

Above are given the reconstructed verbal endings for Proto-Indo-European. These verbal endings are a particularly distinctive feature of all of the languages from the Indo-European group. Proto-Indo-European however must not be thought of as an unchanging entity in space and time before it began to disintegrate into the language branches. The language was diachronically developing over millennia. Any account of language change and reconstructive hypothesis must take this into account.

ii) *Minoan Case Endings*

Two particular features of Indo-European are the question of "nomen agentis" and gender.

One feature of Indo-European morphology identified in

the Minoan language is -TE identified as *nomen agentis* in the words I-DA-MA-TE "Mother of Ida", PI-TE-RI "Fathers" and in SI-RU-TE "Destroyer" and KE-SI-TE "Custodian". This is consistent with what is known of Indo-European languages, particularly the Indo-Iranian branch where both Sanskrit and Avestan have *mater* for mother and Sanskrit has *siryate* for destroyer.

Gender is also important in identifying the nature of the Minoan language, for there is clear evidence for differentiation between masculine and feminine. This is clear in the word KU-RO to describe the Total for masculine and neuter commodities and KU-RA for feminine singular or neuter plural subjects, and KU-RAI to describe feminine nominative plural. The root of this word, and its possible foreign origin, will be discussed below, what is of more importance here however is that it declines in a way consistent with what is known of Indo-European.

Other evidence for the existence of the feminine gender is seen in Term A A-TA-A301-WA-JA which has been analysed as an introductory term ending with -WA-JA which on comparison with Mycenaean and Homeric Greek is similar to a noun ending -aia, a Hellenic and Indo-European form.

It is believed that the first gender differentiations were between animate and inanimate, and that the feminine gender emerges as the Proto-Indo-European languages disintegrated into the different languages. Indeed, traditionally Proto-Indo-European is considered to be an inflecting language and most languages had three genders. This differentiation of gender would then have happened some time before c. 1400 B.C. from when can be read documents in Linear B and Hittite. It is not known how much before c. 1400 B.C. this disintegration took place but the fact that the feminine gender is apparent in Minoan (c. 2000-1400 B.C.) would indicate that the disintegration took place at least in the Third Millennium B.C. if not earlier. This has important consequences for the scholars who still insist on following Gimbutas' dating of the Proto-Indo-European culture in spite of all the evidence to the contrary.

iii) Minoan Endings

The evidence for the morphology of the Minoan language is sparse but revealing. Term D U-NA-KA-NA-SI has been interpreted as a verb, with initial vowel (perhaps glide or

laryngeal), plus stem -NA-KA-NA-, plus verbal endings -SI and -TI. This conforms to what is expected of an early Indo-European language. In Greek -ti is eventually replaced by -si in the third person plural, this had happened by the Mycenaean period, but it should not automatically be expected from the earlier Minoan language. From a language of the first half of the Second Millennium B.C. -SI denotes 2nd person singular, i.e., a direct appeal to the subject of the inscription. This can be claimed because on the one occasion on which the verbal ending -TI occurs, there is a plural subject, whereas with -SI there is a singular subject with many epithets. The most likely explanation, provided by context, is that the verbal ending is 2nd person singular but the term identified as a verb is accompanied by many titles of the subject goddess.

The verbal ending is -TI 3rd person plural on the one occasion (PK Za 11) when the Fathers are mentioned as well as the Great Mother Goddess, thus referring to a subject in the plural. The verbal endings are a strong indication of the identity of a previously unknown language.

There are a number of possible verbal endings on Religious Inscriptions, i.e., A-KA-NU-ZA-TI (KN Zc 7), A-MA-WA-SI, KA-NI-JA-MI and QA-KI-SE-NU-TI (CR (?) zf 1) and U-QE-TI (PL Zf 1), on what are personal objects such as cups and pins inscribed with sign-groups including some terms of the Minoan Libation Formula. There are no more possible sign-groups which may have a verbal ending among the stone libation tables. The only verb they have is U-NA-KA-NA-SI.

iv) Minoan Syntax and Word-Order

Syntax: This is the most difficult part of an extinct language to reconstruct, as it reflects how the language is used in practice, and this applies to both Proto-Indo-European and to Minoan. The Linear A inscriptions discussed above contain 6 to 9 words and they are the most substantial evidence for the Minoan language. They do not provide the sort of linguistic data that is required for the reconstruction of an extinct language with no remaining native speakers. Perhaps future finds of Linear A recording the Minoan language of the Bronze Age and the Greek alphabetic inscriptions recording the EteoCretan language of the Iron Age may illuminate the syntax

of the Minoan languages.¹⁰

Word-Order: Minoan seems to be Subject-Verb-Object (SVO) which is consistent with what is hypothesized for Proto-Indo-European, because the earliest texts, i.e., Hittite, Mycenaean Greek and Vedic Sanskrit are all SVO. It is noticeable that Indo-Iranian and Armenian also follow this pattern, i.e., the languages which are seen to be most closely related to Minoan.

Another way to consider the syntax and general morphology of the Minoan language is through a study of EteoCretan inscriptions, which were written in the Greek alphabet but the language of which is not Greek. In 1987 based on archaeological arguments Bennet came to the logical conclusion 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 Age". Earlier in the decade, in 1982, Duhoux stated that a thorough morphological and phonetic study of the Eteocretan language had the following conclusions: "Cet ensemble de concordances fait que l'indo-européen présente une parenté typologique indéniable avec l'éteocrétoise". This had also been suspected 90 years earlier by R. Conway who in 1902 had perceptively asked (p.156) "Was an Indo-European language spoken in Asia Minor and in the Mediterranean basin in the Minoan age?"

4) VOCABULARY

- i) Administration and Agriculture
- ii) Family Relationships
- iii) Sense Perception and Religion
- iv) Warfare and Emotions

i) Administration and Agriculture

TOTAL AND GRAND-TOTAL: The sign-group KU-RO in the position of Total which it means by context, has been found 35 times at LMIB Haghia Triada, once at Phaistos (PH ? 31a.4) and once at Zakros (ZA 15b.2). This is found as the total of

¹⁰See Y. Duhoux, "L'Éteocrétoise—Les Textes—La Langue", 1982; J. Bennet, "The Wild Country East of Dikte: The Problem of East Crete in the LMIII Period", in *Studies Chadwick, Minos XX-XXII*, 1987, 77-88; and R. Conway "The Pre-Hellenic Inscriptions of Praesos", *BSA* 8, 1902, 125-156 and G. Owens, Evidence for the Minoan Language (3) EteoCretan Inscriptions, *Kritika Daidalika*, 1997, 25-32.

masculine or mixed products, whereas KU-RA has been found at Archanes (ARKH 2.1) and Zakros (ZA 20.4) presumably totalling feminine or neuter plural subjects. This demonstrates that the Minoan word for Total KU-RO/RA was inflected according to gender as with to-so/sa in the Mycenaean Greek of Linear B. In addition, 81-A321 KU-RA3 (=KU-RAI?) on ZA 18 may indicate a feminine nonnative plural being totalled, thus lending strong credence to the identification of an Indo-European inflection. The origin of KU-RO/RA, however, is rather more difficult to explain. It may be a Semitic loan-word, acquired from the more advanced bureaucracies of the Near East, and derived from Common Semitic kull-Total.¹¹ This is exactly the sort of term that might be expected to be borrowed, but it was both adopted and adapted to inflect by the scribes of Minoan Crete. Alternatively, another hypothesis has been put forward by Brown, who suggested that the root was Anatolian derived from Luwian kula-/kulan- (Hittite ku(wa)lan(a)-) which itself derived from an Indo-European root *kwel which may have a cognate in Greek telos.¹² He also cites kulani-meaning to "the culminating point". Whether KU-RO/RA was in origin a Semitic or Indo-European word, of more immediate importance is the fact that it was used on Crete in an inflected Indo-European manner.

In addition Brown considers the sign-group PO-TO-KU-RO found twice at Haghia Triada (HT 122b. and HT 131b.) as All Complete or Grand Total. On HT 122b, PO-TO-KU-RO is the Grand Total of the previous Totals,¹³ Brown suggests that PO-TO-KU-RO can be explained as cognate to pantotelos and discusses Tocharian A puk, pont and ponc- and Tocharian B po and pout- as cognates to Greek pas, pant-. This pas, pant-/ po, pont- Greek/Tocharian isogloss is now well established and satisfactorily explains the Minoan words for Total and Grand

¹¹This was first suggested by C. Gordon, "Evidence for the Minoan Language", 1966, who may well have been right in identifying KU-RO with Semitic kull, but one word does not a decipherment make! Indeed the few words which Gordon identified as Semitic are exactly those which would be expected to be loan-words. A decipherment must be tested by morphology not just by vocabulary.

¹²See Brown, "Traces of Luwian Dialect in Cretan Text and Toponym", SMEA 28, 1990, 225-238 for a discussion of this subject.

¹³See J.-P. Olivier, "Les Grandes Nombres dans les Archives Crétoises du II^e Millénaire", *Proceedings of the 6th Cretological Congress* 1986, 1991, 69-76, who identified Grand Total by context.

Total as Indo-European with cognates in Greek, Luwian, Hittite and Tocharian.

FOODSTUFFS: There are a number of agricultural products which can be recognized in Linear A. This is due to either the same AB ideogram being used by both Minoan and Mycenaean scribes, or to syllabic sign-groups that can reasonably be interpreted as commodities. The shared AB ideograms are AB 120 Wheat, AB 129 Olive, AB 131 Wine and AB 30 NI Figs. These are the most commonly recorded items in both Linear A and B. The term NI for Fig is of interest as it is a Minoan word, retained by Linear B scribes (perhaps Minoans writing for Mycenaean rulers), and which was still in use in Classical times as NIKULEON and still is in use in the Mesara, having undergone metathesis as KOUNALEON. NI was retained even when the word su-za for Figs was written in Linear B. There was some level of diglossia in fifteenth and fourteenth century Minoan and Mycenaean Crete.¹⁴ There are three Linear A terms found on sealing at Haghia Triada. These read as DA-KA (HT Wa 1001-1005), I-RA2 (HT Wa 1006-1013), and SI-KA (HT Wa 1014-1018, 1097-1008). Is it a co-incidence that these repeated sign-groups can be compared to the three main products in Linear B recorded as si-to, e-rai-wo and su-za? If these words stood in isolation then they could be explained as Minoan words which had passed into Greek, but a survey of the evidence will show that they are Pre-Hellenic but also with good Indo-European cognates.

FIGS 41-77 SI-KA This Minoan word has cognates in Mycenaean su-za, Attic suka and Boetian tukon and Latin ficus. In addition Armenian, which has affinities with Indo-Iranian and other satem languages, has tu'z. All of these demonstrate a common Indo-European source as do Gothic smakka, Old Church Slavic Smoky and Rumanian smochind. A likely common Indo-European root of *s/t+vowel+k+vowel can be offered for the word for fig in many branches of Indo-European including Minoan.

OLIVE 28-76 I-RA2 This word, ILYA, can be compared to Linear B e-rai-wo = elaiwon. The phonetic similarity between RA2/ra3 and LYA/lai is striking, particularly given how rare these signs are in both Linear A and Linear B. The word for

¹⁴See K. Nikolidaki-Owens and G. Owens, "The Minoan Libation Formula—Practical Considerations", *CretStud* 4, 1994, 149-156. I also thank Prof. M. M. Nikoïidakis of Vorroi for sharing his extensive knowledge of the Mesara.

Olive (tree/fruit/oil) is common to nearly all Indo-European languages, though its exact origin is uncertain. Latin derived olive as a loanword from Greek elaiwon which itself derived from Minoan ILYA.

WHEAT 01-77 DA-KA This is the other sign-group found repeatedly on sealings from Haghia Triada which when found with oil and figs might be expected to be the Minoan word for grain or wheat. The word DA-KA did not survive into Greek, but the word yava in Sanskrit had an early meaning of grain. Another word found on a sealing is SI-TU (HT Wa 1019). The word si-to is found in Linear B where it means grain or cereals, while in Homer it was used to mean both wheat and barley. Although it came to mean wheat in Greek, and still does, it appears to have had a wider meaning in earlier times, and was found the Old Church Slavonic zito for grain in the generic sense. As DA-KA by context may be wheat, and as SI-TU is probably grain (wheat and barley), then likewise barley may be expected in Linear A. Although the ideogram for barley from Linear B is known (B 121) it is not found in Linear A. The word for barley, nowever, ki-ri-ta/KI-RI-TAI, is found in both scripts. In Linear A the word KI-RI-TAI is found twice (HT 114a.1 and 121.1) on tablets along with the ideograms for wheat, cyperus, figs, wine and oxen, i.e., in a list of agricultural commodities. KI-RI-TAI can be interpreted as the plural of barley krithai. This not only shows a plural in an Indo-European manner. but also shows a cognate with Albanian dridhe for grain. KI-RI-TAI in Linear A may have the general meaning of grain, or as it is followed by a list of various products, then it may even serve more generally as a title of agricultural products. On both HT 114 and 121 KI-RI-TAI is followed by SA-RYA and the ideogram for WHEAT. A further Indo-European connection could be a cognate of SA-RYA with Sanskrit sasya-. The sign-groups 31-75 SA-RYA is found 21 times at Haghia Triada, sometimes preceding the ideogram for WHEAT AB 120.

Unfortunately, and most regrettably, the Minoan word for wine has not been definitely identified, but the appearance of di-wo-nu-so on a Linear B tablet c. 1300 B.C. along with offerings to Zeus di-we show that Dionyssos, the Greek god of wine, can now be rationalized as the "Wine of Zeus". The Minoan word, on analogy with Greek Foinos and Hittite wiyana, might be something akin to wVjV-na, where the vowel is not yet determined but the consonants expected can be predicted. The

starting point for a search for the Cretan word is on the aforementioned Linear B tablet from Khania referring to Dionyssos. The closest possible word is that on the reverse of this tablet, which reads as wo-no-wa-ti-si which is a compound of woinos Foinos, Hellenic for wine. In Linear A the sound value WE has not been identified for certain but there are reasons to support its identification with A301 (see above). Thus the sign group A301-06 WE-NA from Khania KH.5.3 may be the Minoan for wine. Alternatively it could be]40-57[,]WI-JA[on tablet PH.18a.1 dated to approximately the C18th B.C. The WINE ideogram is attested on two contemporary tablets from Phaistos PH 7 and 9. Thus the Minoan word for wine can in all likelihood tentatively be identified in Linear A. The sign A301 also stands as an abbreviation/ideogram for a product many times (GORLA 5, 1985, 282-3), just as NI stands for figs, thus suggesting that it too is a well-known agricultural product.¹⁵

It is also worth extensively quoting Buck, page 390, in his section on Food and Drink, 5.92 Wine, "Greek oinos, early Foinos, Lat. vinum (probably from *woinom. like vicus, vidi: Grk. Foinos, Foida in which case Umbr. vinu must be a Lat. loanword), Alb. vene, Arm. gini together with the Semitic words, Arab. wain, Hebr. yayin all probably loanwords from some prehistoric Mediterranean source. But even so, the source could be some IE language of that region. For if we assume that the original sense was 'vine', it is attractively derived from the same root as Lat. vitis 'vine' (IE *wei in words for 'twist, wind'...). Lat. vinum is the source of all the other Eur. words except the Greek and Albanian". As has been seen the Hittite word is also cognate, thus suggesting an earlier Indo-European origin. Minoan Crete would be an ideal candidate for the origin of this word.

It has now been possible to identify the four basic products of the Cretan agricultural economy. These were and are wine, olive-oil, grain (wheat and barley) and figs. In Chapter 10 of *Before Civilization*, "The Emergence of Civilization in Europe", p. 299, Renfrew believed that Mediterranean polyculture, based

¹⁵See E. Hallager, M. Vlasakis and B. P. Hallager, "New Linear B Tablets from Khania", *Kadmos* 31, 1992, 61-87 for tablet KH GQ 5. Crete has a tradition of quality wine stretching back over 40 centuries at least at places such as Archanes. Believing in tradition and that a successful natural recipe should not be interfered with, the author and his wife purchased wine from Archanes for their wedding.

on the “Mediterranean Triad” of wheat, olive and wine, was responsible for the emergence of civilization as it did not rely purely on cereals as in the Near East, but could utilise more land and therefore produce more crops which importantly do not compete for space nor for the time of the farmer. This is a valid observation in accounting for the early appearance of civilization in the Aegean, which is undoubtedly an important natural microcosm. The role and nutritional value of figs however should not be underestimated. It is more accurate to talk of a “Mediterranean Quartet”, comprising figs, wheat, olive-oil and wine, which were and are the staple products of Crete, or even of the ‘Mediterranean Quintet’, comprising figs, wheat, olive-oil, wine and the ubiquitous pulses/legumes.

ii) *Family Relationships*

The Linear inscriptions have revealed I-DA-MA-TE interpreted as “mother of Ida” who later became known as Demeter. This is known from two axes from the cave of Archalochori (AR Zf 1 and 2).^{15b} In addition, on two inscriptions from Petsophas above Palaikastro (PK Za 11 and PK Za 12) the two terms A-KO-A-NE = *akka = mother and A-PA-DU-PA = *appa = father have been found, along with PI-TE-RE = *pater- = fathers. These two terms, Mother and Father, are significantly both found on the same inscriptions as “Mother Asasame” and “Holy Father”.

iii) *Sense Perception and Religion*

The two terms which are connected with mountains, and which later became oronyms. i.e. Dikte and Ida are both derived from *Indo-European roots that mean to point out, reveal, make clear *dik- and to see *wid-, both of which well describe the most common scene of Minoan iconography, the epiphany of the Mother Goddess on the mountain.

One term of the Minoan Libation Formula. I-JA/NA, from the religious inscriptions of the Minoan Peak Sanctuaries, has been interpreted as cognate to *eis holy, sacred and this has been found together with Ida in I-NA-I-DA which could be a reference to “Holy Mount Ida” and/or to “Holy Epiphany”. In

^{15b}See G. Owens, New Evidence for Minoan “Demeter”. *Kadmos* 35:2, 1996, 172-175 and Y. Duboux, LA>B da-ma-te = Dmeter? Sur la langue du lineaire A, *Minos* 29-30; 1994-1995 [1997], 289-294 for recent discussions on the origin of Demeter.

addition, KU-PA2-NI-TU-NI-TE could be cognate with Kubaba, Kybele a Hittite name for the Great Mother Goddess Asasara. This term A/JA-SA-SA-RA-ME is the most widespread and it has been argued both linguistically, on analogy with Hittite and Luwian, and archaeologically, on evidence of cult from Syme and elsewhere, that it represents the Minoan rendition of Astarte.

iv) Warfare and Emotions

Linear A can be interpreted as having cognates to Indo-European *nik- to defeat, conquer, give victory, as well as SI-RU-TE from Indo-European *ker- destroyer, *wis- strength and *men- anger, divine wrath, found together in compound form, in I-PI-NA-MA, who has been interpreted as a goddess.

5) *THE POSITION OF THE MINOAN LANGUAGE WITHIN INDO-EUROPEAN*

- i) Centum or Satem ?
- ii) Archaeology and Language—The Neolithic Diffusion Model
- iii) The Pelasgian Languages of the Aegean
- iv) From Helladic to Hellenic—The Coming of the Greeks ?

i) Centum or Satem?

The following discussion attempts to explain the position of the Minoan language of Crete c. 2000-1425 B.C. within the Indo-European family of languages. To do this, it is necessary to draw upon the fields of both archaeology and comparative philology, which was indeed the original aim of this work, to see if the result of a synthesis of these two strands of evidence can lead to a better understanding of Linear A and the Minoan language.

To place the Minoan language within the Indo-European family of languages, it is necessary to see whether any of the features that have been observed may indicate a closer relationship to any one branch of Indo-European than another. The first indication is Minoan SI-RU-TE destroyer from the *Indo-European root *ker-. This identifies Minoan as a satem rather than a centum language. It used to be thought that the centum/satem division reflected geographical location, i.e. West and East, but this is no longer the case as the

decipherments of Hittite and Tocharian this century have shown them to be centum languages. The satem languages are the Indo-Iranian, Balto-Slavic and Armenian groups. The Balto-Slavic group, and particularly Lithuanian, Lettish and Old Church Slavonic have shown cognates to Minoan, but still closer analogies have been seen with the Indo-Iranian branch. This has been shown particularly in the case of vocabulary and phonology.

The languages to which the closest cognates to Minoan can be found are Vedic and Avestan, i.e., the earliest stages of Indo-Iranian. In addition, the Provisional Syllabic Grid for Linear A (Table 1) shows a weakness in, but not a lack of, the Consonant+E and Consonant+O series. These are the vowels that were lost in Indo-Iranian when long and short e, o and a collapsed into long and short a. This does have similarities to Minoan and the partial loss of these vowels may indicate that Minoan split off from Indo-Iranian at a stage before the collapse of these vowels took place, or that Minoan kept a weak E and O series in the syllabary under the linguistic influence of the neighbouring language of Mycenaean Greece where these vowels had not been lost. The similarities between Minoan and Indo-Iranian can be clearly seen in PI-TE-RI = Fathers. Languages can also be influenced by neighbouring languages from different language families, as with the Indo-Iranian languages themselves which have been influenced by the Dravidian languages of South India. Whatever the reason, it is clear that the frequency of Consonant+A in Linear A is indicative of the same feature in Vedic and Avestan. Minoan and Indo-Iranian have a vocal similarity when read. The subsequent development of the Minoan language may have been fairly conservative, due to its insular position, and this necessitated the scribal changes that took place to reflect linguistic differences when Linear A was adopted and adapted by Mycenaeans at Knossos for the writing of Greek. Culturally, Early and Middle Minoan Crete was closer to Egypt,¹⁶ from

¹⁶See J. Vercoutter. "L'Egypt et le Monde Egéen PréHellénique", 1956, for the well documented links between these two cultures, and see E. Sapouna-Sakellarakis and J. Sakellarakis, "The Keftiu and the Minoan Thalassocracy", in *The Minoan Thalassocracy*, eds. R. Hagg and N. Marinatos, 1984, 197-203. The recent discoveries at Avaris, Tell el-daba, in the Nile Delta may further illuminate the relations between Egypt and the Aegean. See I. Bietak, "Minoan Wall-Paintings unearthed at Ancient Avaris", *Egyptian Archaeology* 2, 199:, 26-28 and V. Hankey, "Egypt, the Aegean and the Levant", *Egyptian*

where the inspiration for a script probably derived, and to the Levant,¹⁷ from where the Palatial system may have been emulated, than to contemporary Mainland Greece. It may be that the Linear A inscriptions which read from right to left, do so under Semitic influence, as is seen even more so in Cyprus, even though the language of Bronze Age Crete was probably not Semitic either.

iii) *Archaeology and Language—The Neolithic Diffusion Model*

To make such a claim, that the Minoan language is most closely related to the Indo-Iranian branch of Indo-European, it is necessary to offer a hypothesis as to how and when this may have happened. The main theories prior to Renfrew's "Archaeology and Language" (1987) were that the first Indo-European speakers had spread from a homeland. This was located by Gimbutas in the area of the Kurgan culture c. 3000 B.C.¹⁸ Renfrew challenged this theory, and many others, on the premise that reconstructed language can not be securely dated by glottochronology, due to the unquantifiable speed of linguistic change. Glottochronology and linguistic studies can not set the absolute time-scale within which the development and splitting of Indo-European is to be placed.¹⁹ The question of date, i.e. when the Indo-European languages and the people of the cultures which spoke them diverged, must be answered by scientific archaeology.²⁰

Renfrew's conclusions (1987 p. 288) that Neolithic farming

Archaeology 3, 1993, 27-29.

¹⁷See P. M. Warren, "The Genesis of the Minoan Palace", in the *Function of the Minoan Palace*, eds. R. Hagg and N. Marinatos. 1987, 47-56. For a further discussion of the relations between Minoan and Near Eastern Palaces see J. Graham, "The Palaces of Crete", 1969, and W.-D. Niemeier, "Minoans in Canaan", in the *Proceedings of the 7th Cretological Congress-Rethymno*, 1991, 675-679.

¹⁸See "Proto-Indo-Europeans: The Archaeology of a Linguistic Problem: Studies in honour of Marija Gimbutas", 1987 with extensive bibliography.

¹⁹See C. Renfrew, *loc. cit.* fn. 4 above. Glottochronology can however be useful for offering observations about relative chronologies of language change but not absolute chronologies.

²⁰The synthesis of archaeological and linguistic material in order to better understand the past, was thoroughly laid out by Renfrew in *Archaeology and Language*, 1987. This is the most up to date, analytical and instructive (readable) work on this subject. Each generation should carefully, but not blindly, build upon the work of previous scholars in order to reconstruct history. See Mallory et alii, 1988, for a critical review of Renfrew's work.

was based on wheat and barley and sheep and goats, which ultimately originated in Anatolia, were summed up by him thus: "It seems likely that the first Indo-European languages came to Europe from Anatolia around 6000 B.C., together with the first domesticated plants and animals, and that they were in fact spoken by the first farmers of Europe. That I suggest, is the key to the solution of the Indo-European problem".

He also shows how the first traces of farming in the Aegean are from Nea Nikomedeia in Macedonia, Arghissa Marghoulia in Thessaly, the Franchthi cave in the Peloponnese and Knossos in Crete before 5200 B.C., according to C¹⁴ dating. It is also of note that traces of Neolithic farming of the same date are known from Cyprus. The date of prior to 5200 B.C. is earlier than has previously been suggested for the coming of Indo-European languages into Greece, but may explain why the Indo-European languages had diverged so much by the time they were written down c. 1400 in the case of Hittite and Mycenaean Greek, and in the recording of the earlier oral epic the Rig Veda in Vedic Sanskrit.²¹ In other words Renfrew is offering a wave theory from a homeland, but one based on an earlier time-scale than previously suggested, based on the evidence of archaeology rather than reconstructed languages. The most interesting part of this theory is that it explains the presence of an Indo-European language in Crete, although this was not claimed by Renfrew himself.²²

The fact of Neolithic farmers being the first Indo-European speakers who spread out from Anatolia prior to 6000 B.C. is supported by the archaeological evidence from Crete. The earliest inhabitants of Crete are now considered to have arrived c. 7000 B.C.²³ and their closest cultural affinities are

²¹Not only does the language of the Rig Veda have similarities with what has been seen of Minoan, but the common theme of Divine Wrath in the case of SI-RU-TE the Destroyer in Crete and the forerunner of Shiva in the Rig Veda is also of comparative interest. See the translation and copious notes by W. O'Flaherty, "The Rig Veda: An Anthology", 1981, in Penguin Classics.

²²In 1973 Renfrew said: "Of course the decipherment of the Minoan Linear A script may one day bring new information; it will be no surprise if the language turns out to be Indo-European". In 1987 Renfrew rather more cautiously said: "We do not have much idea of the language of Neolithic Crete, since its Bronze Age successor, as documented by the Minoan Linear A tablets, remains undeciphered".

²³See P. M. Warren and V. Hankey, "Aegean Absolute Chronology", 1989, with extensive bibliography and references.

with Anatolia, from where it is believed they arrived. There is no change in the archaeological record to suggest a change in population and language, thus the Minoans were most probably the direct descendants of the first Neolithic farmers who occupied Crete. This in turn suggests that the Minoan language, as recorded by Linear A, is the direct descendant of the language of the first Neolithic settlers on Crete who came from Anatolia, where in the Bronze Age it is known that Indo-European languages were spoken.

In tracing the development of Neolithic farming out of the Middle East, and more specifically Anatolia. Renfrew identifies South Anatolia as the original homeland of the first farmers based on the presence of wheat, barley, goats and sheep. This comprises part of the area where Luwian, an Anatolian language was recorded, and where the Lycian descendants of the Bronze Age Luwians were known to have lived. This is precisely the area of Anatolia which has the closest geographical and cultural connections with Crete, namely in regard to script (Linear A and Hieroglyphic Hittite), language (initial A instead of Hittite I e.g. Hittite ishassara = Luwian ashassara = Minoan A/JA-SA-SA-RA-ME) and even mythologically e.g. the connections between Miletos in Anatolia and Milatos and Malia in Crete, the latter of which has now produced a painted Linear B inscription which reads as ma-le-wa.²⁴ In addition excavation has shown how the Aegean had farming before the rest of Europe. A study of C¹⁴ dates for the earliest cultivated cereals shows that farming was established in the Aegean before 6000 B.C. and in the North of Scotland, for example, by 3500 B.C. It is the spread of farming in the Neolithic period which Renfrew equates with a wave model

²⁴See G. Huxley, *loc. cit.*, fn. above, 15-24 and see A. Farnoux and J. Driessen, "Inscriptions Peintes en Linéaire B à Malia", BCH 115:2, 1991. 71-97 for MA Z I and MA Z 2, and MA Z 3 has now also been reported. See also M. Finkelberg, "Minoan Inscriptions on Libation Vessels", *Minos* XXV-XXVI, 1992, 43-86, for a decipherment of Linear A as Bronze Age Lycian. This welcome analytical and morphological study supports the likelihood of Minoan being related to the Anatolian languages, i.e., as Indo-European. But the interpretation of inscriptions is difficult to reconcile with what is known about Minoan religion and ritual. In *Scientific American* of July 1996 p. 14 was published a Linear A inscribed ostrakon from recent inscriptions at Miletos in Asia Minor. See W. D. Neimeier, A Linear A Inscription from Miletus (MIL Zb 1), *Kadmos* 35:2, 1996, 87-99 for the prompt publication of this important find.

explaining the diffusion of the Indo-European languages. It is also likely that the Aegean, including mainland Greece and Crete, comprised part of the original zone from where Neolithic farming spread out. Renfrew envisages the Western branch of this zone developing into the languages of Europe, the Central into Hittite 'in situ', and the Eastern into the Indo-Iranian languages.

Therefore it is here suggested that the first inhabitants of Crete c. 7000 B.C. were indeed Neolithic farmers who originated from Anatolia and who occupied Crete. These people progressed on their path of cultural development, perhaps influenced more by their advanced Semitic neighbours than by fellow Indo-European speakers, with the result that the Minoan language remained largely isolated from other Indo-European languages.²⁵ The Minoan language, however, as recorded by Linear A c. 2000-1425 B.C. can now be identified as a distinct branch of Indo-European.

It is of note that many of the arguments, both archaeological and scribal, which have been made for Crete, may also be applied to Cyprus, due to its proximity to the hypothesized homeland of the first Indo-Europeans in South Anatolia. It must at least be considered that this may apply linguistically too, i.e., that the language of Bronze Age Cyprus was also Indo-European, albeit more heavily influenced by neighbouring Semitic languages. The Hittite, Cretan and Cypriot scripts (and languages?) are all part of the same Indo-European cultural sphere, although greatly influenced by other cultures of the Eastern Mediterranean. It must be remembered however that scripts can travel independently of languages, and even across language groups, e.g. Cuneiform for Hittite, Arabic for Bengali, most recently Roman for Turkish and now Chinese, and most basically to present scholars Egyptian-Sinaitic-Phoenician as the basis of the Greek-Etruscan-Roman alphabets. If the language of Bronze Age Cyprus was not Indo-European, why did they adopt a script from Crete and not from

²⁵The theory of an Indo-European language being influenced by Semitic neighbours has also been put forward for the Hurrian language of the Mitanni, claimed to be Indo-European in origin with affinities to Indo-Iranian. This is plausible but difficult to verify. It is of interest, though, that at times the Mitanni Empire included control of Ugarit the emporium at the mouth of the Orontes which was at the crossroads of civilization (Hittite, Egypt, Levant, Mittani and Aegean via Cyprus). Such a place would have been a rich conduit for the exchange of goods and ideas.

their Semitic neighbours?

What follows is a working hypothesis based upon all available evidence, archaeological, epigraphic and linguistic, in the area of the Aegean. This research is very much work in progress and it is presented here to attempt to offer an overall view of events in the Aegean. It is hoped that it will encourage discussion. The hypotheses which follow are tentative.

The term 'Pelasgian' in the discussion which follows is used by the present author as a geographical term to describe the languages of the Bronze Age Aegean. This term has been in use since Herodotus and was employed by among others Ventris to denote the pre-Greek languages of the Aegean.²⁶ It is used here to denote pre-Greek, but not necessarily pre-Indo-European as has been assumed by many scholars. The linguistic data will indicate the nature of Pelasgian.

iii) *The Pelasgian Languages of the Aegean*

It has been previously suggested that the Pelasgian languages of the Aegean be classified into East, South, West and North (see Table 3). The East Pelasgian languages are the Anatolian group consisting of Hittite, Palaic, Luwian, Lycian and Lydian. Hittite was deciphered by Hrozný in 1915.²⁷ The South Pelasgian languages are Minoan of the Bronze Age and EteoCretan of the Iron Age. The relationship of the EteoCypriot language of Bronze and Iron Age Cyprus to this group is a distinct possibility. The Indo-European nature of the Minoan language has been discussed in detail above. The West Pelasgian branch of the languages of the Aegean is Helladic. This is primarily known from toponyms and other words from the previous linguistic stratum of the area known as Hellas before the first records in Mycenaean Greek c. 1400 B.C., i.e., Linear B which was deciphered by Ventris 1952. The relationship between Helladic and Hellenic will be discussed below. The North Pelasgian languages are Thracian, Samothracian, Lemnian and possibly Etruscan.

²⁶For a thorough critical discussion of Pelasgian, see the articles of D. Hester in *Lingua* 13, 1965, 335-384 16, 1966, 274-278 and 18, 1967, 168-178. It is a common device among linguists to equate Pre-Greek with Pre-Indo-European. This is a dangerous assumption and one not warranted by the facts.

²⁷See B. Hrozný "Die Sprache der Hethiter", 1917 and "Code Hittite", 1902, for the decipherment of the Anatolian languages, at the beginning of this century, as a distinct and early branch of Indo-European.

It has been suggested, from the scarce evidence available that the languages of Thrace, Samothrace and Lemnos were Indo-European prior to the advent of Greek in these areas.²⁸ The evidence is very small but there are indications that the languages which preceded Greek in the Aegean were pre-Greek but nonetheless Proto-Indo-European. It has also been suggested that Thraco-Phrygian should be associated with Armenian, thus positioning it close to both Hittite and Hellenic, as has been hypothesized for Pelasgian. It has even been suggested that the Hurrian language of Bronze Age Anatolia is the ancestor of Armenian, and the Indo-European nature of Hurrian is clearest in the numerals. All of these possible connections show the complexity of the Indo-European problem but they are tentative hypotheses as so little data exists for the Thracian, Phrygian and Hurrian languages.²⁹

It has also been suggested by Etruscan scholars that the only possible connection between the Etruscan language and any other is with the inscription of Lemnos.³⁰ As evidence is cited the stele from Lemnos with the warrior holding a spear, an iconographic scene that has exact parallels in Etruria, and an inscription in Lemnian. Scholars have demonstrated the probability of Lemnian being an Indo-European language. It has also been seen that certain features in Etruscan may have some similarities in Indo-European, i.e., 'am' to be and 'aisna/eisna' divine (see Minoan Terms I/J *I.E. eis-, holy).

Of course even if Etruscan was Indo-European in origin it is now impossible to separate the Indo-European structure of the language from the non-Indo-European, i.e., preceding Mesolithic linguistic stratum. This is clear in the case of Etruscan numerals which have no connection with Indo-

²⁸See K. Lehmann "Documents of the Samothracian Language", *Hesperia* 24, 1955, 93-100; G. Bonafante "A Note on the Samothracian Language", *Hesperia* 24, 1955, 101-109; and G. Cousin and F. Durbach "Bas Relief de Lemnos avec inscription". *BCH* X, 1886, 1-6, for the inscriptions of the Aegean which are written in the Hellenic alphabet but not Hellenic language. This is akin to the situation of the EteoCretan inscriptions.

²⁹See C. Renfrew "Archaeology and Language", 1987, 71-73 for a full discussion of this group and references.

³⁰See G. and L. Bonafante "The Etruscan Language", 1983, for recent survey of the present state of knowledge concerning the Etruscan Language. See p. 110-113 for stelae very comparable to that from Lemnos on p. 51. Ancient authors such as Herodotus, Hellanicus and Anticlidides suggested that there was a link between the Aegean and the Etruscans.

European at all. Etruscan may be a Pelasgian language which was transplanted to Etruria and which developed there. Bearing this in mind it is difficult to discount the possible relationship between Minoan and Etruscan as branches of Pelasgian particularly when the Pyrgi bilinguals in Phoenician and Etruscan refer to Astarte and when it is known that the Etruscans worshipped Ilithia, i.e., Eileithyia.^{30b}

In the years preceding the decipherment of Linear B, Michael Ventris suggested Etruscan as the language of Minoan Crete. If the evidence is now sufficient to allow at least tentative hypotheses, then it is possible to see Minoan and Etruscan as different branches of Pelasgian which is itself a part of Proto-Indo-European. Perhaps Ventris was correct, but in a more complicated way than has been previously considered.

The fact that of the four branches of Pelasgian, two are Centum languages (Hittite and Greek) and two are Satem (Thracian-Phrygian-Armenian and Minoan) (see Table 3.ii), demonstrates that the split into these two branches must have taken place at a very early stage when the 'Proto-Indo-European-Pelasgian-Anatolian' (P.I.P.A.) language was centred on the Aegean. According to archaeological evidence this was c. 7000 B.C. (Renfrew 1987 Ch.7).

iv) From Helladic to Hellenic — The Coming of the Greeks ?

The question of who were the Greeks, or from where they came and when, is one which has occupied scholars for most of this century.³¹ In 1928 Haley and Blegen, following linguistic and archaeological arguments, placed the coming of the Greeks at c. 1900 B.C. This article has greatly affected subsequent scholarship with detailed arguments over toponyms etc. without scholars actually asking how likely is the date of c. 1900 B.C. for Greek as an independent branch of Indo-European. In 1930 Myres answered the question Who were the Greeks? with the answer that they "were ever in the process of becoming". This is a good approach in that the answers to

^{30b}Eileithyia was a pre-Greek, Minoan, goddess of childbirth mentioned in Linear B and Homer as worshipped at Amnisos where her cave shows evidence of ritual from the Neolithic period to Modern times.

³¹This is an important question because only Greek and Chinese, out of all of the languages of the world which are still spoken today have a written history spanning c. 35 centuries. This diachronic span allows important linguistic observations to be made and accounts for the depth and subtleness of meaning to be found in both of these rich languages.

difficult problems are rarely clear cut. History is usually grey rather than black or white. In 1969 Chadwick challenged the previously established views and although he did not claim to have the answers he nonetheless demonstrated the inappropriateness of the previously held view. In 1973 Renfrew took the criticism of these earlier views a stage further and began to offer an alternative hypothesis. His view was of autochthonous origin in Greece.³² He claimed, in arguments further developed in *Archaeology and Language* 1987, that the earliest Indo-European speakers in Greece should be identified with farmers who are thought to have arrived at least by c. 6000 B.C. Renfrew sees the development of Greek as taking place in Greece and from an earlier pre-Greek but Indo-European language.

In 1989, Hooker in 'The Coming of the Greeks — III' stated "When and in what circumstances did the first Greek-speakers arrive in Greece? To these long-standing questions I personally believe that no final, or even provisional, answer can be given at present. But the questions themselves remain important, affecting as they do the history of the Aegean Bronze Age at a number of crucial points. From time to time a wholly or partially new proposal is made for the solution of the problem which seems to deserve special consideration — if only because it offers an alternative to the view that 'the Greeks' made their appearance at the end of the Early Bronze Age. This view has never had much to commend it positively, and within the last few decades strong reasons have emerged for rejecting it altogether" (*Minos* 24 p. 55).

There are only two facts which can be stated for certain.

1) The earliest Greek records are those from Mycenaean Knossos c. 1400 B.C. which show a well differentiated Greek language.

2) The Mycenaean Greek of c. 1400 B.C. differs less from the Greek language today, 34 centuries later, than it does from contemporary Hittite and near-contemporary Vedic Sanskrit.

This leads to the simple hypothesis that Greek needed at

³²See J. B. Haley and C. W. Blegen "The Coming of the Greeks" *AJA* 32, 1928, 141-154; J. Myres "Who Were the Greeks?", 1930, p. 538; J. Chadwick "Greek and Pre-Greek" *Transactions of the Philosophical Society* 1969, 80-89; and C. Renfrew, "Problems in the general correlation of archaeological and linguistic strata in prehistoric Greece: the model of autochthonous origin", in *Bronze Age Migrations in the Aegean*, 1973, eds. R. A. Crossland and A. Birchall.

least as long to develop from Proto-Indo-European to Mycenaean Greek as it did from Mycenaean Greek to Modern Greek. Therefore, as suggested by Renfrew, this development from Proto-Indo-European-Pelasgian "Helladic" into "Hellenic" must have taken place in "Hellas".

6) THE DECIPHERMENT OF LINEAR A AND THE MINOAN LANGUAGE?

All of the evidence for a discussion of the Minoan language, set against its epigraphic, cultural and religious background, has now been considered. This work has been based upon an enlarged corpus, including more than 50 Linear A inscriptions, many still unpublished, which have been discovered since the publication of the Linear A corpus in 1985. In addition this work has literally "read" the Linear A inscriptions according to Linear B sound values. In 1973, 12 Linear B syllabograms had not had their sound values established, by 1988 this was reduced to 4 unknown sound values, and these were established by 1992. Thus it has been possible to read Linear A according to Linear B. The position arrived at is the best that can be achieved. Excavations such as at Iouktas, Syme, Knossos and Kythera continue to produce Linear A inscriptions. These have been studied and read as far as is possible. All available data has been utilised.

It can not be stressed enough that evidence for the Minoan language is demonstrating that it is Indo-European some 600 years earlier than Greek of Hittite records. The Minoan language is not Greek, and is no more closely linked to that language than to Latin, Sanskrit or Hittite, but is a demonstrably earlier stage of the Indo-European language c. 2000-1425 B.C.

The continuity of the Minoan language, script and cult over 6 centuries is well demonstrated by the documented worship of the Great Mother Goddess A-SA-SA-RA-ME who should probably be identified with Astarte.

KNOSSOS		A-SA SA-MU-NE	c. 2000 B.C.
IOUKTAS	IO Za 2	JA-SA-SA-RA-[ME	c. 1600 B.C.
ZAKROS	ZA Zb 3	A-SA-MU-NE	c. 1425 B.C.
POROS	PO Zg 1	A-SA-SA-RA-A325	c.1390-1335 B.C.

It was in 1786 A.D. that Sir William Jones saw similarities between Sanskrit, Latin, Greek, Gothic, Celthic and Persian

regarding Grammar and other features of the languages. This was the start of Indo-European studies. In 1813 Thomas Young first coined the phrase Indo-European. In 1913 Hrozný demonstrated that Hittite was indeed Indo-European, as Tocharian was also demonstrated to be. It used to be believed that European history, i.e., the study of the past based on written documents began in 776 B.C. with the first Olympic Games, although a Bronze Age Linear inscription (A or B?) has now been found at Ancient Olympia which may complicate events further. In 1952 Ventris demonstrated that history could be traced back to c. 1400 B.C. It is now suggested by the present author that history be traced back to c. 2000 B.C.

This work is showing the Minoan language to be the so far oldest example of Indo-European. This moving of the earliest data to 6 centuries before Mycenaean Greek and Hittite may be difficult to accept. But it should be remembered how vast is human history and how small present awareness of it. The 'history' of Europe, based on written sources, now covers 40 centuries.

Recent developments in all branches of anthropology show how man's concept of the depth and richness of the past is steadily growing. Discoveries in Africa now date the appearance of man to circa four and a half million years ago, while in Europe modern man is now recognised approximately three quarters of a million years before now. This is a larger time-scale than anyone dared imagine and is constantly growing as the result of new discoveries. Who knows what else history has in store?³³ What is suggested in this work is that the Minoan inscriptions pre-date the Mycenaean and Hittite inscriptions by six centuries and that the Minoan language is Indo-European.

This is not the first time that this has been suggested. This work aims to convince by offering proof of the phonology, morphology and vocabulary of the Minoan language. The complete inscriptions offer a control within which the Indo-

³³For example who could have predicted 'Boxgrove Man' or the 'inscription' from Kastona in N. Greece (TA NEA 15-2-94 and KYRIAKATI KI ELEFTHEROITYPIA 15:10-95) dated to 5260 B.C. according to C¹⁴ readings at the Dimokritos laboratory in Athens? Whatever this 'inscription' may turn out to be it demonstrates that there is a lot more to discover about the Neolithic period in Greece. In November 1996 the discovery of a leg bone from Petralona in Macedonia was announced by the excavators who believe that it predates 'Lucy' in Africa. The implication is that the Aegean is possibly the cradle of mankind.

European theory can be tested, for they produce sentences which can both be interpreted as Indo-European and which accord with their archaeological context.³⁴

The interpretation and discussion presented above, and in the previous EVIDENCE 1-4 articles, are offered as evidence of the proposed identification of the Minoan language as INDO-EUROPEAN.

Postscript³⁵

A summary of the linguistic and historical conclusions of the author's Research Fellowship held at Heraklion Museum, appeared in "Kritika Daidalika", *Studies Hooker*, 1997, 103-140 as "The Structure of the Minoan Language". The article was revised in 1998 and submitted in January 1999 to the *Journal of Indo-European Studies* 27:1-2 (Spring/Summer 1999). This epilogue aims to bring research into Linear A and the Minoan Language as up to date as possible by considering the findings of two important papers which appeared in 1998. The reader is referred to the paper of Y. Duhoux, Pre-Hellenic Languages of Crete, in the *Journal of Indo-European Studies* 26: 1-2 (Spring/Summer 1998), 1-40, for a clear assessment of the state of present research into the subject. In addition, for the most recent discussion of research and for the 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 *Bulletin of the Institute of Classical Studies* 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

³⁴This piece of research was only possible as a result of the archaeological work of Sir Arthur Evans and the decipherment of Linear B by Michael Ventris O.B.E. Evans first visited Crete in his search for written documents of the Bronze Age on 15-3-1894 Ventris deciphered Linear B as Mycenaean Greek on 1-6-1952. The conclusions offered here, and the proposed interpretation of the Minoan language, are respectfully dedicated to the memory of these two giants of Aegean archaeology and philology, and to the memory of James Hooker, teacher and friend (6-9-1996).

³⁵Submitted as an epilogue to "The Structure of the Minoan Language", *Journal of Indo-European Studies* 27:1-2 (Spring/Summer 1999).

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, 1994). 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".

This is indeed the position of the present author concerning the identification of the Minoan language as recorded in the Linear A inscriptions of Bronze Age Crete of the Second Millennium. There is, however, one point that should be stressed where the present author differs from the reconstruction offered by Renfrew (1998, 259).

In Renfrew's figure outlining the hypothetical ancestral relationship between the language of the Aegean and Anatolia in the Bronze Age (p. 259, figure 4) he suggests, based upon the present author's reconstruction (Owens 1996), that the Minoan language could be related to Indo-European and Anatolian languages in the following way. Namely, that Minoan could be regarded as a "sister" language of the Anatolian and Indo-European languages. This is remarkably similar to how Hittite and other Anatolian languages were described at the beginning of the twentieth century AD as being related to the other Indo-European languages. This hypothesis would see Proto-Minoan, Proto-Indo-European (P.I.E.) and Proto-Anatolian as deriving from Pre-Proto-Indo-European (P.P.I.E.) = Proto-Indo-Hittite, the common ancestor of the Indo-European languages proper and of the Anatolian languages. Renfrew would place this common ancestor (P.P.I.E.) in Asia Minor during the Neolithic period.

It will be instructive to see how the present author's research and conclusions differ from the reconstruction offered by Renfrew.

In 1996, the present author had tentatively identified the Minoan language as Indo-European. In the following year this research was taken further, with particular attention being paid

to the structure, i. e. , morphology and phonology as well as to the vocabulary of the Minoan language. This was followed by an in depth discussion of the position of the Minoan language within Indo-European. Here the present author resurrected the term "Pelasgian", following Herodotus, Hester and Ventris, to cover the Bronze Age languages of the Aegean, i. e, Minoan of the Second Millennium and EteoCretan, Lemnian, Samothracian and Thracian which were recorded in the First Millennium by means of the Hellenic alphabet.

In 1997, the reconstruction offered by the present author concerning the languages of the Bronze Age Aegean was that as, on the one hand Greek (West Pelasgian) and Hittite (East Pelasgian) were "centum" languages, and on the other hand Minoan (South Pelasgian) and Thracian (North Pelasgian and probably related to Armenian) were "satem" languages, then the break up of "Pelasgian" must have happened before the first evidence for the Minoan language c. 2000 BC and probably before the Bronze Age in the Aegean c. 3000 BC.

Thus the present author ends this paper on Evidence for the Minoan Language by suggesting that the Proto-Indo-European-Pelasgian-Anatolian (P.I.P.A.) language was spoken in the Neolithic Aegean, i.e., Neolithic Anatolia, Crete, Greece and Thrace.

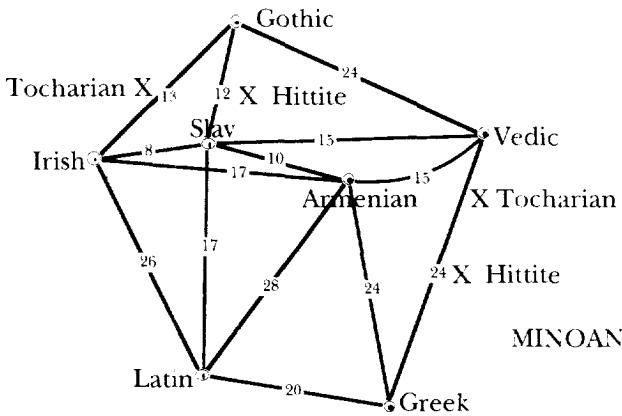
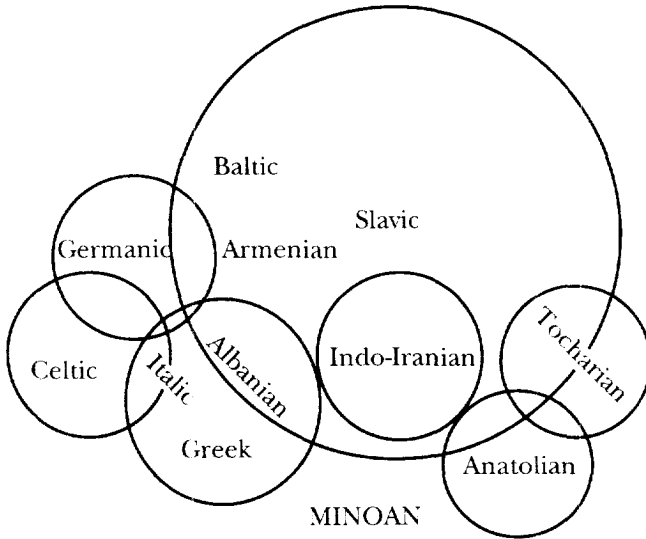
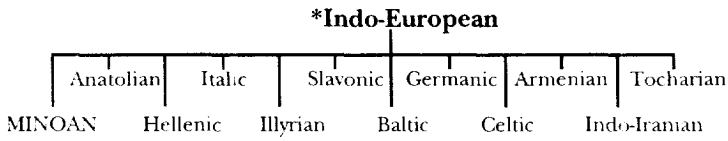
**Table I— A Revised Syllabic Grid For Linear B and A
Provisional Syllabic Grid For Linear A***

LINEAR B					LINEAR A				
a	e	i	o	u	A	E	I	O	U
da	de	di	do	du	DA	DE	DI		DU
ja	je	-	jo	ju	JA	JE	-		JU
ka	ke	ki	ko	ku	KA	KE	KI	KO	KU
ma	me	mi	mo	mu	MA	ME	MI		MU
na	ne	ni	no	nu	NA	NE	NI		NU
pa	pe	pi	po	pu	PA		PI	PO	PU
qa	qe	qi	qo	-	QA	QE	QI		-
ra	re	ri	ro	ru	RA	RE	RI	RO	RU
sa	se	si	so	su	SA	SE	SI		SU
ta	te	ti	to	tu	TA	TE	TI	TO	TU
wa	we	wi	wo	-	WA		WI		
za	ze	-	zo	-	ZA	ZE	-	ZO	-
a2		a3		au					AU
pa2	pe2	pi2		pu2	PA2		PI2		PU2
ra2		ra3	ro2		RA2				
ta2			to2		TA2				
			wo2					WO2	
dwa	dwe		dwo		DWA			DWO	-
nwa	nwe		nwo						-
s/twa	twe	s/twi	two		TWA	TWE			-
UNTRANSLITERATED SYLLABOGRAMS									
34 (=35)	a4	hai			34	A4	HAI		
47		dwi			47		DWI		
49		po2			49		PO2		
63		nwi			PLUS	A301	305-6	310	312
						314-5	318	321-22	

n.b. A dash - indicates where a sign of that value would not be expected. A blank space indicates that such a value is not known.

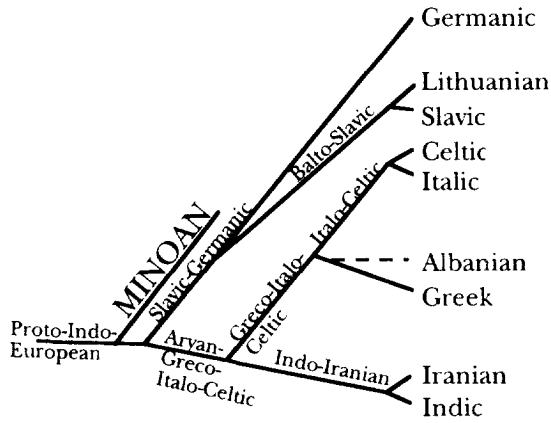
*The Linear A syllabary excludes those signs found only at regional sites.

Table 2 — The Indo-European Family Of Languages
(after Renfrew 1987)



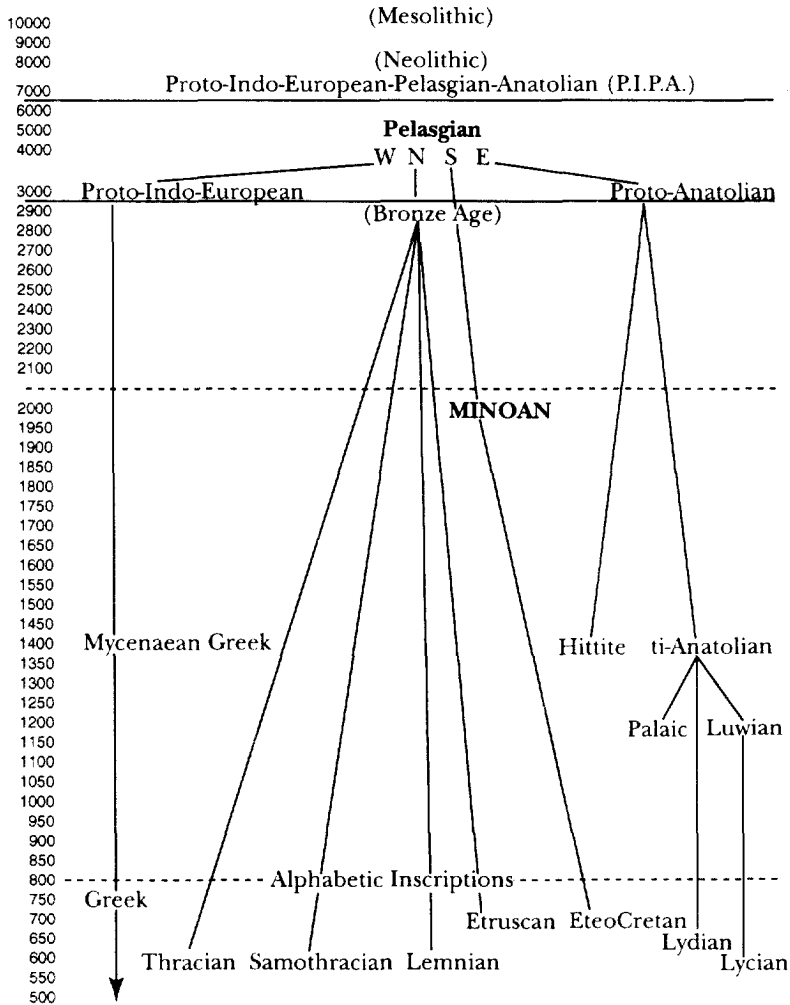
Volume 27, Number 1 & 2, Spring/Summer 1999

Table 2 — The Indo-European Family Of Languages
(continued)



Western Group (<i>centum</i>)	Eastern Group (<i>satem</i>)
Germanic	Baltic
Venetic	Slavic
Illyrian	Albanian
Celtic	Thracian
Italic	Phrygian
Greek	Armenian
	Iranian
	Indian MINOAN

Table 3 — The Languages of the Bronze Age Aegean



Bibliography - Minoan Crete

EVIDENCE 1 - G. Owens

- 1995 Evidence for the Minoan Language (1): The Minoan Libation Formula, *Cretan Studies 5, Studies Hood*, 1995. 163-206 and pl.XVIII-XII.

EVIDENCE 2 - G. Owens

- 1997 Evidence for the Minoan Language (2): The Archive of Haghia Triada, *Kritika Daidalika, Studies Hooker*, 1997, 17-24.

EVIDENCE 3 - G. Owens

- 1997 Evidence for the Minoan Language (3): The EteoCretan Inscriptions, *Kritika Daidalika, Studies Hooker*, 1997, 25-32.

EVIDENCE 4 - G. Owens

- 1997 Evidence for the Minoan Language (4): Egypt and the Keftiu, *Kritika Daidalika, Studies Hooker*, 1997, 33-37.

Ph.D. i-ii-iii - G. Owens

- 1997 Evidence for the Minoan Language - The Phaistos Disk, Ph.D. i-ii-iii - Introduction, To "Read"?, To "Understand"?, *Kritika Daidalika, Studies Hooker*, 1997, 39-99.

GORILA 1-5 - L. Godart et J.-P. Olivier (eds.)

- 1976-1985 *Godart et Olivier Recueil des Inscriptions en Lineaire A* Vol. 1-5 (1976-1985).

"GORILA" 6 - G. Owens

- 1997 Record of Inscriptions in Linear A 1985-1995, *Kritika Daidalika, Studies Hooker*, 1997, 237-243.

KRITIKA DAIDALIKA, G. Owens

- 1997 Evidence for the Minoan Language, Selected Essays in Memory of James Hooker on the Archaeology, *Epigraphy and Philology of Minoan and Mycenaean Crete (Studies Hooker)*. Hakkert Publishing, Amsterdam 1997.

Y. DUHOUX

- 1998 Pre-Hellenic Language(s) of Crete. *Journal of Indo-European Studies* 26: 1-2, 1998, 1-40

C. RENFREW

- 1995 Who Were the Minoans? Towards a Population History of Crete? *Cretan Studies 5, Studies Hood*, 1995, 1-27.

C. RENFREW

- 1998 Word of Minos: The Minoan Contribution to Mycenaean Greek and the Linguistic Georgraphy of the Aegean Bronze Age. *Cambridge Archaeological Journal* 8:2, 1998, 239-264.

The Journal of Indo-European Studies

Bibliography - Indo-European Studies

- Beekes, R.
1995 *Comparative Indo-European Linguistics, An Introduction.*
- Buck, C. D.
1951 *A Dictionary of Selected Synonyms of the Principle Indo-European Languages.*
- Chantraine, P.
1990 *Dictionnaire Etymologique de la Langue Grecque* (new edition).
- Comrie, B.
1987 *The World's Major Languages.*
- Lehmann, W. P.
1992 *Historical Linguistics* (3rd Edition).
1993 *Theoretical Bases of Indo-European Linguistics.*
- Mallory, J. P.
1973 A Short History of the Indo-European Problem, *Journal of Indo-European Studies*, Volume 1, 21-65.
1989 In Search of the Indo-Europeans, Language, Archaeology and Myth.
- Mallory, J. P. *et alit*,
1988 Review of "Archaeology and Language" by C. Renfrew (1987) and discussion in the same volume by various authors, *Antiquity* 62, 607-609 and 564-595.
- Pokorny, J.
1951-59 *Indogermanisches etymologisches Wörterbuch.*
- Renfrew, C.
1973 *Before Civilization.*
1987 *Archaeology and Language.*
- Szemerényi, O.
1980 *Einführung in die vergleichende Sprachwissenschaft* (2nd edition).