FROM LINEAR A TO LINEAR B

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for my parents
This study aims to construct a coherent framework within which the scripts of Late Minoan Crete can be related to each other. This is achieved by a combination of archaeological, epigraphical and philological evidence. If the scripts of Late Minoan Crete can be studied diachronically and related to each other, then a better understanding can be gained working from the known i.e. the Mycenaean Greek of Linear B to the unknown i.e. the Minoan language of the Linear A script.

The development of writing on Late Minoan Crete is clarified by combining the archaeological and epigraphical evidence, and the transition from Linear A to Linear B is thus better understood. An interdisciplinary study of the material creates a better understanding of the Late Minoan period on Crete.

This study builds upon the scholarship of the last 40 years since the decipherment of Linear B, as well as taking into account recent archaeological discoveries of inscriptions written in the Cretan scripts. The transition from Linear A to Linear B is better understood as a result of considering the c.3000 Linear B tablets and fragments rediscovered in 1984, and the more than 30 Linear A inscriptions discovered since the 1985 publication of the Linear A corpus. This new material allows observations to be based on more information than hitherto possible. The study of Minoan Linear A is therefore based upon an accurate reading of an enlarged corpus.

Finally philological observations and conclusions are drawn concerning the Minoan language recorded by the Linear A script. This is necessary before a future decipherment can be undertaken with any prospect of success.
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FROM LINEAR A TO LINEAR B
A Diachronic Study Of The Scripts Of Late Minoan Crete
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INTRODUCTION

Archaeological excavations on Crete began in 1878 when Minos Kalokairinos made soundings in the West Wing of the Palace of Knossos. Later interest in the site of Kephala was expressed by Hazzidakis, Myres, Halbherr, Schliemann and Dorpfeld amongst others. Arthur Evans first visited Crete in 1894, having had his curiosity aroused in 1889 by being shown a 4-sided bead-seal of cornelian bearing Cretan Hieroglyphic signs which he recognised as a form of writing. After protracted discussions and negotiations, Evans had acquired the whole site of Knossos by 1899, and in March 1900 he started his excavations(1).

As is known, Evans discovered Linear B tablets in his first year of excavation. But the 3 scripts of Minoan Crete were already known before the excavations started. For Minos Kalokairinos discovered the first Linear B tablet in 1878, although it was not definitely identified as bearing a script, and this was subsequently seen by Evans(2). Kalokairinos also discovered the first Linear A inscription in the same year on a pithos from the third west magazine(3). The Cretan Hieroglyphics were recognised as a script by Evans in 1889 when he was shown the above mentioned sealstone(4). Another inscription found prior to the excavations of 1900 was that on an inscribed stone libation table from the Diktaean cave at Psychro(5). By 1900 all three Cretan scripts had been discovered.

Thus Minoan civilization was first revealed in an extensive way by the excavations of Sir Arthur Evans at
Knossos, which began in 1900 and by the subsequent excavations at Knossos, Mallia and Phaistos. Since then, archaeological excavations have covered the whole length and breadth of the island. With the archaeological discoveries came more information concerning the Aegean scripts as well. From the excavations of the last 100 years, three scripts can be identified on Crete i.e. Cretan Hieroglyphic, Linear A and Linear B, which is the terminology established by Evans himself.

All three of the scripts of Minoan Crete will be considered in this work, and it is necessary to discuss the previous work on the subject. After excavation the next step before a study can be made is the publication of the epigraphic material. Sadly this is something which has progressed very slowly for the scripts of Minoan Crete. Following the discovery of major Linear B archives at Knossos, Evans planned to publish the written documents of Bronze Age Crete in the "Scripta Minoa" volumes. Scripta Minoa I was published in 1909, and included the Phaistos Disk and the Cretan Hieroglyphic script. The second volume of Scripta Minoa however, dealing with the Linear B tablets, was not published until 1952 by Sir John Myres. This followed the first publication of the Pylos tablets in 1951 (Bennett 1951).

In 1952 the Linear B script was deciphered by Michael Ventris, and work began on detailed and accurate editions of the tablets(6). A series of editions of the Knossos Tablets were published, of which KT5 is the most up to
date(7). This and the Corpus of Mycenaean Inscriptions from Knossos are the working tools for a study of the Knossos Linear B archive(8).

The Linear A inscriptions were even more neglected in the years prior to and following the 1952 decipherment of Linear B. In the last 40 years following the decipherment, and particularly as a result of the increasing number of finds of Linear A inscriptions, a need was felt for a fully published corpus. This was admirably and methodically undertaken by Godart and Olivier, whose corpus has replaced previous publications of Linear A inscriptions. The Godart and Olivier Collection of Inscriptions in Linear A (GORILA) was published in 5 volumes: GORILA 1 (1976) Tablettes éditées avant 1970; GORILA 2 (1979) Nodules, scelles et rondelles édités avant 1970; GORILA 3 (1976[1977]) Tablettes, nodules et rondelles édités en 1975 et 1976; GORILA 4 (1982) Autres documents; GORILA 5 (1985) Addenda, Corrigenda, Concordances, Index et Planches des signes. By 1985 all of the then known Linear A inscriptions had been published with a photograph and drawing; and importantly the "Index des signes" GORILA 5 (1985)p.135-325 allowed, for the first time, a study to be made of all Linear A inscriptions, and for parallels to be observed between related groups of signs. This was an important stage in the study of Linear A. By 1985 there were 1427 published inscriptions and these contain 7147 signs(9).

As a result of continuing excavations all over Crete (Palaikastro to Khania, Knossos to Haghia Triada) and
beyond Crete, there has been a further increase in the corpus of Linear A inscriptions. From 1985 to the summer of 1991 a further 21 inscriptions containing 92 signs were published. In addition another 11 unpublished but known Linear A inscriptions containing another 42 signs have come to light. This adds 32 documents and 134 signs to the corpus(10). The size of the Linear A corpus in 1991 stood at 1459 documents and 7281 signs(11).

The Cretan Hieroglyphic is the last Cretan script to be meticulously studied, a necessary step before a greater understanding of it is to be hoped for. At present, and due mainly to Cretan Hieroglyphic archival deposits from Knossos and Mallia, the corpus consists of c.120 documents (mainly archival inscriptions) inscribed on clay and c.150 seals and sealings(12). The present total of Cretan Hieroglyphic inscriptions is c.270 inscriptions containing 1537 signs. Since 1985, the editors of the GORILA corpus, Godart and Olivier have been working on the Corpus Hieroglyphicarum Inscriptionum Cretae (CHIC). This corpus, due to appear in 1992, will for the first time definitively publish and record all known inscriptions in the Cretan Hieroglyphic script(13).

Now that all of the excavated epigraphic material has been accurately published, it is possible to commence a study of the Linear A and Linear B inscriptions. The Cretan Hieroglyphic corpus is still awaiting final publication but plays a lesser role in the following discussion of Cretan scripts. Prior to the 1952 decipherment of Linear B by
Michael Ventris, there were few works which offered a serious contribution to the subject, for most would be decipherers were seduced into a quick "answer". The exceptions to this were Alice Kober and Emmett Bennett, whose careful and patient work increased understanding of the script. Most important of these was the recognition of Kober that the Linear B script recorded an inflected language. Ventris rightly acknowledged the contributions made by the two American scholars(14).

Following the decipherment of Linear B in 1952 as recording Mycenaean Greek, the minds of many scholars turned towards the earlier script of Minoan Crete, Linear A. It was clear that this was the script of an earlier civilization. The 1950's saw many scholars again seduced into offering an unreliable decipherment of Linear A. In the decade following the decipherment of Linear B, many tried to decipher Linear A, but without success. In the 20 years prior to 1985, these attempts were much fewer, but the invaluable compilation and publication of the Linear A corpus took place. It should have been clear from Ventris' decipherment of Linear B that what was required before a decipherment of Linear A could be seriously contemplated was a reliable publication of the texts. This now exists in the GORILA corpus.

From 1985 to the present, and only since 1985, scholars have been able to base their observations and conclusions regarding Linear A on the accurate publication and comparison of all known texts. Previous work had been
based on inadequate readings of an incomplete corpus. The aim of this present work is not to decipher Linear A. That on present evidence is impossible. A presentation of the existing data will demonstrate the problems involved.

There are over 5800 Linear B inscriptions containing over 66300 signs, 1459 Linear A inscriptions containing 7282 signs, and c.270 Cretan Hieroglyphic inscriptions containing c.1537 signs. When Ventris deciphered Linear B he was aware of c.2000 documents containing c.30000 signs. The Linear A and Cretan Hieroglyphic scripts account for less than 10% and 2% respectively of the signs of the whole Minoan-Mycenaean epigraphical material. Much more material is needed before a decipherment can be achieved(15).

The aim of this work is to lead towards a greater understanding of Minoan Linear A. To this end, the Linear A script of the Late Minoan period will be studied from two perspectives: firstly in its archaeological context, and secondly as it relates to Linear B. After a brief discussion of seals and sealings and the first script on Minoan Crete, and the script(s) of the First Palace period, a study will be made of the Linear A of the LMIB period. The documents from this period, more than 90% of the Linear A corpus, not only come from one single period at the end of the Neo-Palatial period, but they are also the closest chronologically to the Linear B records of the LMIIIA period. If the LMIB Linear A inscriptions can be understood in their archaeological context, and the historical circumstances be better clarified between the last Linear
A inscription (LMIB) and the earliest Linear B inscription (LMIIIA), then there is a greater chance of increasing the present understanding of the Linear A material.

By a synthesis of archaeological, epigraphical and philological data, the aim of this work is to conduct a diachronic study of the scripts of Late Minoan Crete. It will proceed from the Linear A inscriptions of the LMIB period, via the anepigraphic but crucially important LMII period, to the Linear B inscriptions of LMIIIA1 and 2. If such a study is constructive, and can demonstrate points of continuity between the two scripts (and perhaps of the two languages which they record), then the chances of a future decipherment of Linear A will be greatly enhanced.

Although most of this study will be based on archaeological and epigraphical material, some use of philological material must also be made, primarily in the concluding chapter. For Linear B and Linear A are both scripts which record languages, Mycenaean Greek and the as yet unknown Minoan language. It is therefore essential to see how justified is a transference of syllabic sound values from Linear B to Linear A. Such a transference will allow Linear A and the Minoan language to be literally "read" if not yet understood.

The signs of the scripts of Minoan Crete are in this work expressed by AB and A and B numbers. The AB numbers are those which refer to signs found in both the Linear A and Linear B scripts. The A numbers are those signs which are found only in Linear A and do not have a similar sign
in Linear B script. Likewise the B numbers are those signs which are found only in Linear B and do not have a similar sign in Linear A. This terminology is taken from the GORILA corpus, now the standard work and starting point for any study of the Linear A inscriptions (16). This system of numeration i.e. AB signs will be extended to the corpus of Cretan Hieroglyphic inscriptions when it is published, giving HAB signs.

It is also necessary to see how valid a transference of sound values is between the Linear B and Linear A scripts once the common signs between the two scripts have been identified. This question has been adressed by both of the editors of the GORILA corpus (17). Although only a small number of common AB signs can be proved to have had the same sound value in both Linear A and Linear B, the likelihood of Linear B having acquired both the signs and their sounds from the previous Linear A script is high. So with caution the Linear A inscriptions will be transliterated according to the sound values of Linear B. The exact relation between the the two scripts, and between the two languages which they record, will be considered in the concluding chapter. First there will be a presentation of the epigraphical and archaeological evidence of each period, before historical and philological conclusions are drawn. It is necessary to briefly outline events of the Pre-Palatial and Proto-Palatial periods, and to consider the various stages of administration and writing in Early and Middle Minoan Crete.
It is known that the earliest habitation at Knossos goes back to c.7600 B.C., which is testified to by the deep layers of Neolithic material found on the Kephala hill at Knossos. The transition from Final Neolithic to Early Minoan I, as Evans termed the first stage of recognisable Minoan civilization, occurred between 3500-3000 B.C. (18). This transition was followed by the Minoan period, the terminology of which was established by Evans and will be used here, but the Minoan period has been refined by studies in the last 90 years which have gone some way towards clarifying the tripartite chronology established by Evans. The chronology has been refined within the same tripartite system, by a study of pottery and by establishing synchronisms with the better established chronologies of the Near East and Egypt (19) (Table 1).

Before a consideration of the scripts of Minoan Crete, it is necessary to consider why a script was needed. One reason is clearly to record agricultural commodities and administrative procedures of the Palaces. But prior to the foundation of the First Palaces in the MMl period, there was already an administrative system in operation in Early Minoan Crete. In the EMII period some form of administration was carried on at a simple level by the use of seals and sealings. Dating from the EMII period are 17 seals, 3 sealings and 2 pot marks, all indicative of small scale bureaucratic procedures (Table 2). The designs on these seals and sealings are predominantly cross-hatched or composed of incised lines. So the seal design does not
signify anything in itself, but significance must be attached to the fact that in the EMII period someone at Myrtos for example was able to multiply impress a sealing, which appears to have sealed a door (20). The importance of these seals and sealings is that someone had the authority to use them (21).

From the following EMIII-MMI period there are 378 sealstones from the vaulted tombs of the Mesara (CMS II.1 [1969]), a large body of evidence which enables something to be seen of the designs on sealstones of this period. There are 3 different categories of designs on sealstones, rectilinear (R), curvilinear (C) and ornamental (O). The ornamental designs include those which are later used as signs of the Cretan Hieroglyphic script. The figures for the different categories of signs from different periods can be expressed in percentage terms as follows:

- **Seals and Sealings of the EMII period.** R-C-O = 90-10-0%
- **Seals of the Mesara Tombs EMIII-MMI.** R-C-O = 42-33-25%
- **Other Pre-Palatial Sealstones EMIII-MMI.** R-C-O = 40-19-41%
- **Archanes Fourni Sealstones EMIII-MMIA.** R-C-O = 05-29-66%

There is a marked decrease in the number of sealstone designs which are rectilinear, and an increase in the percentage of designs which are ornamental. Although the ornamental designs include signs such as people, animals, plants etc, it is only in the material from Archanes Fourni that such signs are used as part of a script. The fact that there is not one possible Cretan Hieroglyphic inscription from the sealstones of the EMIII-MMI Mesara indicates that
the ornamental designs which these sealstones contain had not yet been adapted for use as a script (22).

The earliest occurrence of the Cretan Hieroglyphic script is the "Archanes Script" (23). This is the term used by Yule to describe the earliest clearly definable script known in Crete, which is from a context at Archanes Fourni, dated after study by the excavator to EMIII-MMIA (24). The 17 Archanes Fourni sealstones have 42 faces, 14 of which occur on one ivory multiple sealing. The number of signs on this one object, and the repeated sign groups found on more than one sealstone from Archanes Fourni, indicates that a specific meaning is recorded by these signs. From the number of signs which exist in the repertoire of the Cretan Hieroglyphic script, and from the fact that epigraphically both Linear A and B are related to this script, it is clear that the material from Archanes Fourni conveys a script. The term Cretan Hieroglyphic was used by Evans to describe the first script of Minoan Crete, through visual comparison with Hieroglyphic signs from Egypt. But in spite of the fact that three sealstones from the Mesara bear Egyptian Hieroglyphs (CMS II.1 nos. 120, 121 and 180) there is no indication that the Minoans derived their script from there. On the contrary there are many signs which seem particularly Cretan in character e.g. the double-axe (P36), horns of consecration (P37) and the bucranium (P38), while other signs are derived from human figures, animals or natural motifs, many of which were already known on Pre-Palatial sealstones. Therefore although the Minoans were
probably aware of the Egyptian Hieroglyphic script, there is no indication that the Cretan Hieroglyphic script was not created on Crete. It is most probable that the Minoans took the idea of a "pictographic" script from Egypt, but created it by adapting their large repertoire of sealstone ornamental designs into a syllabic script(25).

One repeated sign-group found three times on the sealstones of Archanes Fourni is P36-P60 (double-axe and sepia signs). When Linear B sound values are applied to the Linear A and Cretan Hieroglyphic signs, then P36-P60 can be read as A-SA. This can be compared to 16 instances of Linear A sign-groups starting with these signs (AB08/57-AB31) on non-archival material, mostly on stone libation tables from Minoan peak-sanctuaries. It was recognised by Grumach and Sakellarakis (1966) that the repeated sign-group from Archanes Fourni stood in some textual relation to the Minoan Libation Formula, found on Iouktas and elsewhere. In fact a Linear A sign group starting with signs comparable to P36-P60 is found 4 times at Iouktas (IO Za2, 6 and 9, Zb10), once each at the nearby locations of Prassas (PR Za1) and Troullos (TL Za1), and twice at Knossos (KN Za10 and Zc7). There is a textual link between the EMIII-MMIA Cretan Hieroglyphic inscriptions from Archanes Fourni and the MMIII-LMI Linear A inscriptions from Mount Iouktas. The peak-sanctuary of Mount Iouktas has produced pottery from as early as EMII, and was in use as a place of religious worship when the Archanes seals were placed at Fourni in EMIII-MMIA(26). There is also a strong
link between these two locations. For Iouktas overlooks and dominates Fourni, and the visitor to Fourni is always aware of the nearby mountain, the peak-sanctuary of which is a one hour walk away and visible from the room at Fourni where the Cretan Hieroglyphic sealstones were found.

The Archanes Cretan Hieroglyphic script pre-dates the foundation of the First Palaces at Knossos, Mallia and Phaistos. The First Palaces, founded in the MMIA/B period, had an increased storage capacity compared to the Early Minoan Pre-Palatial settlements, which allowed them to store a surplus in the magazines. So it is probable that the Cretan Hieroglyphic script, already in existence in EMIII-MMIA, was used for an administrative application by the First Palaces. The Palaces used the new script as an efficient way of controlling the Palatial administration and economy. The use of a script permits a more complex administration than one just based on seals and sealings(27). But the continued use of seals and multiply stamped sealings in the MMII period for administrative purposes will be considered before studying the Cretan Hieroglyphic and Linear A Palatial archives of the Middle Minoan period.

There are sealing deposits from Phaistos, and from Monastiraki in the Amari valley, both dated to MMIIB at the end of the First Palatial period. The sealing deposit from Phaistos (CMS II.5 [1970]) produced 327 sealings, including two Cretan Hieroglyphic inscriptions. Many of the designs employed are known also as Cretan Hieroglyphic signs e.g.
animals, human figures and objects such as the double-axe and jug, but there is no indication that they are anything other than decorative here, with the exception of two sealings. Another noticeable feature of the Phaistos sealing deposit is the practice of multiple stamping. The practice of using sealings, for whatever purpose, and in such large numbers is a marked development from the simple sealings with rectilinear motifs of the EMII period. The Palatial development of this practice means that the Palatial administration had the capacity to convey a more complex message, reinforced by its being multiply stamped. This process was advanced further by the introduction of Cretan Hieroglyphic inscriptions on the sealings of Phaistos. The two Cretan Hieroglyphic inscriptions are CMS II.5.239 P36-P47 and CMS II.5.326 P47-P2. If a sealing implies control, as is evident from the sealing of room 29 at Myrtos in EMII, then that control could be expressed more forcefully by multiple stamping and much more explicitly by the Palatial administration with the use of the Cretan Hieroglyphic script.

The villa of Monastiraki in the Amari valley has also produced sealings and a seal from old excavations and more than one hundred clay sealings from the new excavations(28). The seal (CMS V.1.286) has close similarities to the design on CMS II.5.124 from the Phaistos sealing deposit. The 9 published sealings are stamped between 4 and 19 times, and have rectilinear or curvilinear motifs. There is a similar administrative
practice in use at both MMIIB Phaistos and Monastiraki i.e. multiply stamped sealings with a very similar repertoire of signs. There is an absence of ornamental designs, including Cretan Hieroglyphic inscriptions, but it is not yet known whether this is also the case with the 100 or so newly discovered sealings. The position of Monastiraki in the Amari is important as it is located on one of the two natural routes of communication from the Mesara to the Rethymno plain area. Monastiraki, with its storage rooms with pithoi and sealings, is the MMII administrative centre for the Amari valley. Also the similarity to the designs on sealings at Phaistos, and the common practice of multiple stamping indicates that the villa of Monastiraki stood in a close relationship with the First Palace of Phaistos. There is also a close similarity between the pottery of MMIIB Phaistos and Monastiraki. In the villa of Monastiraki during the Proto-Palatial period, a fore-runner can be seen of the Minoan villas which are the local administrative centres of the Neo-Palatial period(29).

From the end of the First Palace period come the first Palatial archives, Linear A from Phaistos and Cretan Hieroglyphic from Mallia-Quartier Mu. There are as yet no archives from the First Palace of Knossos. There are 21 bars and tablets, 4 sealings and 10 inscribed roundels from MMII Phaistos; and 11 bars and tablets, 12 labels, 2 cones, 3 seals, 11 sealings, 9 vase inscriptions and 1 on metal from MMIIB Mallia-Quartier Mu(30). It is clear that both of these Palaces (and presumably Knossos) employed a script to
write administrative records in order to better control their economies. The written administration which is witnessed at these two places is contemporary with and complementary to the practice of multiply stamped sealings. These two archives have some features in common. Both MMII scripts use 2 and 4 sided bars along with tablets. A suspension hole can also be seen on PH9, a feature commonly seen at Quartier Mu, where such documents were hung around objects, probably storage pithoi as the documents often preserve ideograms of agricultural commodities. In addition the MMII Phaistos Linear A material lacks the ordeliness seen in later Linear A archives and resembles more the records kept in the Cretan Hieroglyphic script. The MMII Phaistos Linear A (termed Proto-Linear A by Levi 1954) is more pictographic in its execution of signs than later Linear A, and bears a greater resemblance with Cretan Hieroglyphic signs e.g. the MAN sign on PH8a.2 and PH12.a, and other signs on tablets PH9, 10, 12 and 13 which are more pictographic than their Linear A descendants on archival material. Another example is tablet PH7a.3 which has signs AB80 and AB24 which are very close in appearance to the Cretan Hieroglyphic signs P74 and P40 respectively. In fact this whole sign group has signs which have been executed in a Cretan Hieroglyphic manner (Figure 1.i)(31). There are also 10 Linear A signs from MMII Phaistos i.e. A328, A339, A353-A360 and A364, which are otherwise unattested in the Linear A corpus. There are also similarities between how the MMII Linear A and MMII Cretan
Hieroglyphic documents were drawn up. Although some order is introduced into the tablets by the initial cross at Mallia (3a and 6a) and by ruled lines at Phaistos (8a and 16), they both seem disorganised compared to later MMIII archives. Both archives also made use of medallions bearing syllabic sign-groups i.e. Mallia nos.8-19 and Phaistos Wc 37-40. It is also worth re-iterating the fact that two sealings from the MMII Phaistos sealing deposit bear Cretan Hieroglyphic inscriptions. This shows that both the Cretan Hieroglyphic and Linear A signs were known at MMII Phaistos. Before any conclusions can be drawn, it will also be instructive to look at the contemporary Linear A and Cretan Hieroglyphic documents from both Knossos and Mallia in MMIII.

There are 6 Linear A tablets and 1 sealing from MMIII Mallia, and 3 Linear A tablets, 3 sealings, 2 inscribed vases and 2 cups with painted inscriptions from MMIII Knossos. There are also 52 Cretan Hieroglyphic inscriptions from MMIII Malia written on seals, sealings, jugs, medallions and bars; and 63 Cretan Hieroglyphic inscriptions from MMIII Knossos written on sealings, labels, bars and one tablet(32).

At Mallia both archives (Cretan Hieroglyphic and Linear A) used 4-sided bars and tablets. The Linear A signs are less schematic and more pictographic in appearance e.g. AB80 on MA 1b and 2c, where the "cat's head" is more pictographic than normal for Linear A, and is more akin to examples of this sign on stone libation tables (10 Za2.d.1
and KO Zal.d) than to the more schematic renderings on archival documents (HT 39.3 and KH 61.2) (Figure 1.ii). At Knossos there is less Linear A material for comparison, but both Cretan Hieroglyphic and Linear A archives made use of tablets as well as other documents. There is one comparison that can be made with regard to the execution of signs. On the Linear A document KN 22.a.2 is sign AB46, which is clearly a pair of walking legs, and the execution of this is very similar to a pictographic painted sign on a sarcophagus from Archanes Fourni (Figure 1.iii) (33). All of the documents written in both scripts at both Palaces in the MMIII period are economic, as indicated by recognisable ideograms i.e. GRAIN, OLIVE etc. There is also 1 tablet from Middle Minoan Phaistos, which bears signs similar in execution to both Cretan Hieroglyphic and Linear A, and which also bears ideograms of GRAIN, OLIVE, SAFFRON and FIGS followed by numerals. This too is an economic document from a Middle Minoan Palatial site, but it is still not certain in which script it is written (Figure 1 iv)(34).

Thus the following observations can be made. In MMII administrative documents were kept in Cretan Hieroglyphics and Linear A at both Mallia and Phaistos. In MMIII documents were kept in Cretan Hieroglyphics and Linear A at both Mallia and Knossos. This situation of two scripts being employed in the same period, to write similar documents, calls for greater consideration. The problem is exemplified by the case of the animal-hide ideogram AB180/H4 recorded in Études Crétoises II as in the Cretan
Hieroglyphic script (H26, 29 and 31), and later re-classified by the editors of GORILA as Linear A (MA4, 6 and 9). Uncertainty about how a Middle Minoan inscription should be classified has also been raised in connection with the tablet from Phaistos (P.121), the painted sarcophagus from Archanes Fourni (ARKH.FO. Zc1), and a newly discovered painted inscription from Phaistos (PH Zc 49).

Thus the situation arises that two scripts were in contemporary use in Middle Minoan Crete. This must be explained either by the two scripts having been created prior to MMIIB when they were both employed at Phaistos, or by the two scripts being variations of the same Cretan script. The common Minoan culture based on the Palaces, and the unlikelihood that two scripts were created in Crete at the same time, makes it very likely that Cretan Hieroglyphic and Linear A are different forms of what is basically the same script i.e. the Palatial script used in the Middle Minoan period.

As has been shown above, there are similarities between the documents and between the signs themselves on records of both the Cretan Hieroglyphic and Linear A scripts of the Middle Minoan period. The MMII Proto-Linear A of Phaistos is more pictographic and seems closer in appearance to contemporary Cretan Hieroglyphics than to subsequent Linear A. Within both of the scripts there is a development towards simpler representations as the system develops. This is seen both with the Cretan Hieroglyphic
(Archanes Fourni EMIII-MMIA - Mallia MMIIB - Knossos and Mallia MMIIIB) and Linear A scripts (Phaistos MMIIB - Knossos and Mallia MMIII - Neo-Palatial administrative centres LMI). The difference in execution in the largely common shared repertoire of signs is dependent less on which "script" it is assigned to and more on chronological development (First or Second Palace period), upon the medium chosen on which to write (soft clay or hard stone), and this to a certain extent is connected with the reason why the inscription was made (administrative or religious).

A comparison between the tentative list of 96 Cretan Hieroglyphic syllabic signs found on clay archival documents, recently offered by Olivier (1989), and the Linear A syllabic signs found on Palatial clay archival documents of the Middle Minoan period (GORILA 5 [1985]), will show how much the two scripts have in common (Table 3). There are 58 Linear A Palatial clay archival documents which can be dated to the Middle Minoan period. These use 38 different syllabic signs(35). Of these 38 signs, 15 can be paralleled in Olivier's tentative list. Even at this early stage prior to the publication of the Cretan Hieroglyphic corpus and with relatively little data (58 Linear A documents with 235 signs; c.120 Cretan Hieroglyphic documents with c.560 signs) it is clear that a preliminary survey shows a high degree of shared HA signs between the two Minoan scripts. For nearly half of the Middle Minoan Linear A syllabic signs can be paralleled by the contemporary Cretan Hieroglyphic signs. This overlap is
likely to be more clearly demonstrated as a result of future discoveries and publications.

There are also important examples of the same sign-groups written in both scripts. For at the cave of Archalochori were found many axes, of which three were inscribed, one in the Cretan Hieroglyphic script and two in the Linear A script. If Linear B sound values can be assigned to the Linear A inscriptions (GORILA 4 AR Zf1 and Zf2) they read as I-DA-MA-TE. Likewise two of the signs in the third column of the Cretan Hieroglyphic axe can be read as I-DA. This sign group occurs frequently in later Linear A religious inscriptions. The above example indicates that there are clearly similarities between these three inscriptions found at Archalochori (Boufides 1953).

There are also similarities to be noted between the EMIII-MMIA sealstones from Archanes Fourni, the late MMIIIB stone libation table and ladle from Apodoulou and Troullos, and the LMI stone libation tables which bear the repeated sign-group A-SA. A textual link can be observed between the inscriptions of Archanes Fourni and Iouktas, which come from religious contexts and are inscribed on similar material i.e. hard stone. It is an observable fact that the inscribed stone libation tables bear signs executed in a pictographic manner more akin to the Archanes Fourni and other Cretan Hieroglyphic signs, particularly the Cretan Hieroglyphic Stone Block (Chapouthier 1938), than to contemporary Linear A signs on clay documents (Table 4). There is more similarity between inscriptions on hard
material (e.g. stone, metal, gem stones and the stone block from Mallia) of whatever period, than between the inscriptions on stone and those on clay from the LMIB period(36).

In conclusion it can be observed that in the Middle Minoan period there were two scribal traditions that diverged from a common ancestor, the Archanes Fourni Cretan Hieroglyphic script. The Middle Minoan contemporary scripts which have been termed Cretan Hieroglyphic and Linear A rather appear to be manifestations of different traditions within the First script of Crete. There was an administrative tradition which used the script to keep records on clay documents, and a religious one which used the script to inscribe hard materials i.e. stone. These traditions remained in contact at a number of levels in the Middle Minoan period, and it is only in the LMI period that just the Linear A script is referred to, although the stone libation tables are executed in the pictographic tradition. Within the Middle Minoan period there is one Cretan script with two traditions i.e. simplified linear signs on administrative records on clay, and pictographic signs in religious inscriptions on stone. There is less difference between inscriptions on hard material spanning Middle Minoan and LMI than between the stone libation tables and clay tablets of LMIB. It is becoming increasingly difficult to draw a distinction between Cretan Hieroglyphic and Linear A inscriptions. What can be observed however are two traditions within the pre-Linear B script of Minoan Crete
which are affected by a number of factors (chronological, geographical, thematic and medium employed).

In connection with the Cretan Hieroglyphic and Linear A scripts, Olivier (1989) recently discussed the problem of terminology. He rejected Pope's (1968) suggestion that Cretan Hieroglyphs be known as the "First Cretan Palace Script", on the grounds that the Archanes script is Pre-Palatial (EMIII-MMIA). It is also worth stating that the Knossos Palace and Mallia Palace Cretan Hieroglyphic archives date from MMIIIB i.e. the earlier part of the Second Palace period. So as Cretan Hieroglyphs are used from EMIII-MMIA (associated primarily with MMIA pottery according to the excavator) to MMIIIB, then this script should rather be known as Middle Minoan. As discussed above, due to the increasing level of shared signs between the contemporary Middle Minoan Cretan Hieroglyphic and Linear A scripts, the first script of Minoan Crete should be termed Middle Minoan Linear A, to differentiate it from Late Minoan I Linear A.

This identification of just one pre-Linear B script on Minoan Crete, with two traditions, 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 Linear A corpus. This increase in data and the careful future publication of the Cretan Hieroglyphic inscriptions and subsequent Linear A inscriptions will have taken research one important step closer to the possibility of a future decipherment of Linear A, and to the possible
identification of the as yet unknown language of Minoan Crete (37).
LINEAR A OF LATE MINOAN IB

The Neo-Palatial period of Minoan Crete commences at the beginning of MMIII, following the destruction of the First Palaces. The Cretan Hieroglyphic and Palatial Linear A records of Knossos and Mallia date from within the MMIII period. In the following late MMIII-LMIB phase of the Neo-Palatial period there is just one script in use on Crete, Linear A.

Apart from the Palatial records, the other late MMIIIIB inscriptions are from Apodoulou, Troullos and Kea. The Apodoulou (AP Zal-2) and Troullos (TL Zal) stone libation tables and ladle are inscribed with sign groups that form part of the repeated Minoan Libation Formula. Although there are some textual parallels between the sign-groups of the Archanes script (EMIII-MMIA) and the Minoan Libation Formula (MMIII-LMIB), the inscriptions from Apodoulou and Troullos are to be linked to the formulaic inscriptions found at Palaces and villa sites of the late MMIII-LMIB phase of the Neo-Palatial period. The fact that there is a strong connection between the Palace and Peak-Sanctuary in the Neo-Palatial period indicates that in all likelihood the Apodoulou and Troullos inscriptions should be dated to late MMIIIIB i.e. to after the destruction that occurred within MMIIIIB(1).

The tablet, inscribed sealing and pithos from the island of Kea (KE 1, Wc 2, Zb 4) likewise date from late MMIIIIB, as the period of Minoan expansion overseas was in the late MMIIIIB-LMIB phase of the Neo-Palatial period.
These three documents are the earliest Linear A inscriptions from out of Crete, predating the Linear A found on Kythera (MMIIIB-LMIA), Milos (LMI), Thera (LMIA) and Kea again (LMIB).

The Linear A inscriptions which pre-date LMI can be shown to have come from the very end of the MMIIIB period, as both religious formulaic inscriptions on stone and overseas Linear A inscriptions are features of the late MMIIIB-LMIB phase of the Neo-Palatial period. The transition from MMIIIB to LMIA is dated to c.1600 B.C. As there is no destruction level at sites to show this transition, it is impossible to date it exactly, but according to the latest chronology established, the following timescale is to be envisaged (Warren and Hankey 1989). The First Palaces of Minoan Crete were destroyed c.1700 or shortly after. The Second Palaces were constructed shortly after 1700, but themselves suffered destruction which preserved the Cretan Hieroglyphic and Palatial Linear A records within MMIIIB shortly before c.1600. The MMIIIB period lasted until c.1600 and was then followed by the Late Minoan I period.

There are a number of documents which date from the MMIII/LMIA transition period c.1600 B.C. There are stone libation tables from Prassas (PR Zal box), Syme (SY Zal-3) and Iouktas (IO Za7, 8 and Zb10). There is also one inscribed stone weight from Kythera (KY Zg1). It is observable that the MMIII/LMIA period sees the first use of the Linear A script for a religious purpose, unless the two
painted cups from Knossos (KN Zc6 and 7) are earlier, and the first instance of the Linear A script from outside of Crete (2).

There are 8 inscriptions which can be dated to the LMIA period. These are 4 on clay vessels (KN Zb20 and THE Zb2, 3 and 4), 1 painted on clay (PK Zc13), 1 on a stone weight (KN Zg<21>) and 2 on metal pins (CR Zf1 and KN Zf31), one of gold and one of silver containing 18 and 40 signs respectively. These are substantial inscriptions from a personal and possibly religious context. It should also be noted that two of the Thera pithoi share the same reading. There are no inscriptions from this LMIA period which are administrative and inscribed on clay tablets, nodules, sealings or roundels. A more detailed discussion of the dating of all the Linear A inscriptions is to be found in "La Chronologie des documents en linéaire A" (Vandenabeele 1985). This information is also included in the "concordance générale" of GORILA 5. In this study the Linear A inscriptions are referred to by their designation in GORILA 5.

There are also 12 inscriptions which must be assigned to the LMI period, but which cannot be more precisely dated within that period. There are 3 pithoi and a large vase from Haghia Triada (HT Zb158-161), a libation table from Knossos inscribed on two sides with 17 signs (KN Za10), a tablet fragment from the island of Milos (MI 2), a page tablet from Palaikastro (PK 1) with 8 lines of writing and 41 signs plus numerals, 2 inscribed pithoi from Phaistos
an inscribed silver pin from Platanos with 22 signs remaining (PL Zfl), an inscribed clay figurine from a villa at Tylissos (TY Zgl) and also an inscribed pithos from the same villa (TY Zb4). Linear A was used in the LMI period for administrative and religious inscriptions, and its use is also noted outside of the island of Crete as well.

There are 1275 documents which are dated to the LMIB period, making over 93% of the securely dated Linear A inscriptions. There are a total of 279 tablets from this period, 992 inscriptions on nodules, sealings and roundels, 4 on clay vessels and 3 on frescoes. The evidence by site is as follows - Archanes (7 tablets), Khania (91 tablets, 20 nodules and 86 roundels), Zakros (31 tablets, 1 roundel and 2 on clay vessels), Haghia Triada (147 tablets, 862 nodules, 2 sealings and 3 on frescoes), Tylissos (2 tablets), Pyrgos (2 tablets) and Kea (2 on clay vessels).

The evidence from Pyrgos consists of just 2 Linear A tablets and as there are only 2 inscribed clay vessels from Kea which date from this period, it is not possible to discuss the Linear A archives or evidence for administration from these two sites. A study will be made of the Linear A archives of the LMIB period from Archanes, Khania, Zakros, Haghia Triada and Tylissos. The discussion of Linear A administrative documents will span Crete from Khania in the West to Zakros in the East, and from Archanes in the North to Haghia Triada in the South. The 2 Linear A tablets from Tylissos will also be discussed: they are
unique among the Linear A records and closer in some respects to the Linear B records of the Palace of Knossos. A common administrative system can be observed in operation across the length and breadth of Crete during the LMI phase of the Second Palatial period of Minoan civilization. It will be instructive to look first at the archives individually and then to consider the Minoan administration of LMIB Crete (Figure 2).

ARCHANES The archive from Archanes consists of 7 tablets from the Tourkogeitonia site from the centre of Archanes (GORILA 3 p.1-19). Archanes occupies a very important site in Crete in that it is 10km from the Palace of Knossos and sits at the head of the Pediadha area to the south of Knossos. Archanes is also surrounded by other nearby important sites such as Fourni, Iouktas, Anemospelia and the villas of Vathypetro and Prassas. The siting of a settlement at the head of the Pediadha protecting the approach to Knossos, and being adjacent to the peak-sanctuary of Iouktas made Archanes a place of strategic importance. Its connection with writing is also well known (and the close relation with the Palace of Knossos which this implies) from the inscribed sealstones from Fourni (EMIII-MMIA), and from the Linear A libation tables from Iouktas above Archanes with dedicatory texts which have some relation to the inscribed sealstones of Fourni.

Archanes is in an ideal position for an administrative centre and the finds from excavation at the site indicate that it was an important regional centre with a close
relationship to Knossos. Each of the 7 tablets consists of
sign-groups ideograms and numerals. The ideograms are of
GRAIN and WINE, the latter being a commodity with which
Archanes and the Pediadha are closely connected and
whose importance in the area in earlier times is shown by the
the Minoan wine-press found in situ at the nearby villa of
Vathypetro.

Tablet ARKH 2 follows the format of a syllabic sign-
group standing as a title, then a syllabic sign-group
followed by the WINE ideogram and numerals, followed in
turn by 4 other syllabic sign-groups, themselves followed
just by numerals but with the WINE ideogram understood. The
tablet appear to be a list of quantities of wine; the sign
groups are probably toponyms or personal names of the
places or people who supplied the wine on this tablet,
which was recorded at the administrative site of Archanes.

There is only one repeated sign-group on the Archanes
tables i.e. 08-01[ and 08-01-02 on ARKH 5 lines 3 and 2
respectively. This can be compared to two other
inscriptions of the Linear A corpus i.e. 08-01 on TY 3a.5
and 08-01-60 on KN Zf31. It is of interest that these
inscriptions all occur at places in the North Central area
of Crete. The most likely explanation of the sign group is
that it is a toponym in the vicinity of the Knossos area.

The tablet ARKH 5 consists of a syllabic sign-group
followed by numerals and then the repeated sign-group,
followed first by the GRAIN and WINE ideograms and
numerals, and then by the second instance of this sign-
group, where the tablet breaks. But the occurrence of both GRAIN and WINE ideograms after 08-01-02 suggests that this is a record of the same place which may have produced both of these commodities.

There is also an inscribed stone ladle from Troullos (GORILA 4 p.58), which is actually just 5 minutes walk from the findplace of the Linear A archive of Archanes and is clearly to be considered in connection with written records at Archanes. Troullos was not a separate location from Archanes, but part of the same settlement, and this shows that Linear A was also used for a religious purpose as this stone object bears sign-groups which form part of the Minoan Libation Formula found on stone tables from Iouktas, Petsophas and other sites. So as would be expected of a settlement just one hours walk from Knossos and within the shadow of Iouktas, Archanes used Linear A for both religious and administrative applications.

KHANIA There are 91 tablets, 20 nodules and 86 roundels from the Minoan settlement on the hill of Kastelli at Khania in the west of Crete(3). The nodules carry a single sign each (common signs are AB 74, 76 and A301- all of which are syllabic signs). There is one repeated sign-group 08-67-01-02 which occurs twice on the Khania nodules, and this sign-group does not occur elsewhere although the similar sign-group 08-67-02 is known from Archanes (ARKH 4b.4), which may suggest that this sign-group is a toponym; and while the Archanes toponym is similar, it by no means has to be the same settlement referred to at both Khania
and Archanes. Indeed as village names are often taken from local features, so 08-67-01-02 (Khania) and 08-67-02 (Archanes) need be no closer related than Kastelli Kissamou and Kastelli Pediadhos. If the nodules served as a label to whatever they accompanied then the single signs are probably abbreviations to describe whatever they were referring to.

The 87 roundels have two instances of a syllabic sign-group, 77-06-30-37 (KH Wc2005) and 100-352-57 (KH Wc 2100). Neither of these can be paralleled elsewhere in the Linear A corpus. Most signs on the roundels appear to be ideograms and, as they cover most of the surface of the roundel, it seems that the roundel was made to accomodate a particular ideogram. Also at Khania, unlike Haghia Triada, not a single roundel is inscribed on both sides, and it is possible to see a different use of roundels at these two sites. But consideration of a roundel and its purpose should take into account both the inscription and the seal impressions along the edge (Hallager 1987 and 1990). Hallager comes to the conclusion that the number of seal impressions on the edge of the roundel signified the number of transactions made by an individual with the central administration in respect to the ideogram or syllabic signs carried. He shows that the roundel accomodates the number of seal impressions around it, and thus the number of transactions was known and recorded when each roundel was made. So Hallager's hypothesis is that, for example, KH Wc 2019 recorded the object depicted by the ideogram A411VASE,
15 times as that is the number of seal impressions. Also a convincing support for this hypothesis is that the sole roundel from Gournia (GO Wc1) has the oxen ideogram accompanied by the numerals for 5, and the roundel has been impressed 5 times (4).

On the Khania tablets however there are records with few syllabic sign-groups, ideograms and numerals. Unfortunately many of the 91 tablets are fragmentary and there are probably some joins to be made between them (5). One sign-group on KH 11.1 08-51-[.]-17 can also be paralleled, as far as the first two syllables are concerned, by similar sign-groups from Haghia Triada (7 times), Tylissos, Palaikastro and Khania itself. In other words this can be paralleled across the length and breadth of Crete. At Khania and Tylissos this sign-group is followed by an array of ideograms and numerals, whereas on PK 1.2 the sign-group is followed by the numeral 1. Without an ideogram, this tablet from Palaikastro would appear to list personnel and the aforementioned sign-group would then be a personal name. This is indeed borne out by the first line of HT 85a where the following can be read:

08-51 307-307 100/102 where the last sign 100/102 is a MAN ideogram. This is then followed by a list of sign-groups without ideograms but with numerals in lines 2-5 and a sign-group 81-02, followed by the figure of 66 which is the sum of the previous numerals. So clearly 81-02 means total. But what is being counted on this tablet and headed by 08-51? As there is no ideogram, the most likely
explanation is that this is a personnel tablet with a leader at its head, followed by a list of the numbers of men either at different locations or under the command of named men. Observations such as these are vital for understanding the context and likely subject matter of the tablets from the available evidence prior to a decipherment of the Linear A script. It seems probable that 08-51 is a man’s name which was common on Crete. If this is so then 08-51 and 08-51-[.]-17/77/78/80 are variant forms of the same name which originate from the stem 08-51.

ZAKROS This site in the far east of Crete has so far produced 31 tablets, many of which are fragmentary, one roundel and two inscribed clay vessels. These tablets contain syllabic sign-groups, ideograms and numerals. There are 4 repeated sign-groups, which occur a total of 10 times on 3 different tablets i.e. ZA 4, 5 and 15. Another feature which these tablets have in common is the ideogram AB 131 WINE. It is likely that the entries on these tablets show how much wine was taken to Zakros from certain places, and that the repeated sign-groups are toponyms from the east of Crete, and this would explain why they can not be matched with sign-groups from elsewhere. The WINE ideogram is sometimes followed by other signs on tablets ZA 4, 5 and 15. The ideogram on ZA 4b is followed by the figure 104 and is probably a grand total of the individual and smaller entries on ZA 4a, lines 1-8. Since the entries of wine were so meticulously recorded, the storage and consumption of wine was evidently a matter of importance to the Palaces.
and villas of LMIB Crete, as has also been noted at Archanes.

**HAGHIA TRIADA** There are 2 inscribed sealings, 22 roundels, 862 nodules and 147 tablets which constitute the Linear A administrative archive from Haghia Triada in the Mesara(6). This material comprises the bulk of the LMIB Linear A evidence (GORILA 1 p.1-251 and GORILA 2 p.3-78). The inscribed sealings reveal no more than that a seal with a simple cross motif was used, allowing a comparison to be made with Cretan Hieroglyphic inscriptions from the MMIIB Phaistos sealing deposit from the First Palace period (CMS II.5 1970 nos 239, 246 and 247). Some of the 22 inscribed roundels from Haghia Triada are inscribed on both sides and they have a total of 35 inscriptions. The inscriptions range in complexity from simple ideograms and units of measure to sign-groups, some of which are repeated within the Haghia Triada material on both roundels and tablets. As these do not occur at other sites, they are perhaps local toponyms of the Mesara plain in South Crete. Some of these inscriptions consist of a sign-group, ideogram and unit of measure. This sequence could perhaps be interpreted as "Toponym-Commodity-Quantity".

Of the 862 nodules, 22 have a syllabic sign-group, and most of the rest a single sign. Most of the signs are AB syllabic signs or syllabic sign A301. A total of 818 nodules have just 1 syllabic sign which probably stands as an abbreviation for what was recorded by the nodule, and 10 of the 11 employed signs used as abbreviations are AB
signs. The repeated sign-groups read, with Linear B sound values, are DA-KA, I-RA2 and SI-KA and it is probable that the single syllabic signs DA, I and SI are abbreviations for these words. This administrative short hand could only have been employed if the words for which these abbreviations were used were extremely well known.

The 147 Linear A tablets from Haghia Triada are the largest body of evidence for Linear A, but the archive is still considerably smaller than the c 3000 Linear B tablets of the Knossos archive (c.f G. Pugliese Carratelli 1945). Many of the tablets are complete and consist of a few syllabic sign groups, ideograms and numerals.

All the Haghia Triada tablets are of the "page type", common in the Linear B but rare in the Linear A and Cretan Hieroglyphic archives of the First Palace period. They also seem to be formatted in a more orderly manner than those of other archives; although the tablets are not ruled with lines, their text does run in lines and does not show the lack of order apparent in Middle Minoan Linear A from Phaistos. It is also noticeable that most of the texts cover the whole surface of the tablet, as if the scribe knew how much space he required and made a tablet accordingly. Such a close connection between the text or transaction and the physical object has already been noted by Hallager for the sealings from Khania and elsewhere. Some 45 of the 147 tablets i.e. approximately one-third, have also been inscribed over the whole of the verso, and another 5 have used one line of the verso to accommodate the
overspill of a text which exceeded the recto. This is a noticeable departure from other Linear A tablets where the verso is usually utilised for part of the record. The Haghia Triada archive is again showing similar practices to those in use at Linear B Knossos in that it is more common for the verso to be uninscribed. Thus the archive seems to be the closest in several respects to the LMIII Linear B archive of Knossos. It is also observable that the execution of signs on the Haghia Triada tablets is more schematic than elsewhere when compared to other LMIB Linear A tablets (GORILA 5 p.XXVIII-LII Tableaux des variantes des signes du Linéaire A).

A STUDY OF THE LINEAR A ARCHIVE OF HAGHIA TRIADA

The normal structure of an entry on a Linear A tablet at Haghia Triada is "title", then a list of sign-groups followed by ideograms and numerals(7). On some tablets the ideogram is not repeated in successive entries but is understood between the sign-groups and numerals. A new ideogram was written when the commodity being recorded was changed. There are also other tablets where a sign group is followed by a list of different ideograms and numerals. So there are two sorts of records, one recording various amounts of one commodity after different sign-groups, and the other recording quantities of different commodities after one sign-group. Although it is impossible at the moment to completely understand the tablets, it seems likely that the second type of record e.g. HT 23a is of various products from one settlement and this suggests that
77-06 is a toponym, as lexical units are rare at Haghia Triada but those that do occur, do so several times, indicating that the tablets are lists of "Toponym-Commodity-Quantity". The sign-groups such as 77-06 are probably toponyms of LMIB settlements in the Mesara plain, where at this time Haghia Triada was the pre-eminent administrative site, having apparently surpassed Phaistos in importance. It is important to note that Phaistos (pa-i-to in Linear B) does occur in Linear A as the sign-group AB 03-28-05 on the tablets HT 97a.3 and HT 120.6. As these records are being kept at Haghia Triada, then an entry of PA-I-TO probably means that the tablet records a list of produce taken from there to the administrative centre of Haghia Triada. One profitable avenue for research to follow in the future will be to transliterate Linear A sign-groups which are probably toponyms according to Linear B values and then to see whether any other Pre-Hellenic toponyms such as Phaistos can be read(8). If such identifications can be achieved, then they may be related to known archaeological sites in their respective areas of Crete. For LMIB Linear A archives are regional and a place recorded in the Zakros archive is to be located in East Crete, a place recorded in the Khania archive is to be located in West Crete, and a place recorded in the Haghia Triada archive is to be located in the Mesara.

Many of the ideograms are of agricultural products such as wine and grain, but there are also what appear to be personnel tablets where either the ideogram 100/102 MAN
is used or there is no ideogram. For example on HT 122 most
sign-groups are followed by numerals, presumably the number
of men at that place, but on HT 122b.1 is written the MAN
ideogram and a total of 65 in line 5 which is a sum of the
entries on both sides of this tablet. The entry on line 6
AB 11-05-81-02 97, the last two signs of which (81-02)
constitute the Minoan word for total, is at the moment
incomprehensible ("Grand-Total" Olivier 1989). But this
tablet which was kept at Haghia Triada was clearly a record
of personnel. Other tablets record just one agricultural
commodity e.g. HT 123a with various quantities and
fractions of units of olives recorded after a list of sign-
groups which are probably place-names. So some tablets deal
with a single commodity, presumably from different places,
and other tablets deal with an assortment of commodities
from one place.

In the LMIB period Haghia Triada was the
administrative centre of the Mesara, having apparently
surpassed Phaistos in importance (Carinci 1989). These two
sites are closely related and being situated at either end
of the hill in the Mesara plain, they are a natural focal
point for a seat of authority. The complex relationship
between these two sites has recently been discussed (La
Rosa 1985 and Watrous 1984). The conclusion reached is that
the two sites existed together but by LMIB the
administrative records were being kept at Haghia Triada and
not at Phaistos. Clearly the site of Phaistos/Haghia Triada
was the Palatia/Administrative centre of the Mesara. It is
also significant that the importance of Haghia Triada continued into the LMIII period, when da-wo (probably Haghia Triada) (9) is more important in the Linear B records as a centre than pa-i-to. The economic importance of Haghia Triada in the Linear B period is well attested by records relating to foodstuffs, products and workgroups.

The similarities and differences between the Linear A archive of Haghia Triada and the Linear B archive of Knossos have been recently surveyed by Hooker (1990). Externally, the Linear A archive is recorded on "page" tablets, while the Linear B records are written on both "page" and "palm-leaf" tablets. There are ruled lines on Linear B tablets, a feature not used at Haghia Triada although the Linear A text is written horizontally across the surface before proceeding to the next line. There is also a substantial overlap between the repertoire of signs used by each script. Internally there are also differences between how the scripts were employed. For Hooker (p.174-189) drew attention to the fact that Linear B texts usually consist of syllabograms and logograms (ideograms) and numerals; while Linear A scribes used either syllabograms or logograms (ideograms) to describe the subject of the entry. The archive of Haghia Triada offers the best opportunity of observing the Linear A script in use and offers the best chance of increasing future understanding of Linear A, once the relationship between Linear A and Linear B has been established. This subject will be examined in the chapters that follow.
TYLISSOS  The two tablets from Tylissos (GORILA 1 p.324-329) date from LMIB as do other Linear A archives, but there are certain aspects of the Tylissos Linear A tablets which deserve particular attention (Figure 3). The inscribed figurine and pithos from Tylissos can only be ascribed to the LMI period generally. What sets these records apart from other Linear A archives is that the Tylissos tablets exhibit some features which are peculiar to Tylissos and others which can be more closely paralleled with the Linear B texts of LMIIIA Knossos, rather than other contemporary Linear A archives. There are 34 different signs which occur in the 2 tablets from Tylissos (Table 5). 22 are AB signs, 8 comprise A302 plus another syllabogram, always an AB sign. This leaves only 4 purely Linear A signs, 2 of which (A309 a.b.c and A361) occur only at Tylissos, while A321 occurs 4 times in the Linear A corpus and A302 is widely found. Thus the Linear A signs known from other sites are relatively rare. But whereas some other rare signs in Linear A are only found at certain sites, indicating that either they are regional variants of well known signs or ideograms only used at that site, it can be seen that the Tylissos signs are either peculiar to Tylissos or are to a large degree AB signs which are known from the Linear B records of LMIII Crete.

It is also shown that if equal weight is given to the component parts of these complex signs e.g. A610=A302+AB10, which in this case constitute half a sign each for statistical purposes, then the total of 34 different signs
used comprises 26 AB signs (21 syllabograms, 1 ideogram and 8×0.5 adjunct components); 6 canonical Linear A signs (2 syllabograms and 8×0.5 adjunct components); and 2 Linear A signs only found at Tylissos. A statistical analysis which takes into account the frequency of signs yields the following results: out of 77 signs on the two Linear A tablets of Tylissos, 69.5% are AB signs, 17% are signs only found at Tylissos, and 13.5% are standard Linear A signs. At Tylissos on these two tablets, a scribal tradition can be observed which is significantly closer to the Linear B of Knossos rather than to the other contemporary archives of Linear A(10).

On tablet TY 2 a syllabic sign-group, 50-39, stands as a title to the tablet followed by entries of the ideogram A309 a.b.c. and numerals. This sign is only found at Tylissos and can not be related to any known Linear A ideograms which usually refer to agricultural commodities and are accompanied by fractional signs, not the large round numbers which can be read at Tylissos. There are three variants of sign A309. The basic sign is a single empty circle (a), which in some places has a curved line below (b), or a concentric circle within (c). As well as being accompanied by syllabic signs, ideogram A309 is accompanied by numerals, usually multiples of ten. So whatever is denoted by A309, the ideogram occurs in three variant forms, is qualified by AB syllabic sign-groups, and is recorded in multiples of 10, and only occurs at Tylissos.
Tablet TY3 contains AB syllabic sign groups, followed by ideograms and numerals. The ideograms are A302, a common Linear A sign, A361 which is only found at Tylissos, and A610-A622 which are all signs composed of A302 plus adjuncts which are all AB signs. The ideograms are followed by numerals and fractional signs. The subject of this tablet is ideogram A302, of unknown meaning, which is also recorded at Archanes, Haghia Triada, Knossos, Khania and Zakros.

Any similarity between the signs of Tylissos and Linear B are probably due to geography rather than to chronology. For the settlement of Tylissos is 6 hours walk away from the Palace of Knossos, in a direction south west from the Palace heading towards the Psiloriti area. Tylissos could hardly have been completely independent from Knossos and is sited on a small plain astride the route towards Mt. Ida which also passes the site of Sklavokampos. Tylissos is also well documented in the Linear B records where it is observed that it stood in a close relation to Knossos and seems to be part of the greater Knossos area i.e. that fertile area of the north coast which was of immediate interest to Knossos. Other sites such as Amnissos and Aghia Pelagia must also have stood in a close relationship to the Palace of Knossos.

However it should be noted that the nearer site of Archanes does not show Linear B features in its texts. This could be explained by the fact that Archanes had a long tradition of writing, due to its proximity to Knossos and
louktas, and also was a more substantial and important site than Tylissos, and thus Archanes would have had more independence in its position at the head of the Pediadha plain(11). Tylissos, on the other hand, has no earlier tradition of writing, is a smaller site which cultivates a relatively small upland plain and may have been more directly administered from Knossos. As a result of this, Tylissos was more heavily influenced by the scribes of Knossos. Unfortunately no Linear A records from the LMIB Palace of Knossos, which could have revealed the exact nature of the script employed in the Palace at this time, have survived. Of the c.40 Linear A inscriptions from Knossos, not a single one can be dated to this period, which is crucial to understanding the transition from Linear A in LMIB Crete to Linear B at LMIIIA Knossos.

PALATIAL RECORDS FROM LMIB CRETE

There are no Linear A records from the Palaces of LMIB Crete. The lack of LMIB Linear A records from Phaistos has been explained above by its close relation with Haghia Triada which served as the administrative part of the seat of authority in the Mesara. Indeed the Haghia Triada archive is the closest to a LMIB Palatial archive. But this does not account for the silence from LMIB Knossos and Mallia. Both of these sites were established Palaces, with an administrative and scribal tradition going back almost certainly to the start of the First Palatial period i.e. some 500 years prior to the Cretan LMIB destructions. The Palace at Knossos mostly survived the LMIB destructions and
this may explain why no archive from that period is known. But this would not explain why such an archive is not known from the LMIB level at Mallia. It is likely that truly Palatial records were kept, not on clay tablets, baked and preserved in the conflagration, but on perishable material such as papyrus. The Minoans were undoubtedly aware of the papyrus plant and probably knew of its usefulness for scribal records. For their contacts with Egypt brought them into contact with the papyrus thickets of the Nile, which are often depicted on LMIB frescoes from Knossos and elsewhere on Crete (12).

It was observed that there is evidence to support the theory that a cursive script was used for writing on perishable materials (Pope 1960 and Hooker 1979). Indications of the ability of the Minoans to write in such a manner are the cups from Knossos which have been written with ink (KN Zc6 and 7), the sherd from Palaikastro with a painted inscription (PK Zc13), and a newly discovered inscription of 2 painted signs from Phaistos (PH Zc49) (13). In addition, the fact that cretulae i.e. lumps of clay squeezed round string and then sealed, are found in large numbers at Haghia Triada, Zakros and elsewhere with other administrative documents, and often themselves bearing Linear A signs, indicates that they sealed documents written on perishable material. This leads Hooker to state that "...although with few exceptions all the known Linear A and Linear B texts are inscribed on clay, a different, more tractable, and more perishable material was
principally used for writing in Late Minoan Crete." The 324 Linear A tablets known to date are the ephemeral basic bureaucratic records of local administrative centres (14). The conflagrations in the LMIB period destroyed the more permanent records of the Palaces and sites such as Haghia Triada and Zakros, which have produced large numbers of cretulae often preserving the impression of a string which bound the papyrus roll which they sealed. The LMIB destructions destroyed the archives and preserved by baking the less important records written on clay tablets.

MINOAN ADMINISTRATION IN LMIB CRETE

The basic format of the Linear A tablets consists of syllabic sign-groups, ideograms and numerals and fractions. The recognisable ideograms are predominantly of foodstuffs, and the purpose of these tablets is to record the agricultural commodities from the area around the administrative centre.

One way in which the Linear A records from the regional centres of the LMIB period differ from both the previous Palatial records (MMIII) and later Linear B records of Knossos (LMIIIA) is in respect to numerals. For the MMIII records deal with many hundreds and even thousands, as do the Linear B records, while the LMIB records deal with much smaller quantities (15). This reflects how Crete was administered at various times. For in MMIII the administration was based on the Palaces of Knossos, Malia and Phaistos; and in LMIIIA the administration of West and Central Crete was based upon
Knossos. But in LMIB the administration of Minoan Crete was based upon the regional centres of Archanes, Khania, Zakros and Haghia Triada as well as Tylissos and Myrtos, the Palatial sites of Mallia and Knossos and probably other sites as well(16). After the MMIII Palatial archives, an expansion is visible in the LMIB period of the number of sites with an archive, and after LMIB this system again contracts so that Knossos alone is the administrative centre for a large part of Crete.

The term "regional administrative centre" is here used to describe sites which have produced Linear A archives, testifying to their role as administrative settlements. Clearly there are differences between the various sites recognised as "regional administrative centres". The urban aspect of the harbour towns of Khania and Palaikastro should not be neglected when their status is considered. But Tylissos and Myrtos can accurately be described as villas i.e. small settlements surrounded by their land holdings (as are many modern Cretan villages). However "regional administrative centres" is the best way to describe all these places, which clearly stood in some relation to the Palatial centres. Haghia Triada was presumably the regional administrative centre for the Mesara; Zakros and Palaikastro for East Crete; Khania for West Crete; Tylissos for the upland plain in the Psiloriti massif; Myrtos for that section of the south coast; and Archanes was doubtless the regional administrative centre at the head of the Pediadha in Central Crete. These
regional administrative centres can be related to a map of Crete and closely correspond to the fertile areas and plains of Crete from which they would draw their produce (Map 2).

The regional administrative centres dealt with their own specific geographical area. The Palaces would presumably have had interests on a wider scale, but this can not be documented as the LMIB Palatial records have not survived. The Linear A records of Phaistos/Haghia Triada probably refer to the Mesara, a well defined and productive region. It is likely that Knossos included within its area of immediate control sites such as Amnissos, Aghia Pelagia and perhaps Tylissos. Archanes however seems to have been a more independent settlement in the LMIB period, obviously standing in some relation to Knossos and Iouktas, but also important in its own right as the site at the head of the fertile Pediadha plain. It is also likely that Mallia administered the bay in which it is sited, and perhaps the plain of Lasithi(17).

In regard to the administration of LMIB Crete, Weingarten believes "... it is immediately clear that we have one site each in the north (Knossos), south (Agia Triada), east (Zakro) and west (Khania). Four such geographically spread sites can hardly be other than the four administrative centres of LMIB Crete. The Palaces at Mallia and Phaistos are apparently no longer administratively operational, and, I suggest further, that except for Agia Triada (which has replaced Phaistos), all
the villas and towns were administratively inactive at this time" (1990 p.110). But this is too simple a view of a complex situation. Clearly the archaeological evidence is lacking, nowhere more obviously than at Knossos, but Weingarten's suggestion oversimplifies the situation. For to identify sites as administrative purely on the ground of the presence of sealings, as Weingarten does, is misleading. Rather a regional administrative centre is more likely to reveal itself in the archaeological record as one which has produced evidence of written archival records. On that basis it must be admitted that only a fraction of the records of LMIB Crete have survived, and so the situation must be more complicated than is suggested by the assumption of only four administrative sites.

The administrative division of LMIB Crete must take into account at least the three Palatial sites of Knossos (including Tylissos), Mallia (in spite of the lack of documents) and Phaistos/Haghia Triada (Mesara); and other LMIB regional administrative centres which can be identified are Archanes (Pediadha), Zakros and Palaikastro (East Crete), Khania (West Crete), Myrtos (S.Central Crete) and now Petras (in the area of Siteia). So there were 3 Palatial sites and at least 6 other regional administrative centres. The picture which the evidence offers is not as simple as that offered by Weingarten (1990) and not as complex as that offered by Palaima (1987), who lists 11 Palace and villa sites with Linear A records. But this is not strict enough in its approach, for he considers both
Phaistos and Haghia Triada as administrative sites, which of course they were, but it was only at different times that they served as the administrative site of the Mesara. He also ignores the likelihood of Tylissos standing in a particularly close relation to Knossos and includes Gournia on the basis of just one roundel. Although Gournia may well have served as an administrative centre, there is no epigraphic evidence that it did. Roundels can and do travel, tablets do not.

The evidence indicates that the situation on LMIB Crete was similar to that described by Bennet (1990), in which he sees Neo-Palatial Crete being administered by the Palace, town and villa sites with defined areas of interest which conform to geographical boundaries. This is the most convincing interpretation of the epigraphic evidence. How the towns and villas related to the Palaces is not yet completely clear, but the presence of regional administrative centres is demonstrated by the Linear A records. This view of the administrative areas of LMIB Crete is likely to be modified by future finds, but not disproved (18).

Another level of administration to be considered on LMIB Crete is that of the use of sealings by the Minoan bureaucracy. Betts (1967) conducted a detailed survey which showed very similar sealings from Gournia, Haghia Triada, Sklavokampos and Zakros. The conclusion he came to concerning the signet-rings which impressed the similar sealings was that "The picture they create seems to be of
a centralised bureaucracy at Knossos, of Knossian rulers using signet-rings of the finest quality with bull-leaping as their chief insignia, perhaps produced in the workshop of a single master-craftsman at Knossos". While Betts himself warned that caution must be exercised before any historical conclusions can be drawn, the basis of his observation is deserving of greater consideration. These ideas were further discussed by Weingarten (1990), who also observed that since the "look-alike" sealings are impressed on clay foreign to the site at which they were discovered, then whatever they sealed, and whoever sealed them, must have originated somewhere else i.e. Knossos. So Weingarten identifies the LMIB noduli from Gournia, Hagia Triada, Sklavokampos and Zakros as "evidence for the use of seals to establish identity, but they are not evidence for an active local bureaucracy". It is clear however that the Linear A tablets are evidence of an active local bureaucracy and their discovery in the archaeological record denotes a regional administrative centre.

LINEAR A EVIDENCE FOR TRADE ROUTES

There are 15 extra-Cretan Linear A inscriptions which are admittedly only a small part of the Linear A corpus but are a significant body of material as they all come from a context out of Crete. The implications must be considered of the discovery of Linear A at Haghios Stephanos, Kea, Kythera, Milos, Thera and most recently fom Tiryns(19). The last site has also produced LHIIIB Linear B tablets and painted stirrup jars, while Kythera also produced an MMIIIA
3-sided prism bead sealstone with possible Cretan Hieroglyphic signs (CMS VII 1967 no.36). The find places of extra-Cretan Linear A inscriptions suggest the following routes of communication and trade (Map 1):

i) From Khania in the West to Kythera and Haghios Stephanos in Laconia.

ii) From North Central Crete (Knossos and Mallia) to Thera and along the Western Cycladic route via Milos to Tiryns in the Argolid; and also from Thera along the Central Cycladic route to Kea.

These are the observable trade routes, but so far no Linear A has been found along the Eastern trade route which existed from Palaikastro and Zakros via Kasos, Karpathos and Rhodes to Asia Minor and Cyprus (Melas 1980). Also, as Linear A is now known from Tiryns, it seems likely that the Central trade route also continued to Attica on the mainland. Attica, the Peloponnese and the Dodecanese are likely places for finds of Linear A in the future along the natural lines of communication in the Aegean.

From the west of Crete the trade route passes from Khania to Kythera, where a Minoan colony was excavated at Kastri (Coldstream and Huxley 1972). The finds from here included an MMIII-LMIA weight KY Zg1 with the sign AB 120 "E". This sign is well known, and here represents a unit of measurement along with "E" which is probably a fractional sign. The next inscription along this route is from Haghios Stephanos in Laconia HS Zg1, a few hours to the north of Kythera by ship (Janko 1982). This inscription is on a
schist plaque with the signs 08-80. The meaning of these two signs is not clear, although 5 other Linear A inscriptions begin with 08-80 (MA 1b, ZA 7b.1, CR(?) Zf1, KH 14.1 and SK Zb1). The inscription from Haghios Stephanos may be an abbreviation of a longer word, and this word may be an administrative term as the occurrence of this sign-group on Linear A tablets indicates. Although it is more likely that the inscribed object came from Crete, the possibility can not be discounted that it was inscribed locally by someone in Laconia.

Along the Central Cycladic route, the first port of call for ships leaving the north coast of Crete is Thera, which has produced 4 inscriptions on pottery, 3 of which can be dated to LMIA (Marinatos 1971). These inscriptions are from the destruction of Akrotiri as a result of the eruption of Thera now dated to c.1625 B.C. i.e. within LMIA (20). Two of the Thera inscriptions probably were the same (THE Zb2 and 4), and this repeated combination of 08-27 is also found on KN Zf13 and HT 29.5. The presence of Linear A on Thera is attested on Minoan pithoi and vases, whether as a result of trade or colonisation; the script could have been used by Minoan traders or by Minoan overlords who administered this strategic island, or even by Therans who had come under the powerful Minoan influence in scribal matters.

From Thera one route of communication passes to Milos which has produced a fragmentary tablet and a clay vessel inscribed on the base (MI Zb1 and MI 2). One ideogram is
clear on the tablet, A652 i.e. A401VASE + AB 60, so one line at least if not the whole tablet was an inventory of vessels (Renfrew 1977). The two-sign inscription on the cup reads as 67-26 and interestingly or co-incidentally the first sign is the shape of the vessel itself but used in Linear B with the sound value ki, and possibly also with the same sound value in Linear A(21). But the importance of a tablet from Milos, another strategic island with a good natural harbour and a valuable source of obsidian, which was traded widely throughout the Aegean, indicates that there was an archive and some sort of bureaucratic administration there on however small a scale. The administration of Milos may have been fairly self-contained in its locale, as was the case with Pyrgos on the south coast of Crete.

North from Thera the next find spot of Linear A is the island of Kea, within sight of Attica, which has produced 5 Linear A inscriptions. These are a tablet, a sealing and three inscriptions on clay objects, a cup, lamp and jar (Caskey 1970). The cup again has the sign AB 67 with the value KI, but in design the sign AB 67 is the same sort of cup as that upon which it is inscribed. The appearance of this sign on an object which it portrays is striking in its simplicity. The lamp inscription (KE Zb4) cannot be textually paralleled from elsewhere, but it is sinistroverse i.e. reads from right to left, which is shown by a diacritical mark, and in this respect can be compared to KN Za19 and VRY Za1, both of which are libation tables
(Palaima 1988). In view of this, and since lamps are common finds at Minoan peak-sanctuaries, it is probable that this lamp from Kea with its inscription read in the opposite direction from the usual has a religious meaning. The inscription on the jar from Kea A594 is actually a Linear A adjunct sign composed of AB 131 plus AB 60. This ideogram AB 131 is well known as the sign for wine, which is what is recorded here, but is further qualified by the syllabic sign AB 60. This adjunct to the wine ideogram is also found on two tablets from Zakros (ZA 6 and 15). Either the vessel was inscribed on Crete and transported to Kea or it was inscribed on Kea, which is perfectly possible as the presence of a tablet shows that somebody actually on the island was literate. As on Milos, so on Kea, a local administration can be observed, either controlled by Minoans on the island or by islanders using the Minoan Linear A script. Linear A was used on Kea for administrative, commercial and probably religious purposes.

The final inscription from outside of Crete to be considered is a recently discovered Linear A inscription on a pithos from Tiryns, discovered in the German excavations of 1982/3(22). The Argolid is the natural final port of call for the trade route from Crete which runs via Thera and Milos. The links between Crete and the mainland are well attested in many fields, including the presence of mason's marks in the LHI/LMI period on the mainland(23). This pithos inscription reads as A301-AB41[ and is thus certainly Linear A as the first sign is only found in this
script (24). The context of this pithos is LHIII B2 which is beyond the range of Linear A use (MMI/II-LMIB), which shows that the jar was still in use some considerable time after it was actually inscribed (25). The two signs were inscribed on the pithos, which is made of local clay after firing i.e. the inscription was made in the Argolid. The Linear A script was known at Tiryns at some time before LHIII B2, and was used by either a native of the Argolid or by a Minoan at Tiryns who wrote on a locally produced pithos. The Linear A sign A301 is known to be a syllabic sign. Olivier (1988) has demonstrated that there are palaeographic similarities between the second sign and examples of this sign from Hagia Triada, Knossos and most importantly from Kea. This could well indicate a connection between the use of Linear A on Kea and its use at Tiryns. The inscriptions from outside of Crete date from MMIIIB-LMIB i.e. the Neo-palatial period, and it is within this time span that one would expect the Tiryns inscription to fall (26).

The above mentioned Linear A inscriptions from outside Crete are administrative (tablets and sealing), commercial (pithoi and weights), personal (cups) and religious (lamp). Their date corresponds to the known period of Minoan expansion, trade and possible colonization before the Minoan hegemony in the Aegean passed to the Mycenaeans. The Linear A inscriptions are from this heyday of Minoan overseas activity. The exact nature of the links between Crete and the Mainland in the 16th and 15th centuries is still hotly disputed, but clearly there were strong
cultural and commercial links throughout the Aegean. The exact degree of Minoanization of the Cyclades is uncertain but Minoan influence is clearly visible and the use of the Linear A script is just one manifestation of this (27).

The subject of extra-Cretan Linear A was discussed by Palaima (1982), but that brief survey has now been superseded by the new discoveries and the GORILA volumes allow the relevant material to be studied and parallels to be made, and the probable nature of the Minoan presence and the use of their script in the Cyclades to be considered (28).

The evidence indicates, as Palaima suggested in the title of his paper, that the Minoan presence in the Cyclades was administrative and commercial. The point made by Cadogan (1984) and Branigan (1981 and 1984) is that it must be decided what sort of Minoan communities were active in the Cycladic islands in MMIII-LMIB. The evidence from the Cyclades does not yet allow a definitive answer to be made concerning the nature of the Minoan presence. The presence of Minoans in the Cycladic islands is indicated by Minoan household objects such as conical cups and loomweights, and this indicates that there were actually Minoans in the islands, involved in administration and commerce, but also writing on more personal objects such as a lamp and cups. The possibility that Cycladic islanders used the Linear A script, and/or imported inscribed objects (particularly pithoi) cannot be discounted either. The presence of Linear A inscriptions outside Crete can be
accounted for by the following explanations:

i) Linear A used by Minoan residents in the Cyclades.

ii) Linear A used by Cycladic islanders.

iii) All Linear A inscriptions imported from Crete.

iii) A combination of i-iii.

The most likely explanation of Linear A being found in the Cyclades is a combination of the possibilities outlined. Whether the Minoans were present in the Cyclades as conquerors or traders can not yet be determined. What is well attested is the widespread presence of the Linear A script.

The above mentioned Linear A inscriptions from the Cyclades and the archives from Crete form the bulk of the epigraphic evidence for the LMIB period. By concentrating on the administrative aspects it is possible to focus on the Linear A inscriptions in a way that will allow similarities to be drawn with the Linear B archive, and for differences to be seen as well (Palaima 1990). The Neo-Palatial LMIB records constitute over 90% of the Linear A archive. Of the LMIB records, over 95% are administrative or commercial (tablets, sealings, pithoi and weights), again allowing the largest body of Linear A evidence to be studied in a context akin to that of the Knossos Linear B archive. All but 74 of the 1456 known Linear A inscriptions are administrative or commercial (29). All but barely 200 of the 1456 known Linear A inscriptions are LMIB in date. This group of LMIB administrative Linear A material has been considered for the light which it throws on Linear A, how
the script was employed in its final stage, and— as will be seen— its observable similarities to and differences from Linear B(30).
The LMII period on Crete began c.1425 and according to Warren and Hankey (1989) lasted until c.1385. This is the period which falls between the last certain attestation of Linear A in LMIB, and before the Knossos Linear B records of LMIIIA. The previous LMIB period had been brought to an end by the wave of destructions which are found all over Crete from Khania to Zakros, from Tylissos to Haghia Triada, and which preserved the Linear A archives of the regional administrative centres of Late Minoan IB Crete. The LMIB administrative documents constitute 92.6% of the Linear A corpus.

The LMIB wave of destructions is evident at most sites on Crete, although on a smaller scale at Knossos. It was thought that Knossos completely escaped the LMIB destructions but this is no longer the case. Excavations along the Royal Road (Hood 1962) produced "the first pure Late Minoan IB deposit to be recognised at Knossos, where the apparent absence of destruction levels of Late Minoan IB character has always been a puzzle." This LMIB level also contained charcoal, in contrast to the preceding LMIA level, and although the transition from LMIA to LMIB at Knossos was seemingly without accompanying destructions by fire, the same is not true for the end of LMIB. The ivory-workers shop which was destroyed at the end of LMIB is evidence of a destruction by fire at Knossos of at least some of the Palatial area, indicating that Knossos too suffered to some degree from the wave of destructions which
characterize the end of LMIB, and which in turn is followed by LMII c.1425.

POSSIBLE LMII LINEAR A INSCRIPTIONS

There are two Linear A inscriptions which may date from the LMII period, and in view of their possible date in what is otherwise an anepigraphic lacuna between the latest stage of Linear A (LMIB) and the earliest of Linear B (LMIIIA) they deserve close attention. They are both from Knossos, one on a pithoid jar from the Minoan Unexplored Mansion (Popham, Pope and Raison 1976); and the other on the doorway of the Kephala tholos tomb, 15 minutes walk north of the Palace of Knossos (Hutchinson 1956).

The pithoid jar inscription from the Minoan Unexplored Mansion, KN Zb40 (GORILA 4 p.83), reads 08-03-67 10-06-08 and was assigned by the excavator to the LMII destruction of the Mansion (Popham et alii 1984). Popham states that although the destruction was dated to LMII, some vases are typologically from the earlier LMI period, and indeed he states that if this inscribed pithoid jar had been found out of context, it too would have been dated on stylistic grounds to the preceding LMI period. Also Raison and Pope state that an LMIB date for the inscription on a jar which survived into the following period is more likely than the inscription having been written in the LMII period(1). The inscription 08-03-67 10-06-08 can not be exactly paralleled elsewhere; but 10-06 is common as the beginning of a sign-group (10-06-77-06-41) which frequently appears as part of the repeated libation formula on stone libation tables from
Palaikastro (PK Za8, 11 and 12), Iouktas (IO Za2 and 9), Kophinas (KO Za1), Syme (SY Za2) and Troullos (TL Za1). The sign-group 08-03 also occurs once on a libation table from Palaikastro (PK Za12), which bears both 08-03 and 10-06 which can be compared to the inscription from the Mansion. This makes it a distinct possibility that some sort of religious inscription is present on this pithoid jar, which would explain why the jar survived in use from the LMI period down into the following LMII period. Popham also states that on the upper floor of the Mansion was a domestic shrine, including a goddess figurine, which again indicates a religious dimension to the area where the Linear A inscribed pithoid jar was found.

The other possible LMII inscription, KN Ze16, is located on the central right block of the dromos of the Kephala tholos, just before the visitor enters the burial chamber. Hutchinson (1956 and 1962) dates the tomb to LMIA on the grounds that no pottery from the chamber is later than LMIA. But Popham (1964) in a review of Hutchinson's book states that he views the tholos tomb as "LMII rather than LMIA as indicated by joining sherds from the fill". The editors of GORILA prefer not to assign a date to this inscription. The contents of the tomb had been plundered, but Hutchinson discovered 31 finds including 4 gold fragments; 2 bronze rivets plated with gold from a sword; 1 knife, 2 tweezers, 1 tool (?), 1 finger ring, 1 ear-ring, 3 pins and fragments all of bronze; as well as beads, spindle whorls, a steatite mould, a sealstone and an ivory
plaque depicting 2 helmets. These finds may give an indication as to the occupant of the tomb, but the date of construction and the date of the inscription cannot yet be determined. The inscription consists of two well established AB signs: 08-39.

The first sign, AB 08, the double-axe sign, is known in all Cretan scripts and as a masons' mark. The form here, with the horizontal dash above the cross bar, occurs in Linear A and in Linear B records from the Room of the Chariot Tablets (Driessen 1989). However this observation does not prove that KN Zel16 is later than the Linear A of LMI, nor does it alone prove that the records of the Room of the Chariot Tablets are earlier than LMIIIA. In fact, the epigraphical "no-man's land" of LMII still remains. The only other certain Linear A inscription on a stone block (rather than on a stone libation table) is from Mallia, MA Zel1, which is undated within the Second Palatial phase and is of no assistance in establishing a comparison to the Knossos tholos tomb inscription(2). The second sign AB 39 is also known in both Linear A and Linear B, and is less ornate than the double-axe sign. Both signs are very finely executed and their form is more like that seen on tablets than signs executed in the same medium i.e. on the stone libation tables (Figure 4). For example the double-axe sign is akin to the schematic representation on tablets rather than to the more pictographic representations on the stone libation tables which show the curved blades of the double-axe e.g. KO Zal. The closest similarities to the double-axe
sign which are found on stone libation tables are from Prassas and Troullos in the Knossos region. These examples correspond to the schematic and linear rendering of the double-axe sign in the Kephala tholos tomb. The evidence shows that archaeologically and epigraphically there is no way of being certain whether this inscription dates from LMIB or LMII. The medium upon which the inscription is written i.e. a stone block within a tholos tomb, means that no exact date can be offered.

It is likely therefore that the pithoid jar from the Mansion was actually inscribed in LMIB. But the Kephala tholos inscription is possibly LMII in date as the signs are not executed in a manner which would be expected from an inscription on stone of the LMIB period. Also a LMII date may be suggested by the finds which possibly indicate that the Kephala tholos was a warrior-grave in the Knossos area, a phenomenon unknown at Knossos before LMII.

LMII ARCHAEOLOGICAL EVIDENCE

There are traces of LMII habitation at the Minoan Unexplored Mansion and at the Stratigraphical Museum Extension at Knossos, and at Maison E at Mallia. A study of the period between Linear A (LMIB) and Linear B (LMIIIA), i.e. LMII needs to consider both the possible epigraphical and archaeological evidence which dates from this crucial period.

The Minoan Unexplored Mansion has now been explored, excavated and published, giving a detailed account of an LMII building at Knossos (Popham et al. 1984). The Mansion
has signs of burning, and also produced evidence of metalworking and weapon manufacture in the LMII period, which concurs with the other evidence of military activity in this period i.e. the warrior-graves of Knossos(3). Popham (1984 p.264) also stated "But, the major event in the history of the Mansion was its destruction by fire in LMII. Whether this event has more general implications is the main question which the excavation has raised." This is an important matter, which will be further discussed below.

The Stratigraphical Museum Extension excavations are also of importance for the LMII period (Warren 1983 and 1991). This excavation is 350m. west of the Palace of Knossos along the continuation of the Royal Road, which runs south of the Mansion. The main features of the Museum Extension excavations, which have revealed an urban area west of the Palace, are a road, houses and circular platforms with inscribed signs. The earliest traces of building on the site are MMIA, and there are also building traces and pottery of the MMIII-LMIA period. From the LMIB period are numerous vases including two which have designs of a possible boar's tusk helmet and figure of eight shields(4). This area of Knossos also has signs of burning in the LMIB period and may not have escaped the wave of destructions by burning which characterized the end of the LMIB period. The LMII evidence from the Stratigraphical Museum Extension excavations is from the Gypsum House and South house, north and south of the Royal Road which runs north-west from the Palace. Warren states that "Much of the
area was occupied in LMII, with evidence of destruction in several places." The LMII excavations show that the southern building continued in use from LMI, which is a noticeable exception to most LMIB sites which suffered destruction. The other house was constructed in the LMII period. In this period the city of Knossos extended well to the west, along the line of the Royal Road, and this area was finally destroyed by fire.

This has serious consequences for events at Knossos and on Crete in the LMII period. The conclusion reached by Popham is that there was a localized LMII destruction at Knossos before the LMIIIA2 destruction which preserved the main Linear B archive (Popham 1970, 1975 and 1989). Popham (1975 p.374) made an important observation when he mentioned other evidence for an earlier burning at Knossos. "In his excavations near the Royal Road, Mr. Hood found a small deposit of LMII pottery, possibly a dump in a pit, which contained among its fine pottery a few sherds with clear signs of burning. Independently, my own studies of deposits from the Palace itself led me to suggest some time ago that in the West Magazines there was "evidence not only of a destruction in LMIIIA" (i.e. the final destruction) "but of considerable alteration in the same and preceding LMII phase": more immediately to the point, the considerable quantity of LMII sherds below the South Front suggested to me that "perhaps there was some local destruction of the Palace in LMII; certainly some remodelling of the West Wing had started at this time and
continued into LMIIIA. The LMII material could then be either destruction debris or merely a dump made during renovations." (Popham 1970 p. 60 and 67) Straws in the wind, maybe, but the evidence is beginning to open the possibility (and I rate it no higher) of deliberate destructions in LMII, say some 30 years or so before the Palace finally fell."

The excavator of the Museum Extension excavations also concurred with this view of events (Warren 1983 p. 66). "Finally, the LMII destruction within the city clearly spread over this western area with fire the immediate agent. At this time the buildings were still serviced by the main east-west road running up westwards from the Palace." The wider implications of the LMII destructions along the line of the Royal Road will be considered below. It can be observed at Knossos that the area mostly escaped the Cretan-wide wave of destructions at the end of the LMIB period, that it suffered destructions in the western area in LMII, and finally suffered a catastrophic destruction in LMIIIA2.

The LMII material from Mallia is a well documented and stratified deposit from Maison E (Et. Cret XVI 1970). Popham (1975 p. 373) considers this deposit to be "practically identical ..." with the LMII material from the Minoan Unexplored Mansion, and he makes the "obvious assumption that the two deposits are the result of more or less contemporary events." The similarity of material from the LMII destructions caused by burning at Knossos and
Mallia means that disruption occurred on the north coast of Crete, it was not just confined to Knossos in this period. Whatever happened at Knossos in the LMII period also had an effect elsewhere in Crete.

Outside of Knossos, it is instructive to see which places were occupied in LMII. Popham (1980) listed 24 sites in addition to Knossos which were occupied in LMII and LMIIIA. Popham himself pointed out that the list was not complete and would be added to as excavations continue, but the list of 24 sites spans Crete from Zakros to Khania and from Mallia to Myrtos. The list was indeed added to by Driessen (1990) using the work of Popham (1980), Kanta (1980) and Bennet (1985), and he listed 19 LMII sites and 53 LMIIIA1 sites. This reconfirms the view of LMII-IIIA1 Crete recovering after the widespread LMIB destructions. The main LMII sites on Crete are clustered around Rethymno, Phaistos and Knossos with outlying settlements at Khania and Palaikastro.

**WARRIOR-GRAVES**

Another feature of the period which follows the LMIB destructions is the appearance of warrior-graves in the Knossos area. Warrior-graves are those in which a burial occurs with a major weapon i.e. sword, dagger or spear(5). The men buried in the LMII-IIIA1 period with these weapons are to be recognised as warriors. The weapons which they used in life, accompanied them in death.

There are 23 warrior-graves from the Knossos area, as well as one at Archanes and one at Phaistos, and related
burials with bronzes at Archanes and Khania (Table 6) (6). Most of these burials have more than just one major weapon each, exceeding the basic criterion and emphasizing that these were the graves of warriors. The weapons from the LMII level of the Minoan unexplored Mansion should also be considered, for this is clearly not a burial context but should be considered as a weapons workshop. There were 6 complete or fragmentary weapons (3 spearheads, an arrowhead, and 2 sword/dirk fragments) from the Mansion contemporary with the Knossos warrior-graves. These graves are important for what they can reveal of the level of military activity in the Knossos area in the period following the LMIB destructions.

The 23 warrior-graves in the Knossos area, in addition to 21 swords, 9 daggers, 20 spearheads and 5 small spearheads/javelins, have also produced bronze arrowheads, staples from what was probably a body shield, boar’s tusk plates from a helmet and a spear-butt. These weapons come from warrior-graves located in the burial areas of Aghios Ioannis/New Hospital Site, Sellopoulo, Zapher Papoura, one of the Mavrospeloia graves and 3 other scattered tombs. The earliest of these tombs (Aghios Ioannis/NHS) are extremely rich in weapons but have little pottery, and what there is dates from LMII. The occupants of these tombs were warriors and their most common weapon was the heavy thrusting spear. But the cemetery of Zapher Papoura offers a different picture. For by this time, LMII-IIIA1, there were 11 such warrior-graves out of a total of 100 graves. Indeed 26
Zapher Papoura tombs contained a weapon (i.e. spear, sword or dagger [major] or arrows, battle-knives or knives [minor]) but only 11 of these would be classified as warrior-graves. This cemetery contained pit, chamber and shaft graves, but it is noticeable that 6 out of 8 swords from Zapher Papoura came from shaft graves, as did 3 out of 5 spears. The weapons which define a warrior are more commonly found in shaft graves at Zapher Papoura than in any other type of grave. The sole warrior-grave from the Mavrospelio cemetery is tomb XVIII. This cemetery was in use prior to LMII and continued into LMIIIC, but the only two tombs which can be dated to this period i.e. LMII-IIIA1 are VII and XVIII. The other recorded warrior-graves are scattered around the Knossos valley and are not concentrated in any particular area. This diffusion of warrior-graves into the burial areas of Knossian society is also paralleled by the appearance of warrior-graves out of the immediate area of Knossos i.e. Archanes Fourni and Phaistos "Tombe dei Nobili", and by burials with bronzes from Archanes Fourni and Khania.

The custom of warrior-graves, the burial with weapons and bronzes, is not previously seen on Crete (although there are few pre-LMII Minoan burials known from Knossos), whereas their Mycenaean predecessors, namely the Grave Circles A and B, are well known, as are the large quantity of weapons which they contained (Karo 1933 and Mylonas 1973). There are 25 mainland warrior-graves which date from LHIIB-LHIIIA, roughly contemporary with LMII-IIIA1 on
Crete. As well as containing major weapons i.e. spears, swords and dirks, they also contained minor weapons and military objects such as boar's tusk plates for helmets and in rare cases at Dendra, even some body armour(7). Of the mainland warrior-graves, 60% are from the Argolid, which may be a continuation of the custom of warrior-graves first seen in the Grave Circles of Mycenae. The earlier appearance of warrior-graves in the Grave Circles of Mycenae indicates that the warrior-graves can justifiably be seen as a Mycenaean burial practice.

To return to Crete, but not to Knossos, it is necessary to consider the warrior-graves from the rest of the island i.e. those from Archanes Fourni and Phaistos, and Khania. The warrior-graves from outside the Knossos area, Archanes Fourni and Phaistos "Tombe dei Nobili" contained a sword and a spear, and a sword and a strip of metal armour respectively. Both swords are Ci type, found at Zapfer Papoura, in the silver cup tomb, and as votive offerings at Kato Syme, where they were over 1m. in length but with no rivet holes, suggesting that they were never actually used in battle. This type Ci sword is also well known from the Argolid(8). Mention should also be made of the 7 tombs from Katsamba, the harbour of Knossos at the mouth of the Kairatos river (Alexiou 1967). None of these tombs has preserved a major weapon by which a warrior-grave could be recognised. But these tombs, dating from LMII-IIIA1, are contemporary with the warrior-graves in the Knossos area and have produced some interesting finds.
These include kylikes, an alabaster vase with a cartouche in Egyptian Hieroglyphics of Tuthmosis III c.1479-1425 B.C., an amphoroid vase with depictions of boars tusk helmets, and a decorative ivory figure-of-eight shield (Alexiou 1967 plates 2, 10, 18-19 and 36). Although not one of these tombs can be identified as a warrior-grave, nonetheless these finds do suggest a Mycenaean presence at Katsamba in the LMII-IIIA1 period.

The "burials with bronzes" (Catling and Popham 1974) will also be considered here as these tombs from Archanes Fourni and Khania share many characteristics with the aforementioned warrior-graves. Of the 8 "burials with bronzes" on Crete listed by Catling, 6 are also warrior-graves; while of the 10 "burials with bronzes" from the mainland, 8 are also warrior-graves. There is a general phenomenon of "warrior-graves/burials with bronzes" in the LMII/LHIIB-LMIIIA2/LHIIIA2 period on both Crete and the mainland. These burials share the common feature of interring as grave-goods the following objects: bronze weapons and/or bronze vessels, sealstones and jewellery(9). These "burials with bronzes" are also important in that they too are found out of the Knossos area. It is significant that the burials found out of Knossos i.e. Archanes Fourni, Phaistos and Khania date to the LMIIIA1/2 period i.e. to the period immediately prior to the final destruction of Knossos.

The warrior-graves at Knossos and elsewhere, which have been discussed above, are indicative of new influences
at LMII Knossos. The occupants of the tombs are buried in a manner previously unknown on Crete, but with some precedent in the Argolid. These warriors are buried in the period following the LMIB Cretan-wide destructions, which cover Crete from Khania to Zakros and from Mallia to Haghia Triada, but which left Knossos largely unaffected. It was Evans (1935 p.785) who spoke of this period preceding the final destruction as one of a military character. "The last Palatial phase at Knossos presents a military and militaristic aspect", and his original observation is still valid, even though the LMII and LMIIIA1 periods can now be distinguished within this militaristic phase(10).

The warriors buried at Knossos in LMII were buried apart from the non-warrior burials in a manner which has close similarities with both contemporary and earlier warrior-graves from the Argolid. But by the LMIIIA1 period i.e. Zapher Papoura, these warrior-graves are found alongside non-warrior burials. By this time they are more integrated into the Knossos community, as shown by their burial alongside non-warriors, than they were in LMII. This assimilation of the warriors buried in Mycenaean manner into Knossian society can also be paralleled by the appearance in LMIIIA1 of such burials outside the Knossos area i.e. at Archanes, Phaistos and Khania.

Having discussed the archaeological evidence for the LMII period from both destructions and warrior-graves, mention should be made of the events that occurred at the end of this period and account for the destruction at
Knossos and elsewhere. By re-constructing the likely cause of the events in LMII, it can be tentatively shown what is likely to have occurred at the transition at Knossos from LMIB Linear A recording the Minoan language to LMIIIA1 Linear B recording the Greek language(11).

**THE INTERMEDIATE PERIOD**

It was suggested by Hallager that this "Intermediate Period" (LMII-IIIA1) was one that showed both Minoan and Mycenaean features, chronologically situated between the Minoan PolyPalatial (LMIB) and the Mycenaean MononPalatial (LMIIIA2) periods, but in which the Minoan elements were still prevailing (Hallager 1978). This "Intermediate Period", neither purely Minoan nor Mycenaean in character, and falling between Linear A and Linear B, can be shortened according to the arguments put forward by Olivier (1967), Chadwick (1973) and Driessen (1989) for an earlier dating for the Room of the Chariot Tablets. The LMIIIA1 period can now be excluded from the "Intermediate Period": for from this period date Linear B tablets of the Room of the Chariot Tablets conveying Mycenaean Greek, and with a very high proportion of clearly Greek names on the Sc tablets. Also within this period warriors are buried at Knossos according to mainland Mycenaean customs, but are buried within Knossian burial grounds alongside non-warriors, as also happens at other places in Central and Western Crete. So LMIIIA1 falls within the overtly Mycenaean phase of Knossos, by virtue of Linear B, Greek names of charioteers, and warrior-graves at Knossos and elsewhere. It is
justifiable to talk of an "Intermediate Period", but this should be limited to the post-Linear A and pre-Linear B period i.e. LMII.

It is within this period that the change took place from LMIB records being written in Linear A conveying the Minoan language to LMIIIA1 records being written in Linear B conveying the Greek language. If, as seems likely, the Room of the Chariot Tablet records pre-date the LMIIIA2 archive and date from the LMIIIA1 period, then the change from Linear A to Linear B and from Minoan to Mycenaean occurred in LMII. By LMIIIA1 the rulers of Knossos were Greek speaking Mycenaean. In LMIB the rulers were Minoan speaking. How is this change to be explained in view of the above mentioned archaeological evidence?

INTERPRETATION OF THE LMII ARCHAEOLOGICAL EVIDENCE

Following the destructions at most Minoan sites on Crete at the end of LMIB, there was a break in settlement at most sites. In the following LMII period, there is some evidence for settlement at a few places as well as the first warrior-graves in the Knossos area. This period is brought to an end at Knossos by a number of localized destructions to the west of the Palace, along the line of the Royal Road. From the following LMIIIA1 period come the Room of the Chariot Tablet records conveying the Greek language of the new Mycenaean rulers of Knossos. The LMII period is the time during which Knossos changes from a Minoan to a Mycenaean administrative centre (Palaima 1984). The major events which ended LMII, following the increasing
number of warrior-graves (in separate burial grounds from the Minoan population), were the localized destructions in the West Wing of the Palace and along the Royal Road. It is this which indicates a change from Minoan to Mycenaean control of Knossos.

The situation at Knossos prior to LMII is of a Minoan Palace using Linear A and co-existing with other Minoan Palaces, villas and towns. In LMIIA1 Knossos was a Palace controlled by a Mycenaean bureaucracy, keeping records in Greek, with c.150 fully armed charioteers with Greek names. The change from Minoan to Mycenaean, from Linear A to Linear B, took place within LMII. The other events which happened within this period and which are archaeologically attested are the occurrence of warrior-graves in the Knossos area and the localized destructions which characterized the end of LMII. It is suggested here that, in view of the indications, these military phenomena at Knossos are connected with the change in the administrative records from Minoan to Mycenaean.

Following the LMII destructions, in the very areas of Knossos where Mycenaean influence or presence is visible, control of the palace of Knossos and West and Central Crete is in the hands of the Mycenaearns. Popham (1970) said that the evidence was beginning to open the possibility of deliberate destructions in LMII. This has been borne out by subsequent excavations. What is now clearer is that LMII marks the point following which Mycenaearns are in control of Knossos. Bearing this in mind, it is valid to ask
whether these LMII destructions could mark the Mycenaean bid for power.

The area in which these LMII destructions occurred are located in one area of Knossos i.e. along the line of the Royal Road. The buildings along here show Mycenaean presence in LMII, and have strong links with weapons and warfare (the Armoury and the bronze-working of the Mansion), the very factor which may have brought Mycenaeans to Knossos in the first place. In the LMII period there were warriors at Knossos, buried in their own burial-grounds, with weapons which were also manufactured in the Minoan Unexplored Mansion, a substantial building which, while outwardly Minoan in appearance, seems to be most un-Minoan in its function in LMII(12).

A hypothesis which may explain the localized destructions along the line of the Royal Road at the end of LMII, and the subsequent Mycenaean control in LMIIIA1 following these destructions, is to see them as connected events and to interpret the end of LMII as a Mycenaean coup d'etat from their area west of the Palace, along the Royal Road, and into the Palace itself where they established control by arms. The LMII period was brought to a violent end by destructions, after which these Mycenaean warriors are recorded in the Palatial Sc chariot records, and buried alongside non-warrior burials in cemeteries such as Zapher Papoura.

This hypothesis raises the question of the status of Mycenaean warriors at Knossos in the LMII period. Initially
they were warriors, housed and buried apart from the Minoan community. This implies that they had recently come into the Knossos area and were still socially a separate group. As they are present at Knossos in their capacity as warriors in LMII, then perhaps their arrival can be connected with events which brought the preceding LMIB period to a close. The LMIB Linear A clay archival documents from Khania, Tylissos, Haghia Triada, Archanes, Zakros and elsewhere testify to a wave of destructions across the length and breadth of Crete. The exception of Knossos (and its lack of a preserved Linear a archive) to these other complete destructions is notable, as is its LMII period of continued Palatial settlement and militaristic features. This LMII period was becoming increasingly Mycenaean in character, as exemplified by the local production of Mycenaean type vase-forms e.g. kylikes from the very beginning of LMII, but the transition from LMIB to LMII at Knossos was a purely Minoan matter.

So in view of Knossos' prosperity in LMII, and as it alone on Crete escaped destruction, the possibility exists that Knossos was responsible for the LMIB destructions elsewhere on Crete. The Palace of Knossos exerted its power to gain control over a large part of the island. If this was the case, then it could easily have been achieved with assistance from warriors who probably originated from the Argolid and were buried in Mycenaean warrior-graves. If the occupants of the tombs at Aghios Ioannis and the New Hospital Site were buried in the early years of LMII, they
may well have been active at the end of the preceding LMIB period (13). There is no certain evidence that this was the case, but Knossos' supremacy on Crete in LMII may have been achieved as a result of the LMIB destructions, which the ruler of Knossos, supported by warriors from the mainland, would have been in a position to have carried out. Equally there is no evidence to suggest that Mycenaean administration was imposed in LMII. On the other hand there is evidence for Mycenaean control in LMIIIA1, as shown by a Linear B archive recording Mycenaean Greek and warrior-graves assimilated into existing burial grounds. The possibility is raised that Knossos exerted its control over a sizeable part of Crete with the aid of Mycenaean warriors at the end of LMIB (14).

**THE AREA OF CRETE UNDER KNOSSIAN CONTROL**

Some information can also be gained concerning the area of Crete controlled by Knossos under its Minoan and Mycenaean rulers. In the main Knossos archive of LMIIIA2, there are c.100 place names which can be located in West and Central Crete, in the area limited by the sites of Knossos, Phaistos and Khania (Ku-do-ni-ja) (15). In the Room of the Chariot Tablet records, the geographical spread of toponyms is as wide if not as extensive as in the later archive i.e. the RCT toponyms cover the area between Knossos, Phaistos and Khania but do not record so many places in between. As there are no other contemporary destructions (with the exception of Mallia Maison E) at the end of LMII, then the area West and Central Crete which was
ruled by Knossos under its Mycenaean rulers in LMIIIA1 was probably the same as that ruled by Knossos under its Minoan rulers in LMII. There are no indications of Mycenaeans exerting control over other places at the end of LMII. Rather they seized control at the administrative centre of Knossos where power was centralized, and by taking the capital, they captured the kingdom(16). Therefore the area ruled by Knossos in LMII, namely West and Central Crete, was the area retained under the central control of the Palace of Knossos following the LMIB destructions. The questions that need to be considered in relation to the LMII period on Crete are, how does the destruction at Mallia fit into this scenario, and why was East Crete not retained as part of the LMII Knossian kingdom following the pan-Cretan LMIB destructions, the responsibility for which probably emanates from Knossos?

The LMII destruction at Mallia Maison E has produced pottery to show that it was contemporary with destructions at LMII Knossos and should be seen as part of the same historical event. This implies that there may have been some destruction in Maison E at the same time as LMII destructions occurred at Knossos, but importantly when there were not contemporary LMII destructions at sites over the rest of Crete. If the LMII destructions at Knossos are seen as evidence of the upheaval which brought the Mycenaeans to power, then perhaps this upheaval had an effect at Mallia as well. It is impossible to ascertain who or what caused the Mallia LMII destruction; but following that period
Mallia was probably within the area of West and Central Crete controlled by Knossos. The later interest of Mycenaean is well attested at Mallia(17). Perhaps the LMII destruction of Maison E was the result of the Palace of Mallia not accepting the Mycenaean assumption of power at Knossos, and being forced to accept Mycenaean hegemony. This one act of coercion at the end of LMII may have been sufficient to have deterred other Minoan sites from thinking about attempting to claim their LMIB independence and prosperity.

If there was a Knossian conquest of Crete at the end of LMIB, possibly with the aid of Mycenaean warriors, why do the sites of East Crete not fall under Knossian administrative control in LMIIIA2, LMIIIA1 (and presumably in the LMII period as well), following the LMIB destructions, which included such sites as Palaikastro, Zakros and Petras?(18). For although West and Central Crete was probably administered by Knossos following the LMIB destructions, the sites of East Crete, although they suffer destructions, are not later attested in the Linear B records. There is not one Linear B toponym that can be placed with certainty east of Knossos.

East Crete is here defined as the area east of the Lasithi massif (Bennet 1987). This massif and its continuation north of the Selinari gorge serves to separate East and Central Crete. This is also shown by the Mycenaean finds of Mallia (see above) and the Psychro cave in Lasithi which has links with the Mallia/Knossos area, and those
from Kato Syme to the south of Mt. Dikte (19). These finds testify to the Mycenaean nature of Central Crete. The Minoan (and non-Greek) nature of East Crete is shown by an Iron-Age EteoCretan inscription at Dreros in the hills north of the Selinari gorge, and by the lack of Mycenaean finds East of Lasithi (20). The Lasithi massif is an imposing natural boundary between Central and Eastern Crete, leaving only two routes of communication, either north via the Selinari gorge and Mallia, or south via the coastal plain of Myrtos-Pyrgos.

Bennet (1987) suggested that Knossos did not control East Crete because of the geographical difficulties of administering the land east of Lasithi; as well as its extensive interests in the western and central areas of Crete; and because of the re-emergence of Palaikastro as a regional centre strong enough to exclude Knossos from East Crete. He also points out that East Crete shows a revival in LMIII, with an increase in settlements in the Siteia valley, and with connections with the Dodecanese (Melas 1980). The impression gained is of a thriving post-LMIB site at Palaikastro with impressive ashlar masonry, which was strong enough to dominate East Crete and to not fall under the administrative control of Knossos (21). It may have suited both Knossos and Palaikastro to have accepted a de facto border between them at the Lasithi massif.

There are a number of factors which could have affected Knossos' ability to retain control of East Crete following the destructions which brought the LMIB period to
a close. It could have been that East Crete was agriculturally weaker following the LMIA eruption of Thera which deposited ash on East Crete (22). As a result a decision might have been made to limit the area controlled to the more fertile areas of West and Central Crete. There are no fertile areas of East Crete comparable to the Mesara or the Spili or Amari valleys. If Knossos asserted control with the aid of Mycenaean warriors, then their wishes to have secure communications with the mainland must also be taken into account. For it would have been a more attractive proposition to mainland warriors to have conquered and settled in West Crete rather than East Crete. Indeed the same routes which served the Minoans when they communicated and traded with the Cyclades and the mainland in LMI (Knossos/Mallia-Thera-Milos-Tiryns or Thera-Kea[-Attica?]; and Khania-Kythera-Haghios Stephanos in Laconia [and Messenia?]), may have worked in reverse for the Mycenaeans who in LMII-IIIA were based in Crete but wished to keep open their lines of communication with the mainland. This may partially explain why following the LMIIIA2 destruction at Knossos, a Mycenaean Palatial administration was in existence at LMIIIB1 Khania in West Crete (Hallager et al. 1990).

These factors suggest why Knossos limited its area of control to West and Central Crete. This seems to have suited LMII Knossos, presumably under its Minoan ruler, as well as LMIIIA Knossos under its Mycenaean ruler. So following the LMIB destructions, unlike West and Central
Crete which was controlled from Knossos, East Crete did not come under the administrative control of Knossos, and Palaikastro re-emerged as a regional centre(23).

THE LMIIIA1 PERIOD

As a result of the work of Popham and others, the militaristic last Palatial phase recognised by Evans can now be distinguished into the LMII and LMIIIA1 periods. After refinement of the pottery sequences, it is now accepted by those who support an early date for the final destruction of Knossos that this fell within the first years of LMIIIA2.

A late date for the destruction of Knossos at the end of LMIIIB c.1200 B.C. has been suggested by Hallager (1977 and 1978) and Niemeier (1982, 1983 and 1985), who claim that the destruction which preserved the Knossos Linear B archive should be dated roughly contemporary with the archive of Pylos. Such a view is not consistent with the situation in Late Minoan Crete, as Popham (1988) has recently shown in his discussion of the historical implications of dating the archive to either c.1400 B.C. or c.1200 B.C. One clear example of support for an early date is that the Room of the Chariot Tablet records and other militaristic records must be roughly contemporary with the LMII-IIIAl warrior-graves at Knossos. It will also be demonstrated in the concluding chapter that the Linear B of LMIIIA Knossos is considerably closer to the Linear A of LMIB than has previously been demonstrated. It is difficult for the supporters of a late date to explain the gap of
approximately 200 years between Linear A and Linear B. Within the context of Late Minoan Crete, a date of shortly after 1400 B.C. is likely for the Knossos tablets. The new Linear B tablets from Khania (LMIIIA2/IIIB1) also support a date for the Knossos archive which is in the fourteenth century rather than at the end of the thirteenth (Hallager et al. 1992).

It is from the start of LMIIIA2 that the main Knossos archive dates. Recent excavations have enabled not only the LMIIIA1 period to be distinguished from both LMII and LMIIIA2, but also for preliminary observations concerning the nature of this period to be made (Popham 1970 and Kanta 1980).

The LMIIIA1 level as revealed at the Minoan Unexplored Mansion is a little earlier than the main destruction at Knossos, but Popham notes a "marked deterioration in the artistic quality of the pottery." The excavator observed that after the LMII period, which saw the finely built Mansion used for the manufacture of weapons, there was further progression in the LMIIIA1 period, "when further Mycenaean features are introduced at the same time that more Minoan characteristics are adopted by the local Mycenaeans" (40). Popham (1984 p.301 n.23) also observed that "Further features in LMIIIA1 include "burials with bronzes" and some new vase shapes and decorations. Possible adoption of Minoan features include jewellery absent from the LMII "warrior graves" and the re-emergence of the decorated cup in popularity. But it is the
interrelationship between Knossos and the Mycenaean Mainland that is clearest and to be seen in tomb types, wooden coffins, "tinned" vases, weaponry and bronze vases, razors, mirrors, and specific types of vases, seals and jewellery, and, of course, the creation of the Linear B script." All of these features are indicative of a Mycenaean presence at the Mansion in both the LMII and LMIIIA1 periods. The Mansion was used for the production of bronze weapons, a use for which it was neither intended nor suited.

The LMIIIA1 evidence from the Stratigraphical Museum Extension excavation is likewise small in quantity but instructive for this period prior to the later destructions. The excavator notes that "the next phase of occupation provides a remarkable contrast to what had gone before. It comprises three stone-built circular platforms apparently standing on open ground". According to Warren these structures were constructed "at the end of LMII, were in use in LMIIIA1 and probably LMIIIA2, and had gone out of use before the end of LMIIIA2". Whatever the purpose of these structures, the similarity which they show to circular threshing/dancing floors of Crete and the terracotta models from Kamilari and Palaikastro is clear. This hypothesis is supported by the finds which include seals with scenes of dancing or cult-gestures and a kernos. The connection in agrarian communities on Crete, whether Minoan or Modern, between harvest, fertility and dance is well attested(24).
The 12 engraved signs on the 48 surviving ashlar blocks are of note, in that they are basically the same, in the shape of a reversed Z. These signs are unique among mason's marks, and the shape of the blocks indicates that they were re-used from an earlier building, curved at the edges to create a circular platform, and then engraved with these signs. This suggests that the often repeated sign has a special significance for the circular platforms on which they appear (Warren 1984 p.313). There is no convincing explanation of these signs, but their relevance for the LMIIIA1 period seems clear, when this area to the west of Knossos along the line of the Royal Road shows new features as does the nearby Minoan Unexplored Mansion. The circular platforms are a clear break from the previous LMII period(25).

Other evidence for the LMIIIA1 period comes from excavations across Crete, and LMIIIA1 is now recognisable as a distinct period. The work of Kanta (1980) and Bennet (1985) has now identified 53 LMIIIA1 sites, an increase over the LMII period, and the main areas of LMIIIA1 habitation are the Knossos area of North Central Crete (6 settlements), the Mesara (4), Rethymno (2), Khania (2), as well as Mallia, Myrtos-Pyrgos and Palaikastro. In LMIIIA1 the main settlements are found in Central Crete, indicating that life was more settled in these areas than in the west and east of the island.

At Knossos other LMIIIA1 deposits were found along the Royal Road, which was re-paved in LMII. The excavations and
soundings of Hood have shown that during the LMII-IIIAl period buildings were being constructed in this quarter of Knossos (26). From one deposit came LMIIIA1 pottery along with fragments of ivory thought to have adorned a box. As well as building along the Royal Road, the LMIIIA1 period also saw warrior-grave burials in larger cemeteries i.e. Zapher Papoura, unlike the previous LMII period when warrior-graves are found in seclusion and not with non-warrior burials.

Occupation in the LMIIIA1 period has also been shown at Haghia Triada, Tylissos, Kommos and Mallia. There are traces of an LMII/IIIAl destruction at Mallia and Kommos, suggesting that the cause of the destruction at Knossos in this period may have had an effect on the east of the island as well. In the east, recent excavations have shown that not only did Palaikastro recover from its LMIB destruction, but there appear to have been two levels within the LMIB horizon. After the last LMIB destruction, there is increasing evidence for LMII/IIIAl, IIIA2 and IIIB occupation at Palaikastro (27). The continuing excavations at Palaikastro are revealing not just occupation in every period of Late Minoan, but also a higher level of occupation than was previously expected for the post-LMIB re-occupation levels.

THE ROOM OF THE CHARIOT TABLETS

The other important aspect to be considered is the Room of the Chariot Tablets (RCT). It was first suggested by Chadwick (1973) and Olivier (1967) that the records of
the Room of the Chariot Tablets may pre-date the main Knossos LMIIIA2 destruction. Driessen (1990 and 1991) claims that the RCT destruction level which contained the tablets is below that of LMIIIA2 and he accordingly designates the RCT material as LMII-IIIAl. In view of the time span that these two periods cover, it is necessary to try to be more precise in dating the RCT records. It appears that the RCT records are earlier than the main archive, but how much earlier?(28). The epigraphic and philologival evidence for an earlier dating of the RCT will be discussed in the concluding chapter. The archaeological evidence for the date of the RCT is worthy of close attention, and consists of ivory, bronze, wood and sealings(29).

The closest parallel to the ivory carving which depicts a helmet is on a composition from an LMIIIAl-2 tomb at Archanes. The bronze objects associated with the RCT records appear to be hinges of a box. Such an association of a box with tablets is known from LMI Zakros and LHIIIB Pylos, thus not suggesting a date for the RCT. The piece of carved wood likewise seems to have an LMII-IIIAl design. But more important evidence can be gained from the sealings found with the RCT records. When Evans excavated the Room of the Chariot Tablets, there were at least 18 sealings, 12 of which are preserved. 8 of these sealings which were associated with the RCT records are provisionally dated by Driessen (based on suggestions and personal communications from Pini and Younger). 1 can be dated to LMI?, 1 to LMIB-
IIIAl, 1 to LMII-IIIA, 1 to LMIIIA and 3 to LMIIIAl. These provisional dates were made on stylistic grounds. Weingarten (1988 p.10-11) also commented that "the sealings from the Room of the Chariot Tablets mix early and late features in a way seen nowhere else in the Palace. In short, the deposit seems transitional (in sealing terms) and a date of LMII or early LMIIIAl would suit very well."

As the latest sealing is LMIIIAl, the deposit is pre LMIIIIA2. This is stated by Driessen and Weingarten, who assign an LMII-IIIAl date for the deposit associated with the RCT records. However, in view of the preponderance of LMIIIAl designs among the datable sealings, this would appear to be the more likely date for the sealings, ivory carving and RCT records. As has been said, Linear B implies Mycenaean Greeks in control at Knossos keeping records in their own language. This was the case in LMIIIA2, and now appears to be the case in LMIIIAl as well. There is no evidence that Mycenaeans were in control at Knossos in LMII, although their presence is not disputed. Therefore, for Linear B records to be kept in LMIIIAl, the Mycenaeans must have been in control in the period in which a localized destruction baked the RCT records, and they must have seized control at the end of the LMII period, as has been argued above.

The gap in knowledge concerning the scripts and languages of Late Minoan Crete occurs in the LMII period, after the Minoan LMIB period and prior to the Mycenaean LMIIIAl period. This "Intermediate Period" lasted from
c.1425-1385.

There are c.616 Linear B tablets from the RCT (Driessen 1988). Of these 38.3% are classed as Xd (subject matter unknown), 27.4 are Sc (chariots), 9% are Vc (lists without ideograms, perhaps personnel), 4.5% are Np (saffron), 2.6% are V (lists without ideograms), 2.6% are Uf (miscellaneous items), 2.4% are Ce (mixed livestock) and the other series account for less than 2% each. So most subjects which are present in the main Knossos archive are also found in the RCT, with the glaring exception of sheep tablets, absent from the RCT but constituting about half of the main Knossos archive (Killen 1964). Another difference is that the Sc series, after which the room is named, has the ideogram BIGA i.e. fully equipped chariot along with TUNICA (armour) and EQUUS (horse), in contrast to the other chariot ideograms CAPSUS and CURRUS which record chariot frames without wheels and come from the main Knossos archive. These two difference between the LMIIIA1 and LMIIIA2 Linear B tablets (different sorts of chariots recorded, and lack of earlier sheep tablets) may be due to archaeological chance, i.e. the corresponding subject matter in the other archive has not survived, or may imply something of historical significance. Given the importance of sheep and wool to the LMIIIA2 economy, the complete lack of such records in LMIIIA1 is striking; and this, along with the different chariot records, suggests that they reflect different historical situations. The earlier tablets are the first Mycenaean records, when the rulers
were more concerned with chariots than with sheep. But by the time of the main Knossos archive this had changed, and the administrative emphasis lay less on warfare and more on economic matters. The Linear B tablets allow a "freeze-frame" of history to be studied, and the RCT archive and the main Knossos archive allow glimpses of two different phases some 10-15 years apart (30). The epigraphical and philological light which these phases throw on matters of script and language will be considered in the concluding chapter.

Historically, the LMIIIAl RCT records, which are the earliest certain attestation of Mycenaean control of Knossos, allow the following observations to be made. Following LMII, the administrative records of Knossos were kept in Linear B writing Mycenaean Greek. The militaristic air, apparent in LMII in warrior-graves in the Knossos area, continues into LMIIIAl and is reflected in the Sc tablets of the RCT. By LMIIIAl the Mycenaeans were rulers at Knossos, and their administrative interests (and presumably control) covers the area of West and Central Crete. The spread of toponyms in the RCT is as widely spread in the RCT as in the later archive i.e. within the area bounded by Knossos-Khania and Knossos-Phaistos, if not as exhaustive within this area. Geographically there does not seem to be much difference between the places dealt with by the two archives.

Another noticeable feature of the RCT records are the names of charioteers (Table 7). As would be expected, these
names, which are followed by the chariot, armour and horse ideograms, are predominantly clearly Greek. These are the names of the Mycenaeans present at Knossos in this period, who were serving as charioteers in a state of readiness(31). It seems fairly certain that the Mycenaean charioteers recorded in these tablets must be connected to the warrior-graves in the Knossos area and the general militaristic air apparent at Knossos in the LMII-LMIIIA1 period. The correlation between warriors on the Sc tablets and warriors in Mycenean burials is clear in LMIIIA1. Although the previous LMII period has also produced Mycenean warrior-graves, the lack of written records for the LMII period warns that caution should be applied rather than assuming that the historical situation at Knossos regarding Minoans and Myceneans was the same as in LMIIIA1.

In conclusion, it can be observed that the LMIIIA1 period was one in which Mycenaean Greeks were the rulers of Knossos and a considerable part of West and Central Crete. Their administrative interests and control covered a substantial part of the island, but not apparently beyond Lasithi to the east. They kept records covering a range of matters including battle-ready chariots, personnel lists, livestock records etc, but lacked the sheep and wool records which constitute a major part of the LMIIIA2 archive. Places that fell within the Mycenaean domain were Phaistos and Haghia Triada, Khania, Tylissos and probably Mallia and the cult sites of Iouktas, Kato Syme and the Diktaean cave(32). There was some continuity with the
Minoan past, suggesting a take-over of the Minoan administration based on the Palace of Knossos rather than a destruction of the pre-LMIIIAl social and political order. The LMIIIAl RCT records indicate that the Mycenaeans took over central control of the Palace of Knossos which was the established administrative centre of West and Central Crete in the previous LMII period. Events in the Late Minoan period suggest that following the LMIB destructions across the length and breadth of Crete, Knossos may have been controlling West and Central Crete in LMII under a Minoan ruler (albeit with the assistance of Mycenaean warriors) keeping records in Linear A conveying the Minoan language. There is no evidence to suggest that the political control and bureaucratic language in LMII was Mycenaean (33). In LMIIIA1 the extent of Knossian control had not changed, but the top level of the hierarchy within the Palace of Knossos had changed. The LMIIIA1 records demonstrate that the rulers of Knossos were Mycenaeans keeping records in the Linear B script conveying the Greek language. The possible role of these Mycenaeans, who were undoubtedly already established at Knossos in LMII, has been discussed above. LMIIIA1 marks the advent of Mycenaean rule, as a result of events that brought LMII to a close. The change in use of script from Linear A (LMIB) to Linear B (LMIIIA1) is of epigraphic interest and will be demonstrated in more detail in the concluding chapter; the change in language of the ruling class and their administrative records at the Palace of Knossos from Minoan
(LMIB) to Mycenaean Greek (LMIIIAl) is of great historical importance.
FROM LINEAR A TO LINEAR B

It is now time to consider the change from LMIB Linear A to LMIII A1 Linear B, and the change in language from Minoan to Mycenaean. It is necessary to define epigraphically the relation between the Linear A and Linear B scripts before any inferences are drawn concerning the languages conveyed by them, and a tentative identification of the Minoan language is offered.

EPIGRAPHY

To see how much actual change took place within the scripts of Late Minoan Crete, the signs which constitute the scripts at various stages of its use ought to be considered. In Table 8 are given i) the AB syllabic signs common to both Linear A and Linear B; ii) the Linear A syllabic signs found throughout the use of Linear A but without comparable signs in Linear B; iii) the Linear A signs of LMIB excluding regional variations (to give the most accurate view of what LMIB Knossos Linear A would have been like); iv) the Linear B signs of the Room of the Chariot Tablets; v) the Linear B signs of the main Knossos archive of LMIIIA2; and vi) the Linear B signs of the mainland archives LHIIIB.

The signs identified in Table 8 as AB syllabic signs are those accepted by the editors of GORILA 5 (1985). In addition AB118 is included as a syllabogram, in contrast to GORILA 5, which lists it as an ideogram. For AB118 occurs 4 times as a non-syllabic sign, but 20 times in Linear A as a syllabogram, in all but five cases in the final position.
On the basis of the shape of the sign it should be equated with B90 from the Linear B syllabary, transcribed as dwo, which also is found sometimes in word-final position. This sign in Linear B also serves as a unit of weight, and this may be why the editors of GORILA did not consider it to be a syllabogram. That the sign should have a sound value in Linear A is not unexpected, given that Linear A does contain some signs which have a complex sound value i.e. 82 TWA, 86 DWA and 87 TWE; and although complex signs are less common in Linear A than Linear B, they do exist(1).

The data in ii) are again taken from GORILA 5 (1985) and include all Linear A signs which can be identified as having a syllabic sound value. In iii) the signs which are only found at regional administrative sites are excluded. This gives the clearest indication of what the Linear A script in use at LMIB Knossos would have been like, in spite of the fact that most of the c.40 Knossos Linear A inscriptions date from MMIII-LMIA. The signs which are regional variations and thus excluded from section iii) are those from Phaistos (a different case altogether as these Middle Minoan Palatial records show affinities with the contemporary records kept in the Cretan Hieroglyphic script at Mallia-Quartier Mu), and those from the regional administrative centres of LMIB Haghia Triada, Khania, Zakros and Tylissos.

The sites which show regional scribal variations are those which (excluding Tylissos) are all at a considerable distance from Knossos and show some degree of
administrative autonomy in controlling the Mesara and West
and East Crete respectively, and this is perhaps reflected
in their scribal system as well. For while the situation is
not that of just 4 administrative centres (Knossos, Haghia
Triada, Khania and Zakros) as stated by Weingarten (1990),
it is true that these sites were probably the main
administrative sites in their respective areas of Crete,
and this is reflected by both sealing practices and scribal
variations(2). There is some justification in considering
Knossos, Haghia Triada, Khania and Zakros as the major LMIB
administrative centres, but they were not the only ones.
Although Archanes, Papoura and Tylissos can be seen as
falling within the greater Knossos area, the picture is not
so simple in the rest of Crete. For example, what was the
relation of Palaikastro and Petras to Zakros, and within
which administrative orbit did Myrtos-Pyrgos fall ? Thus
section iii) aims to identify what signs the Linear A
repertoire of LMIB would have contained.

The signs listed in Table 8 are confined to those used
as syllabograms in the Linear A and Linear B scripts(3).
Having seen which signs Knossian LMIB Linear A was likely
to have used, it is necessary to pass through the
epigraphical lacuna of LMII to the records of the Room of
the Chariot Tablets (RCT) written in LMIIIA1 Linear B and
recording Mycenaean Greek. The RCT texts show which signs
were employed by the earliest stage of the Linear B script.

The RCT Linear B records contain 576 documents, of
which only 75 are more or less complete. They contain
c.2370 signs, but with only 57 of the 65 AB signs (Driessen 1988). But this must be due to chance, as there is no reason to suppose that the other 8 AB signs were not also in use: they form part of both the LMIB Linear A syllabary and the LMIIIA2 Linear B syllabary. There are also 16 Linear B signs used in the RCT, which had no predecessor in the Linear A script. These additions are noteworthy, for although Driessen (1988 p.140) states: "It is clear that the RCT scores badly with regard to complex signs", 4 of the new Linear B signs have complex sound values (dwe, nwa, nwo and swi) and another 2 are doublets (a3 and pte [=pe2]) (Lejeune 1965). So the RCT only "scores badly" if it is compared to later Linear B records from Knossos and Pylos. But if it is viewed as a stage in the development of the script from Linear A to Linear B on Crete, then the RCT is notable for introducing 4 more complex signs, in addition to the 4 already known in Linear A(4).

In the Linear A of LMIB there were 4 complex signs (consonant+w+vowel) and 7 doublet signs (sound values which are similar to a basic sound value); in the RCT of LMIIIA1 there were 8 complex and 9 doublet signs; in the Knossos archive of LMIIIA2 there were 9 complex and 11 doublet signs; and finally in LH/MIIB there were 10 complex and 12 doublet signs (and this is excluding the 4 remaining untransliterated syllabograms of the Linear B syllabary of 87 signs i.e. 34/35, 47, 49 and 63, all of which are likely to have a complex or doublet sound value) (5). There was therefore a gradual increase in the number of complex and
doublet sound values used at the various stages of development of the Linear A and Linear B scripts, and it is important that this process had started in Linear A, which had both complex and doublet sound values. The linguistic value of this observation will be discussed below when the two languages expressed by Linear A and Linear B are considered. But it is important not to treat the RCT in isolation, but rather in relation to the Linear A which preceded, and the Linear B which followed it.

In section v) are listed the signs used in the main Linear B Knossos archive of LMIIIA2. The scribes used 65 AB signs plus the 16 B signs used in the RCT and the signs to2, ro2 and dwe. This gives an LMIIIA2 syllabary of 84 signs. It is of course possible that these 3 new B signs were known in the RCT of LMIIIA1 and that the chance which failed to preserve the other 8 AB signs also failed to preserve these 3 Linear B signs. But there is a noticeable trend for more complex and doublet signs to be used the longer the Linear B script continued in use, so it is more likely that these 3 signs given above were actually introduced in the LMIIIA2 stage of the Linear B script.

Finally in section vi) are given the signs used in the whole corpus of Linear B material from LHIIIB including the mainland Palatial archives of Pylos and elsewhere. This reveals that by LHIIIB the Linear B syllabary consisted of 63 AB signs and 22 B signs (as 47 and 49 only occur in Crete, but in both the Linear A and Linear B scripts). The new LHIIIB signs have the sound values of ra3, nwi and two.
So post LMIIA2 Linear B from the mainland has 3 additional sound values, one doublet and two complex, giving a syllabary of 85 signs for the latest stage of Linear B.

The conclusions drawn from this statistical analysis are listed at the bottom of Table 8, where it can be seen that a common core of 65 AB signs, i.e. the basic Linear A system which was adopted by Linear B, is found in all stages of the Linear A and Linear B scripts (except the mainland LHIIIB stage). But these 65 AB signs are supplemented in LMIB by 10 A signs, in the RCT by 16 B signs, in the LMIIIA2 Knossos archive by 19 B signs, and in the LHIIIB mainland archives by 22 B signs. It is clear that there is a gradual increase of B signs within the script from LMIIIA onwards, and all the LMIIIA2 and LHIIIB additions are non-basic i.e. complex or doublet sound values. This indicates a creation of sound values to fulfill certain needs e.g. 63 at Pylos, but shows that all the basic (vowel or consonant plus vowel) Linear B signs needed to supplement the AB signs existed in the RCT LMIIIA1 records. The core of 65 AB signs does not change within all the Cretan stages of the Linear A and Linear B scripts. What does change are the Minoan regional variations prior to LMII, and the Mycenaean Linear B signs created after LMII.

The two scripts at all stages in their development show a remarkably high level of shared signs. These 65 AB signs constitute 70% of all Linear A syllabic signs, but 87% of LMIB Linear A excluding regional signs, 80% of the
RCT syllabary, 77% of the LMIIIA2 Knossos archive, and 74% of LHIIB Linear B. The change in signs used by the scripts clearly occurred after LMIB (Linear A=65 AB +10 A signs) and before LMIIIA1 (Linear B=65 AB +16 B signs).

During this period i.e. LMII, a change took place at Knossos in which the Linear A script recording the Minoan language was replaced by the Linear B script recording the Greek language. As indicated in the previous chapter the LMII period is of crucial importance archaeologically, epigraphically and philologically.

By looking at the 16 B signs created by the LMIIIA1 scribes of the RCT, and not used previously in LMIB, it may be possible to see which sound values were required by the Mycenaean Greeks which had not previously been required by the Minoans. Out of the 16 B signs, 7 are consonant plus o, 2 are consonant plus e, 4 are complex sound values, and 3 are doublets. Clearly the scribes in LMIIIA1, who now keep their records in Linear B conveying the sounds of Mycenaean Greek, needed these sounds which had not been needed by the previous Linear A script conveying the sounds of the Minoan language, which appears therefore to be deficient in sounds of the -O series (although the sound values of the LMIB A signs are of course not yet known).

The epigraphic difference between the latest stage of Linear A (LMIB) and the earliest stage of Linear B (LMIIIA1) is actually very small. For the former has 65 AB and 10 A signs, while the latter probably had 65 AB signs and 16 B signs. The shared AB signs constitute 87% and 80%
respectively of the syllabaries in use in these two periods of Late Minoan Crete. Indeed when the frequency of occurrence of AB signs is taken into account, then the 10 A signs of LMIB and the 16 B signs of LMIIB1 constitute an even smaller part of their respective syllabaries; the figures are less than 1% and 13% respectively. On this reckoning the AB signs constitute over 87% of both the LMIB and LMIIB1 syllabaries at Knossos.

As would be expected, there are many similarities between the LMIB execution of Linear A signs and the LMIIB1 execution of Linear B signs. Driessen (1988 p.160) comments "the sign a has its stem never drawn through the horizontal bar in Linear B, although this is rather frequent in Linear A and happens once or twice in the RCT", and he also comments that "some signs, like the tu and P, change direction in the RCT, which is usually a Linear A feature. More Linear A features are one si on Xd 168.1, the ra on Vc 205, the usual drawing of the se etc." It is clear that the Linear A script develops into the Linear B script. A modification within the script takes place it does not radically change. The change that does take place is primarily associated with the complex and doublet sound values and the completion of the -o series. If such a change in LMIIB1 was necessary to cope with the change in language from Minoan to Mycenaean, then the sound values which were added by Linear B and the sound values which were lost from Linear A may help to explain the phonological differences between the Minoan and Mycenaean
languages.

It was stated by Pope (1962) that "we can now see what Linear B is. It is the Linear A script, shorn of a few refinements, and supplemented by some thirty new phonetic signs. The natural explanation for the script, and the only convincing one, is that it was a special creation designed on the basis of Linear A in order to meet the requirements of a new language". This explanation was strongly resisted by Hooker (1979 p.50-52; 71-73) who sees a much more complicated set of circumstances which led to the creation of the new script. The facts presented above and given in Table 8 have shown that LMIB Linear A and LMIIIA1 Linear B share some 65 AB signs which constitute over 87% of both syllabaries. This percentage of overlap will undoubtedly become higher still when new Linear A inscriptions come to light. There is a much higher level of shared signs between the latest stage of Linear A and the earliest stage of Linear B than has previously been realised. In 1959, Chadwick described the difference between Linear A and Linear B as akin to the difference between the Greek and Roman alphabets. In 1978, Pope and Raison could say that "the syllabaries differed in about the same degree as the English and French alphabets in the eighteenth century—that is to say a difference of between 10% and 15% each way" (6). This point was taken up further by Palaima (1988 p.331) who said that "the Linear A and Linear B phonetic repertoires are reasonably close to one another, much more so than previous purely statistical comparisons have
suggested. Now the difference between the two scripts can be shown to be even less following the publication of the GORILA corpus and subsequent Linear A finds (GORILA 6-Appendix 1), and the study of the Room of the Chariot Tablets.

In Palaima's detailed survey of the Mycenaean writing system (1988), he carries out an examination of Linear A and Linear B forms, developing the palaeographical examination of Pope (1962). This survey is valuable for showing some of the similarities and differences between Linear A and Linear B, but is inaccurate in not taking into account the probable LMIIIA date of the Knossos archive. This results in a theoretical discussion attempting to place the creation of Linear B sometime between 1450 and 1250 B.C. But a diachronic study of the stages of development reveals the evolution of the Linear B script more clearly. In particular the study of the LMIIA1 and LMIIA2 stages of Linear B allows the development of the script to be traced more accurately. It is clear from Palaima's Figures (1-25) that LMIB Linear A is generally close to Linear B in execution, but he does not differentiate between Cretan and Mainland Linear B. This has the result that the strong link between LMIB Linear A and LMIIA Linear B is not given the prominence it should have. But Palaima rightly stresses that Linear B continued to develop during the two centuries after the Mycenaeans had adapted the Linear A script.

It appears that LMIB Linear A and LMIIA1 Linear B
were stages along the path of development of this script and syllabary which was developing before LMIB and carried on developing after LMIIIA1. The following stages of the Linear script on Crete can be discerned.

1 MIDDLE MINOAN  Knossos, Mallia and Phaistos using the Linear A script to record the Minoan language.

2 LATE MINOAN I  Regional administrative centres and peak-sanctuaries using the Linear A script for the Minoan language.

3 LATE MINOAN II  Knossos Palatial Records (?) and KN Zel6(?) using Linear A for the Minoan language, but with an increasing number of Greek names and words, due to mainland influence and presence.

4 LATE MINOAN IIIA1  Knossos RCT using Linear B for records in Mycenaean Greek, but also using Minoan names and words.

5 LATE MINOAN IIIA2  Knossos main archive using Linear B for records in Mycenaean Greek, but using Minoan names and words.

6 LATE HELLADIC IIIB  Mainland archives using Linear B to write Mycenaean Greek with very few non-Greek words.

In Hooker’s survey of the origin of the Linear B script (1979 p.14) he asked the following questions concerning the Linear B script. How, why, when and where was it created? Hooker did not claim to have reached a definitive conclusion, but stressed that any theory should "account for the rise of the script against its historical background" and should take into account new epigraphical discoveries(8). It is correct to attempt to answer Hooker’s
questions, taking into account new discoveries and scholarship since 1979.

How was the script created? By adopting and adapting the Linear A script.

Why was it created? To make the necessary changes to enable the already existing syllabic script to record Greek.

When was it created? In LMIIIA1.

Where was it created? At Knossos on Crete, probably by Minoan scribes working for the Mycenaean rulers of the Palace of Knossos.

All of the above discussed stages are stages in the development of one script, known as Linear A in the first 3 stages and Linear B in the last 3 stages. Indeed all 6 of these stages are part of the diachronic development of one Linear script used at different times for the writing of documents in the Minoan and Greek languages (9). The script in use on Crete in the Late Minoan period does not change radically (there is more than 87% overlap between the latest Linear A and earliest Linear B). Rather the script developed through several stages in order to meet the demands of the languages which it expressed.

PHONOLOGY

It has been suggested that the change in language of the ruling class at Knossos from Minoan to Mycenaean Greek, and the need to have new signs to represent the sounds of the Greek language, necessitated the development of Linear A into Linear B. Pope (1962) was basically correct in considering the change from Linear A to B to have taken
A change in language had taken place at Knossos, amongst the ruling class at least, and features of LMIIIA1 Linear B which had not previously existed in Linear A i.e. signs with the sound values -o, ha, ai, rio and tio, and nw plus vowel, would all have been used in conveying the sounds of Mycenaean Greek. To refuse to accept the basis of Pope’s argument is to refuse to acknowledge just how much in common the two scripts have, for of the 16 B signs added to the AB signs in LMIIIA1, when the language being written was Greek, most can be seen to facilitate the writing of Greek, as do the subsequent LMIIIA2 and LHIIIB Linear B additions. Pope’s view that the main changes between Linear A and Linear B are due to the need to write Greek is credible, as the sound values of the post LMIB syllabary show. But Hooker’s position that a more gradual process was taking place is also valid. For rather than an abrupt change from Linear A writing Minoan (LMIB) to Linear B writing Greek (LMIIIA1), a more gradual process should be envisaged of an LMII stage of the Linear script recording documents in the Minoan language but using an increasing number of Mycenaean words, followed by an LMIIIA1 stage of the Linear script recording documents in the Greek language but using many Minoan words. The change in language of the rulers of Knossos from Minoan to Greek provided the impetus for the development of the script, and the evolution of the script termed Linear B took place during the LMII-IIIAl period at Knossos(10).
It will be instructive to see what are the sound values of the Linear A syllabary, and how this differs from the Linear B stage of the syllabary. In Table 9 are presented, side by side, the Revised Syllabic Grid for Linear B and the Provisional Syllabic grid for LMIB Linear A. The Linear A signs are transcribed according to the sound value of the Linear B syllabogram with which they share the same shape. Although it is likely that the same AB sign had the same value in both Linear A and Linear B, this can not be proved beyond doubt for more than a dozen of the signs until the same sign-groups are found in the same context in both scripts (Olivier 1975, Godart 1984 and Duhoux 1989). With this caveat the 65 AB signs are transcribed according to their Linear B sound values(11).

It is clear that a major difference between the two syllabic grids as presented in Table 9 is the defective Minoan -0 series, which had been completed by the time of the RCT and was needed for the writing of Mycenaean Greek names ending in -os. But, although the -0 series is defective in Linear A, it does however exist, but in too incomplete a form for the purposes of the Linear B scribes(12). The only other basic (consonant plus vowel) syllabic sound values lacking from the Linear A grid are those for PE and WE. As the rest of the -E series exists in Linear A, it is very likely that PE and WE are to be located among the as yet untranliterated Linear A syllabograms. The common Linear A syllabogram, A301, perhaps represents one of them.
The doublet signs are also well attested in Linear A: 9 of the 15 doublet signs known in Linear B exist. The well attested P+vowel2 series has been identified by Melena (1987) as a Minoan stratum within the language, representing a pre-Greek sound of B+vowel or PH+vowel, thus similar to P+vowel but preserving a sound from the Minoan language(13). The syllabograms identified as having P+vowel2 sound values are found with few or no exceptions in each case at Knossos. The other doublet sound values are not as well represented in Linear A as later in Linear B. Likewise complex sound values can also be read in the Linear A syllabary, although they are only 5 in number, and do not include NW+vowel as a complex sign and it can be observed that this was required by Linear B. The provisional syllabic grid for Linear A will be more complete than at present when the 10 as yet untransliterated Linear A syllabograms have been interpreted. Among these are likely to be found the sound values PE, WE, and at least SO of the defective consonant plus O series for the writing of Pre-Hellenic toponyms such as Tylissos, Amnisos and Knossos. The other Linear A syllabograms may provide the sound values for consonant plus O basic signs, or other doublet or complex signs. But the important fact to note is that both doublet and complex sound values existed in the Linear A syllabary of LMIB.

The Linear B script of LMIIIA1 includes all 60 of the AB basic signs. The doublet series has been extended to more than just P+vowel2 and consonant+a2. Doublet signs
increase in number from 9 to 15 and expand the range of sound values which can be expressed by this script. The LMIIIA2 creation of ro2 and to2 is also another means of expressing Greek words ending in -rios and -tios respectively. The complex signs also increase from 5 in Linear A to 12 in Linear B, although sign 63 is only found at Pylos, and 47 is only found at Knossos but in both Linear A and Linear B. The complex series nw+vowel is initiated in LMIIIA1 (sign 19=nwo), supplemented in LMIIIA2 at Knossos (sign 48=nwa and sign 83=nwe), and completed in LHIIB2 at Pylos (sign 63=nwi).

Thus the LMIB Linear A script with its 75 sound values (excluding regional variations) evolves into the LMIIIA1 Linear B script of 81 sound values. If more records from the Room of the Chariot Tablets (Linear B) and from LMI Knossos (Linear A) existed, then the level of overlap between the scripts could well be even higher than the 87% which has already been determined. But even without waiting for new epigraphic evidence, it can be seen that the Linear A and Linear B scripts are two stages in the Linear script of Late Minoan Crete. Having seen that the epigraphic relationship between Linear A and Linear B is demonstrably closer than has previously been shown, and having presented the sound values of the Provisional Syllabic Grid for LMIB Linear A, it now remains to be seen what can be understood of the Minoan language which Linear A records.

TOWARDS A TENTATIVE IDENTIFICATION OF THE MINOAN LANGUAGE

Firstly it is important to note that there is an
alternation between Linear A 81-02 KU-RO and 81-60 KU-RA in contexts which are clearly that of "Total" at the end of a tablet(14). This indicates that KU-RO (e.g. ZA 15b.2) records a masculine or neuter commodity, in this case wine; and that KU-RA (e.g ZA 20.4) records a feminine or neuter plural commodity, in this case lost. This is strong evidence that Minoan is an inflected language. Observations such as these were made by Alice Kober in the years prior to the decipherment of Linear B and such observations should not be lost sight of in a study of Linear A(15). There are also inflected variants of the word for total from the Linear A archive of Haghia Triada. The word for total, KU-RO does bear a striking similarity to the Semitic "kull" meaning total. This in itself does not identify the Minoan language as Semitic, for KU-RO may be a loan-word, like ku-ru-so, gold in Linear B. The Minoans could easily have adopted this administrative term for book-keeping from the more established bureaucracies of the Near East.

A study of Linear A must proceed from the textual evidence. To this end a survey of the scholarship of the subject will be instructive, both to warn against repeating past mistakes and to suggest profitable avenues of research(16). No decipherment of Linear A has yet been generally accepted as successful, but a number of pertinent observations have been made regarding the Minoan language. A survey and synthesis of these observations will lead to a greater understanding of Linear A, which is the aim of this present work, and that in turn will suggest which
direction future research ought to take towards a tentative identification of the Minoan language.

**ETEOCRETAN** In regard to the Minoan language, it was stated in Studies Chadwick (1987 p.87) by J.Bennet "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". The EteoCretans were the people of East Crete (the area east of the Lasithi mountains, which it is believed was not ruled by Knossos in the LMII-III period) who wrote "Eteo-Cretan" inscriptions in the 7th and 6th centuries B.C. in the Cretan form of the Greek alphabet, but the language of which is not Greek. It has been suggested that in East Crete the Minoan language survived the Dark Ages and came to be inscribed in the Greek alphabet at Dreros and Praisos. Subsequent research has shown the likelihood of the Minoan language surviving down into the Iron-Age(17).

Firstly there are similar linguistic features in both EteoCretan and Minoan, which are known to be specifically Cretan features e.g. the consonantal sequence "NM" found on PRE 2.3 in EteoCretan and in the word I-PI-NA-MA in Linear A (AP Za2, KO Za1, PK Za8, 10 and 11, TL Za1, VRY Za1, IO Za2, 14 and 15). This sound is also similar to "MN" found on PRA 3.2, DRE 1.1 and PRA 4.7 in EteoCretan and in the word A/JA-SA-SA-RA-MA-NA in Linear A (KN Za10). These pre-Hellenic sequences NM and MN seem to be common to both EteoCretan and Minoan and appear in pre-Hellenic Cretan Toponyms such as Amnisos and Rethymnos. Another distinctive
sound found in both EteoCretan and Minoan is PH+vowel, transliterated as P+vowel2 in Linear A. This sound was recognised by Melena (1987) who transliterated syllabograms 56 and 22 as pa2 and pi2 respectively, with the sound values ba/pha and bi/phi in non-Greek words. These signs are predominantly found at Knossos and Melena noted "that it seems clear that both 56 and 22 render one and the same non-Greek consonant in Linear B forms from the Minoan substratum". It was also recognised by Bartonek in reply to Melena's paper that PHI existed in EteoCretan inscriptions as a further support for the existence of a Minoan substratum. Words containing PHI with what is surely the Minoan rendition of the toponym Praissos i.e. -PHRAISO, occur twice on EteoCretan inscriptions from that site. This distinctive Cretan sound, PI2=PHI, occurs in both Minoan and EteoCretan, in the latter case in what must be the Minoan rendering of the pre-Hellenic place name. It is also of note that in the EteoCretan inscriptions there are 13 instances of PHI, one doubtful PSI and not a single THETA(19).

Attention has also been drawn to the existence of 3 signs on an EteoCretan inscription, ARC(?) B (Duhoux 1982 p.104-111) (Figure 5). Whatever these signs may mean, they do show a close similarity with the signs known from the Bronze Age scripts of Crete. They could be interpreted as Linear B signs as i-zo-si or si-zo-i, depending in which direction they are to be read; or they could be Linear A signs or even mason's marks(20). But whatever their
possible meaning, they do show a strong connection between the EteoCretan inscriptions written in the Greek alphabet and the scripts and signs employed by the Minoans.

These three points discussed above (NM/MN, PH+vowel and the Minoan signs) suggest that Bennet's proposition was correct. This along with the EteoCretan inscriptions coming from East Crete i.e. the part not administered by Mycenaean Knossos, suggests that the Minoan language did indeed survive among the EteoCretans of the Iron Age. Other examples in the Aegean of non-Greek languages surviving down into Classical times are known from the islands of Lemnos and Samothrace(21). The conclusion was reached by Duhoux (1982 p.262) in his important work "L'Étéocrétois", based on a well-reasoned morphological and phonetic study "Cet ensemble de concordances fait que l'Indo-Européen présente une parenté typologique indéniable avec l'Étéocrétois." So as it is probable that the language of the Eteocretans and the language of the Minoans was one and the same Cretan language, and there are linguistic, historical and geographical reasons why this should be so, then there is a strong possibility of the Minoan language as recorded by Linear A being pre-Greek, but Indo-European.

**COMPUTER ANALYSIS** Another important study of Linear A was carried out by Packard (1974), whose work showed the importance of limiting research to useful and demonstrable observations and not attempting a full-scale decipherment. Packard makes some important observations about the relative frequency of signs in both Linear A and Linear B.
This shows a remarkably consistent level of frequency in regard to both V and CV signs in both Linear A and Linear B (Packard 1974 p.80-89). There is not exactly the same level of frequency but Packard's studies do show a tendency for the same signs in both Linear A and Linear B to behave in a similar way in regard to relative frequency. This research has been further developed by Duhoux (1989 p.66-72 and p.116 Table 8), who compares Linear A and B in respect to the frequency of vowels in initial, medial and final positions. Such a study is important for its objectivity in showing the similarities and differences between the way in which the sounds of the Minoan and Greek languages are distributed. It indicates a similar (but not identical) underlying phonetic pattern between the two languages. This is another indication that Minoan may stand in some linguistic relation to Greek(22).

"GREEK-LIKE" ELEMENTS It has also been suggested that "Greek-Like" elements are present in Linear A (Nagy 1963). In this work Nagy detailed what he believed to be several similarities between Linear A and Linear B sign-groups found in the same context, and he suggested that the Minoan language was related to Greek. Subsequent attempts by Faure to translate Linear A inscriptions as Greek are not convincing. Instead some progress may be made by limiting the scope of a search for "Greek-Like" elements in Linear A. This was done by Hooker (forthcoming) who draws attention to features such as the termination of names in Linear A, "sometimes the termination can be associated with
Anatolian (-re and -ru), sometimes with Greek (da-ta-ro/ra)" (23). Mention is also made of stems of Linear A names which later appear in Linear B with a Hellenized ending i.e. often -ro, as clearly Greek names, but the stem remains the same. For endings of names can be adapted to conform to another language, but the stem remains the same(24). He also draws attention to two other stems, qe-ra and wa-tu which are understood in Linear B Greek names as Ther- and Wastu- respectively. These stems also occur in Linear A and again Hooker suggests that Greek stems can be identified among the Linear A names. Hooker admits that "none of these cases is so clear as to convince the hardened sceptic", but nonetheless his observations are useful. Hooker believes that the Linear A names contain elements of Greek, side by side with the Anatolian elements already recognised". Thus the possibility of the Minoan language being Indo-European must be borne in mind.

ANATOLIAN ELEMENTS The question of Anatolian stems in Linear A has also been discussed by Baumbach(25). She observes that some Minoan non-Greek names which are recorded in Linear B as ending in -ro are found in Linear A ending in -RU e.g. di-de-ro=DI-DE-RU, ka-ro=KA-RU, ma-ro=MA-RU and qa-qa-ro=QA-QA-RU. So it is likely that in the ending of personal names the Minoan and Greek languages had this difference, a tendency for Minoan names to end in -U when written in Linear A and for the same names to be Hellenized and to end like recognisable Greek names in -o(s) when written in Linear B. Baumbach identified the
common Minoan personal name endings in -RE and -RU, as well as the re-duplication of the sound at the beginning of the word, as features of the Anatolian language.

The question of Anatolian affinities with the Minoan language had also been raised in the decade following the decipherment of Linear B. In 1958 and 1968, Palmer discussed connections between the Minoan and Anatolian languages. In 1961, Huxley too addressed himself to the subject. It remains to be seen whether the view proposed by Palmer and Huxley can be substantiated by taking into account the new discoveries in Linear A (Appendix 1) and the GORILA corpus (1985). It has been suggested that the Linear A inscriptions, when read with Linear B sound values, have produced results that show similarities with the Anatolian family of languages, including Hittite, Luwian and Palaic. Palmer identified A/JA-SA-SA-RA-ME commonly found on Linear A stone libation tables with Hittite "ishassarasmis" "My Lady" and suggested that Minoan may be related to Luvian. Although Pope (1961) wrote an "obituary" for this goddess, nonetheless this does not mean that the Anatolian theory should be totally dismissed; rather, a new approach must be made to an old problem. Can the evidence of the last 30-40 years either further support or discount the Anatolian theory?

The Minoan language must form part of the pre-Greek linguistic stratum in the Aegean, as demonstrated by Haley and Blegen (1928) with particular attention to toponyms, and as was mentioned by Ventris and Chadwick (JHS 73
Some of these pre-Greek languages survived from the Bronze Age into the Iron Age. For as well as the EteoCretans, inscriptions are known from Lemnos and Samothrace which are written in the Greek alphabet, but the language(s) of which is (are) not Greek. The recent find of Linear A on Samothraki (Matsas 1991) indicates a connection (possibly linguistic) between Minoan Crete and the Northern Aegean at a pre-Hellenic stage c.1600 B.C. The spread of pre-Hellenic (including Minoan) toponyms shown by Haley and Blegen demonstrates that the Aegean stratum covered Crete, the Peloponnese, the Aegean islands and Western Anatolia. This too is an indication of the likelihood of a possible linguistic affinity between the pre-Greek Minoan language and the Anatolian languages.

It is also clear archaeologically that there were cultural affinities between Anatolia and Crete in the Neolithic period. For J. Evans (1968 p.273) stated that "the most distinctive material found in the ENI levels [of Knossos] is of course pottery, and there can be no doubt that the closest parallels to these wares are to be found among pottery from the coastal areas of West Anatolia and some of the East Aegean islands". The pottery and the toponyms indicate a relationship between Anatolia and Crete. Thus both archaeologically and linguistically, it is reasonable to accept some connection between Anatolia and Crete.

It has also been suggested by Renfrew (1974) that languages which are known to be Indo-European are those
from cultures which are attested in the Neolithic period (c.7000-3500/3000 B.C.), as opposed to the non Indo-European Basque language and culture which can be traced back to the Mesolithic period (c.8500-7000 B.C)(27). The "Neolithic diffusion model" of Renfrew suggests that, as the earliest trace of settlement on Crete is c.7000 B.C. and comes from the Neolithic settlement at Kephala at Knossos, there is no archaeological reason to expect the Neolithic Cretans, who were the ancestors of the Bronze Age Minoans of the third millenium, to have spoken a language older than Indo-European(28). But Renfrew is aware that this model, however likely, is hypothetical and sums up thus: "Of course the decipherment of the Linear A script may one day bring new information; it will be no surprise if the language turns out to be Indo-European."

CONCLUSIONS

To sum up: the Minoan language is an inflected language (KU-RO and KU-RA as the words for total), and the computer analysis of Packard has also demonstrated similar underlying phonetic patterns between Greek and Minoan, suggesting that the languages are not unconnected. It has also been shown that Greek-like and Anatolian elements are present in the language recorded by Linear A. This Minoan language is likely to have survived in East Crete in the cities of Phraissos and Dreros. The non-Greek language of these EteoCretan inscriptions has specific Cretan features also found in Minoan. A study of archaeology and toponyms has further strengthened the case for connections between
Anatolia and Crete. On the basis of all these observations, the following conclusion must be drawn.

The Minoan language, as recorded by the Linear A script, demonstrates several connections with languages which form part of the Indo-European family of languages. The Minoan language is to be tentatively identified as pre-Greek, but nonetheless an Aegean Indo-European language (29).

Although the tentative identification of the language group to which Minoan belongs i.e. Indo-European, is important for future research, it is not the final stage in understanding the Minoan language. For it has been shown that the closest chronological stages of Linear A (LMIB) and Linear B (LMIIIA1) share almost 90% of the syllabic signs which they use. Therefore Linear A can for the most part be read with the phonetic sound values of Linear B. It has also been shown that the Minoan language, when read with these sound values, shows evidence of being a member of the Indo-European family of languages. These two stages are vital before a future decipherment can be undertaken with any prospect of success. For as Jean-Pierre Olivier stated (1975 "Lire" Le Linéaire A ?)-

"Déchiffrer" une écriture, c'est la lire; "déchiffrer" des textes, c'est à la fois les lire et les comprendre."

The Linear A script can now for the most part, with the sound values of Linear B, be phonetically read. The Minoan language has, following a number of cumulative observations, been tentatively identified as Indo-European.
The next stage of research towards a future decipherment of the Minoan Linear A inscriptions is to interpret them and understand them. The decipherment of Linear A will be possible when a greater quantity of material comes to light and allows the exact nature of the Indo-European Minoan language to be seen more clearly(30).
# APPENDIX-I

## GORILA 6

GOARETH OWENS RECORD OF INSCRIPTION IN LINEAR A 1985-1992

GORILA 1-5 (1985)  1427 DOCUMENTS  7147 SIGNS

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<td>Za1</td>
<td>INC.GRA.XCI vol.1 (1989)</td>
<td>p.281-283</td>
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<tr>
<td>SY</td>
<td>Za4</td>
<td>PRAKTICA 1988 (1991)</td>
<td>p.244-263 and pl.177</td>
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<td>Zg3125</td>
<td>Parola del Passato (1992)</td>
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<td>Zc49</td>
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<td>PRAKTICA 1975 (1977)</td>
<td>pl.236.B</td>
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<td>AR</td>
<td>Wb1</td>
<td>?? (199?)</td>
<td>I. Tzedakis</td>
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</table>
THE MINOAN LIBATION FORMULA

There are 74 Linear A inscriptions which come from a non-administrative context. These can be considered under 3 categories of non-administrative inscriptions.

i) Personal Linear A Inscriptions (P=15)

ii) Personal-Religious Linear A Inscriptions (P-R=7)

These inscriptions are designated personal-religious either through being written on a religious object e.g. figurine, through being found at a religious location e.g. Kophinas, or through textual connection with a Za inscription.

iii) Religious Linear A Inscriptions (R=52)

These consist of 42 Za stone libation tables with the Minoan Libation Formula and 10 other Formulaic inscriptions.

The Minoan Libation Formula i.e. the repetition of sign-groups on stone libation tables and other objects, was recognised as such by Brice (1965) and Grumach (1968). All of the above mentioned inscriptions (P, P-R, and R) have been published in GORILA 4 (1982), GORILA 5 (1985) or are listed in GORILA 6 (Appendix 1).

From these 74 non-administrative Linear A inscriptions can be discerned 10 repeated sign-groups which constitute the Minoan Libation Formula. The 10 repeated sign-groups will be given below, in the order in which they usually (but not invariably) occur on the Religious Linear A inscriptions.

The best preserved Linear A religious inscription is from a stone libation table from Iouktas, 10 Za2, which contains 8 of the 10 sign-groups. It reads as follows:

1. 08-59-28-301-54-57 . 57-07-67-69 . 57-31-31-60[-13
2. 41-26-04 . 59-06-04-10-37-55 . 28-01-

2. SI-RU-TE . TA-NA-RA-TE-U-TI-NU . I-DA-

A stone libation table from Palaikastro, PK Zal11, contains 7 of the 10 sign-groups which form the Minoan Libation Formula. It reads as follows:

08-59-28-301-54-57 . 08-07-67-04-04 [.].-01 . 39-04-53
28-39-06-73 [] 41-26 [.]. 28-06-57-03-16

I-PI-NA-MI [] SI-RU [.]. I-NA-JA-PA-QA
Another Palaikastro stone libation table, PK Za12, contains 6 of the 10 sign-groups which form the Minoan Libation Formula. It reads as follows

08-59-28-301-54-57 . 08-07-67-04[-04] . 41-[26-04 ,
08-31-31]-60-13 [ ] 08-[70-08]-24 . 10-06-26-77[57-41
08-03-51-03 [ ] 57]-28-06]-57-03-16
A-PA-DU-PA [ ]JA[-I-NA]-JA-PA-QA

The inscribed stone ladle from Troullos, TL Za1, contains 5 of the 10 sign-groups which form the Minoan Libation Formula. It reads as follows

10-06-77-06-41[ . 28-39]-06-80-41-26[-04]
U-NA-KA-NA-SI[ . I-PI]-NA-MA-SI-RU[-TE]

A stone libation table from Kophinas, KO Za1, contains 5 of the 10 sign-groups which constitute the Minoan Libation Formula. It reads as follows

10-06-77-06-41 . 28-39-06-80 . 41-26-04
U-NA-KA-NA-SI . I-PI]-NA-MA . SI-RU-TE

All of the other religious Linear A inscriptions contain 5 or less sign-groups and are mostly incomplete. Below are listed the sign-groups which constitute the Minoan Libation Formula, in the textual order in which they usually appear. Linear A signs are transcribed according to Linear B sound values.

A A-TA-I-301-WA-JA
A-TA-I-301-DE-KA ZA Zb3.2
A-TA-I-301-WA-E PK Za11a
A-TA-I-301-WA-JA IO Za2a.1, Za3, Za7
KO Za1a
PK Za12a
SY Za1, Za2a, Za3, Za4
TL Za1a

A-TA-I-301-WA[-JA IO Za4
]A-NA-TI-301-WA-JA IO Za8
JA-TA-I-301-U-JA AP Za1

B A/JA-DI-KI-TE-
A-DI-KI-TE[ PK Za12
A-DI-KI-TE-TE-DU-[.]-DA PK Za11
JA-DI-KI-TE-TE-DU-PU2-RE PK Za15
JA-DI-KI-TU IO Za2b
JA-NA-KI-TE-TE-DU-PU2-RE PK Za8
C A/JA-SA-SA-RA-ME

A-SA-MU-NE ZA Zb3.1
A-SA-SA-RA[ PK Za4
A-SA-SA-RA-ME PK Za11b-c
PR Za1c
J]A-SA-SA-RA-ME IO Zb10
J]A-SA-SA[ IO Za9
PK Za14b
J)A-SA-SA-RA[-ME IO Za2b-c
J]A-SA-SA-RA-ME IO Za6, Za12
PL Zf1
PS Za2.2
TL Za1.b

D U-NA-KA-NA-SI

U-NA-RU-KA-NA-TI PK Za11c
U-NA-RU-KA-NA-JA-SI PK Za12c
U-NA-KA-[NA-SI IO Za9
U-NA-KA-NA-SI KO Za1c
PK Za8b
SY Za2b
TL Za1b
U-NA-KA-NA-]SI IO Za2c-d
U-NA-KA]-NA-SI AP Za2.1

E I-PI-NA-MA

I-PI[ PK Za8c
I-PI-NA-MI-NA PK Za10, Za11d
I-PI-NA-MA AP Za2.1
IO Za2d.1, Za15
KO Za1c-d
VRY Za1a
I-PI]-NA-MA TL Za1c

F SI-RU-TE

SI-RU[ PK Za10
TL Za1c
]SI-RU[ PK Za12b
SI-RU-TE IO Za2a.2
KO Za1.d
SY Za3
VRY Za1b
SI-RU-DU PK Za11d
SI-[RU-TE IO Za14
SI-RU-[TE IO Za15
SI-[ PK Za10
]SI-[ PK Za12b
G TA-NA-

TA-NA-I-301-U-TI-NU IO Za6
TA-NA-I-301-TI PS Za2.2
TA-NA-DI-TE[ ]KE PR Za1a
TA-NA-RA-TE-U-TI-NU IO Za2a-b
 ]-TI-NU IO Za11

H I-DA-

I-DA PK Za18
NE Za1
]I-DA PK Za17
I-DA-[ IO Za2b-c.2
I-DA-A KO Za1b-c
I-DA-MI SY Za1
I-DA-MA-TE AR Zf1
I-DA-MA-TE[ AR Zf2
JA-U-PA-MA-I-DA-301-DI PK Za9.2
I-NA-I-DA IO Za11

I I-NA-

I-NA-JA-PA-QA PK Za11d
I-NA-JA-RE-JA AP Za2.2
I-NA-TA-I-WO2-DI-SI-KA IO Za6
I-NA-I-DA IO Za11
I-NA-]JA-PA-QA PK Za12d

J I-JA-

I-JA[ KN Za10b
I-JA-PA IO Za5
]I-JA-RE-DI-JA IO Za5
se-to-i-ja

From a study of the main Knossos Linear B archive, it is apparent that the ceremonial chariots listed on the Sd tablets are recorded at pa-i-to, ku-do-ni-ja, se-to-i-ja and by implication Knossos for those recorded on tablets where no toponym is mentioned. The only places outside Knossos to have warrior- graves/burials with bronzes in the LMII-IIIAl period were Phaistos, Khania and Archanes. In the light of these two sources of evidence for military activity (i.e. warrior- graves and chariots), it is proposed here to ask whether the appearance of both of these features at pa-i-to/Phaistos and at ku-do-ni-ja/Khania may also indicate that se-to-i-ja is to be equated with Archanes.

se-to-i-ja occurs 21 times in the Knossos archive; 4 times with personnel, 8 times with sheep, twice with textiles, once on a sealing referring to wool, once referring to goats and their products, on 3 fragments where the subject is unknown, once in connection with chariots and once with wheels(1). It is noticeable that se-to-i-ja is a place connected with many activities, not just with sheep which constitute c.60% of the Knossos archive. A study of the textual evidence of the Late Minoan period will help to explain what sort of activities were undertaken at se-to-i-ja. Likewise a study of the archaeological evidence will help to explain the nature of Archanes in this period, from which date one warrior-grave
and one burial with bronze. To determine whether se-to-i-ja can be identified with Archanes requires a combined use of both textual and archaeological material. Textually there are both Linear A and Linear B entries which refer to se-to-i-ja.

Recently, it was suggested by Bennet that it was incorrect to use "LMIB Linear A evidence to argue the administrative importance of a LMIII place-name in the Linear B administration"(2). Bennet also claims that the recently discovered painted stirrup jars with Linear B inscriptions from Mallia support his belief that se-to-i-ja is to be identified with Mallia. All of these arguments require consideration. But to counter Bennet's accusation that it is incorrect to use LMIB evidence in support of a LMIII place-name, it is necessary to ask whether using Linear B evidence from Mallia is any more valid. For although some believe in an LMIIIB date for the Knossos archive, thus making the Linear B tablets contemporary with the Mallia ISJs(3), the date suggested by Popham i.e. at the beginning of LMIIIA2, is still the more likely. Therefore, as the Linear B archive dates from LMIIIA2 and the Room of the Chariot Tablets records from an earlier period (LMIIIA1), the textual evidence for se-to-i-ja spans from LMIB to LMIIIA1, as se-to-i-ja is recorded both in Linear A and in the RCT. But textual evidence relating se-to-i-ja to Mallia spans from LMIIIA2 (early) to LMIIIB. There is probably less time difference (and certainly no more) between the Knossos archive and the Mallia ISJs(4).
And importantly the Linear A evidence from Archanes and nearby sites does refer to se-to-i-ja, whereas the Linear B from Mallia does not. As well as remembering that LMIB Archanes was a Linear A administrative centre, there is also an inscribed stone libation table (box) from the nearby villa of Prassas (PR Za1) which is relevant to this question.

The 21 Linear B references to se-to-i-ja cover a range of subjects (personnel, sheep and textiles, and chariots) and come from both the main archive and from the RCT. As has been mentioned, se-to-i-ja is one of only 3 places apart from Knossos recorded with chariots (Sd 4407+4414) and wheels (So 4442+4472). The Mc 4464 record of goats and their products is likely to be connected with the entry on the Sd tablet of "ke-ra-ja-pi", fitted with horn.

The sheep tablets are also instructive for the names which they record, and suggest that se-to-i-ja may be close to Knossos. For usually the names of shepherds are Minoan and those of "owners/collectors" are Greek(5). But at se-to-i-ja the names of shepherds such as ku-ke-to, ko-te-u, a-di-ri-jo and j-ta can be read, giving names ending in -tos, -teus, -ios and -tas as characteristic Greek endings for shepherds. Greek names are common for charioteers and "owners/collectors", but not so common for shepherds. The higher incidence of Greek sounding names indicates a location for se-to-i-ja which is closer to and linked with the centre of Mycenaean Greek influence on the island in the LMII-IIIA period i.e. Knossos. The product of the sheep
recorded in the se-to-i-ja area i.e. wool is also dealt with as are the textiles into which it is woven. On both the se-to-i-ja textile tablets (Lc 525, Le 654) the textiles are described as "wa-na-ka-te-ra" or its abbreviation "wa". This term "royal" is only found to describe textiles from se-to-i-ja. Whatever the precise meaning of "wa-na-ka-te-ra", the importance accorded to se-to-i-ja and its probable close proximity to the Palace of Knossos is clear.

Regarding personnel, se-to-i-ja is also found on tablet As 1516 line 20

1.20 se-to-i-ja su-ke-re-o, qa-si-re-wi-ja VIR 1

This entry follows two lists and totals of 31 men (1.1-11) and 23 men (1.12-19). The tablet is incomplete after this se-to-i-ja entry, but all the entries of 1.1-19 are individual entries of either a name or ethnic accompanied by the MAN ideogram. The exceptions to this form of entry are

1.2 ko-no-si-ja, ra-wa-ke-<si>-ja, a-nu-wi-ko VIR 1
1.12 ]-ti-jo, a-nu-to [qa]-si-re-wi-ja, VIR 1

The entries in both 1.12 and 1.20 follow to-so X VIR. So although the entry on 1.12 is incomplete, it does look as if the entries on 1.2, 1.12 and 1.20 were all the first names in a list, accompanied respectively by the terms ra-wa-ke-<si>-ja, [qa]-si-re-wi-ja and qa-si-re-wi-ja, and the lists are completed by sub-totals. Whatever these terms are, they do show a differentiation between Knossos on the one hand and se-to-i-ja and ]-ti-jo on the other. This word
on 1.12 is probably to be restored as ku-\textasciitilde{\textit{ta-ti-jo}} according to the editors of KT5. This suggests that Knossos, se-to-i-ja and ku-ta-to were probably the locations of these named men, and implies that se-to-i-ja and ku-ta-to were of an equivalent status and subordinate to Knossos(7). The man at se-to-i-ja connected with the qa-si-re-wi-ja, that is su-ke-re, also occurs on KN As 40 1.6 on a tablet which again starts with a man of Knossos.

On the Linear A stone libation table (box) from the villa of Prassas (PR Zal GORILA 4 p.46, Platon 1958) is written,

\begin{verbatim}
TA-NA-SU-TE[ ]KE SE-TO-I-JA A-SA-SA-RA-MU
\end{verbatim}

This includes 2 terms that form part of the Minoan Libation Formula and the word SE-TO-I-JA on a vessel from a site less than 1 hours walk from both Knossos and Archanes. This libation table from Prassas, within the Knossos/Archanes area, is dated to MMIIIB-LMIA. The other Linear A inscription to be considered is on a stone ladle from Troullos (TL Zal GORILA 4 p.58), just 10 minutes walk from the find place of the Archanes archive. On this ladle can be read 5 sign groups which form part of the Minoan Libation Formula, and one other word not found elsewhere i.e. O-SU-QA-RE. Whatever this word may mean, a name or a title, it is necessary to compare it to the man at se-to-i-ja connected with the qa-si-re-wi-ja on As 1516 1.20 i.e. su-ke-re. It is significant that the Prassas Linear A inscription mentions SE-TO-I-JA; that there is an apparent phonetic similarity between LA O-SU-QA-RE and LB su-ke-re;
and that O-SU-QA-RE is found on an object from within the environs of Archanes itself.

These are the philological reasons for equating se-to-i-ja with Archanes. It is now necessary to see whether this can be borne out by textual and archaeological evidence. The Linear B entries describe chariots and wheels at se-to-i-ja as at Phaistos and Khania. These places were the seat of a charioteer in the LMIIIA2 period. These three places are the only places outside Knossos recorded as having chariots, just as Phaistos, Khania and Archanes are the only such places having LMIIIA warrior-graves/burials with bronzes. Further, both Phaistos (with Haghia Triada) and Khania were Linear A administrative centres in the LMIB period. So it is suggested that se-to-i-ja be equated with a place that has warrior-graves/burials with bronzes, and was an important Linear A administrative site. The textual entries in the Linear B archive also suggest that se-to-i-ja was close to Knossos. The place which fits these criteria for the Late Minoan period is Archanes, approximately 1 hour walk from Knossos.

A consideration of the Late Minoan archaeological evidence will confirm whether Archanes can be identified as se-to-i-ja, an important administrative site which was the seat of a charioteer. The Archanes area has been intensively explored. The central site of Tourkogeitonia is well known, as is its Linear A archive dating from LMIB. Archanes was an important administrative centre, located as it is at the head of the fertile Pediadha some 10km from...
Knossos. The Mycenaean finds also point to the importance of Archanes and its area, and the pottery found dates from LMII-IIIC. The LMII-IIIA period is well attested including the Fourni tholos tomb A with its bronze vessels, sarcophagus and ivory plaque showing a warrior with a boar's tusk helmet (10). Within a grave dated to LMIIIA2 were found various objects including ivory pyxides and a Ci type sword and a one-piece spearhead decorated with spiral tracing.

These finds indicate that someone was buried in a military manner at Archanes Fourni. They also reinforce the suggestion of the textual record that someone of status and connected with chariots/weapons was based at Archanes, a suggestion consistent with the fact that Archanes protects the southern approach to Knossos. Its location next to Iouktas has always been strategic, and it has had a long tradition of literacy.

For all the above mentioned reasons, it is very likely that se-to-i-ja is to be equated with Archanes.
THE KEPHALA THOLOS TOMB LINEAR A INSCRIPTION KN Zε16

The Kephala tholos tomb was excavated and published by Hutchinson (1956) and is approximately 15 minutes walk from the N. Entrance of the Palace of Knossos. Hutchinson (1962) dated the tomb to LMI, while Popham (1964) dated it to LMII. The editors of GORILA (volume 4 [1982] p. 138) cautiously offered no date, following Vandenabeele (1985). The inscription is inscribed on a stone block of the dromos, a fact which makes it extremely difficult to date it with certainty. It is proposed here, after a re-examination of the inscription, to consider a date on the grounds of the epigraphic execution of the signs, and then to reconsider the context of the Kephala tholos tomb where it was found, and to offer some thoughts as to its possible meaning.

The inscription in the Kephala tholos tomb consists of 2 signs followed by a short vertical line which serves as a punctuation mark to denote the end of the word. This makes it clear that a sign-group is incised and not just mason's marks in the Kephala tholos tomb. For although mason's marks were found on blocks in the tomb (Hutchinson 1956 p. 76-77) and although there is some overlap between the repertoire of signs used in the Linear scripts of Crete and as mason's marks (Hood personal communication), the signs in the Kephala tholos tomb are to be read as a Linear A inscription. The 2 signs are found in both the Linear A and Linear B scripts, and are to be read as AB08-AB39. The
inscription is at approximately eye level on the last block of the dromos on the right as the visitor enters the tholos proper. The dromos is also notable for having side chambers to both left and right. The dromos had been filled in after a burial, but the inscription is located where the visitor could not have missed it.

The 2 signs AB08-AB39 are cut into the stone block. A monumental inscription on stone can only be compared to MA Zell from the Palace of Mallia which is to be read as AB78-AB41-AB04. There are no textual comparisons which can be drawn between KN Zel6 and other Linear A inscriptions, but it is instructive to consider the manner in which the signs were executed on stone. Both signs are more akin to the linear examples found on clay tablets than to pictographic examples found on stone libation tables.

The first sign, AB08, is a common sign in initial position in both the Linear A and Linear B scripts. It is the double-axe sign used in Linear B with the sound-value "a". The execution of this sign is a schematic rendering of the double-axe, not preserving the curved blades of the axe as is usually seen on examples of this sign on stone libation tables (GORILA 5 p.xxix). The horizontal bar across the top of the double-axe is found in both LMIB Linear A and LMIIIAl Linear B of the RCT.

Although the execution of the signs does not in itself suggest a date, it can be noted that the rendering of the signs is not as pictographic as one would expect from a LMI Linear A inscription on stone. On epigraphic grounds, it is
suggested that the inscription may date from LMII.

It will also be instructive to consider the objects found in the tomb (Hutchinson 1956). The burial had been disturbed and the tomb robbed, but the excavator was able to record some 33 finds. These included 4 gold fragments, 2 bronze rivets plated with gold from a sword, 1 knife, 2 tweezers, 1 tool, 1 finger-ring, 1 ear-ring, 3 pins and fragments all of bronze, as well as beads, spindle whorls, a steatite mould, a sealstone and an ivory plaque depicting two helmets. These few objects, and particularly the sword rivets and ivory plaque, suggest the remains of a warrior burial in the Knossos area. Warrior-graves were first recognised as such by Hood (1951) at the nearby Aghios Ioannis/New Hospital Site, and these are still the earliest yet of any warrior-graves in the Knossos area, and not one of them can be dated to before LMII. So both epigraphically and contextually there are indications that the Kephala tholos tomb should be dated to post LMIB i.e. to LMII at Knossos.

Finally some consideration must be given to the possible meaning of this inscription on a probable LMII tholos tomb warrior-grave in the Knossos area. Transliterated according to Linear B sound values, the Kephala tholos tomb reads as AB08-AB39 A-PI. This inscription can not be paralleled in either Linear A or Linear B. It was suggested by Hutchinson that this could be understood as "Leave!" or "Go-Away!" i.e. the imperative of APEIMI. This was treated with scepticism by most
scholars, who did not accept that A-PI could render such a meaning in Mycenaean Greek, and indeed the Homeric Greek imperative is ITHI. What is suggested here is that this LMII inscription A-PI may be interpreted as "Leave!" or "Go-Away!" in a language which is not Mycenaean Greek, but is nonetheless Indo-European. For Hutchinson was probably correct in his interpretation of the inscription, taking its context into account, but he was wrong to try and suggest that it was Greek. Equally other scholars may have been correct not to accept A-PI as Greek, but perhaps they were too quick to discount the possibility of an Indo-European i.e. Greek related language in use at LMII Knossos. For a study of the likely meaning of A-PI it is necessary to consider the archaeological and epigraphical evidence, before a philological consideration can be made i.e. which language is represented by A-PI on KN Ze16. The context suggests that the LMII(?) inscription should be understood as being written in Linear A recording the Minoan language. This is another indication that the Minoan language may be Indo-European.
NOTES

CHAPTER 1

1) For a history of the site and early excavations, see "Arthur Evans and the Palace of Minos" (1983) by Ann Brown of the Ashmolean Museum, whom I also thank for her assistance with my research at the Ashmolean.

2) I am grateful for this information concerning the discovery of the first Linear B tablet by Minos Kalokairinos to Dr. Katerina Kopaka of the University of Crete, as a result of her research in the Ashmolean Museum. The tablet in question, KN Ga<34> was destroyed in 1899, but the text is known from Evans' photograph of a squeeze. See COMIK I (1986)p.18.

3) This inscription is now known as KN Zb34 (GORILA 4 p.79) and is in the National museum in Athens (NM 1160).

4) See Evans Scripta Minoa I (1909)p.8 fig.4 for his description of this inscription.

5) PS Za2 (GORILA 4 p.52) consists of 3 parts. Part a is now in the Louvre, while parts b and c are in the Ashmolean Museum.

6) See Michael Ventris Work-Note 20 (1-6-1952), privately circulated, when he realised that he had deciphered Linear B as a syllabic script recording Mycenaean Greek. See also Ventris and Chadwick JHS 73 (1953)p.84-103.

7) See Killen and Olivier-The Knossos Tablets, 5th Edition (1989); and Godart-Melena-Olivier and Owens in Minos 25 (1992) for the latest report on joins achieved between the Knossos tablets and fragments since KT5. For an example of
one of the joins achieved see Owens (1990).

8) COMIK I (1-1063) 1986; COMIK II (1064-4495) 1991; COMIK III and IV are in preparation.

9) The importance of the GORILA corpus can not be emphasized enough for its role in leading to a greater understanding of Linear A. Prior to a proper publication of the material, many of the discussions of Linear A (with a few honourable exceptions) were doomed to be disappointing as they were based on hazardous readings of an incomplete corpus. The work of Godart and Olivier has brought order to the subject.


11) Although this c.2% increase in material is welcome, it is still substantially less than the Linear B corpus.

12) See Olivier in Aegaeum 5 (1990); and a paper (privately circulated) at the 9th Mycenaean Congress (Athens, October 1990).

13) For now the following works have to suffice for the Cretan Hieroglyphic material: seals and sealings (CMS volumes); Knossos Hieroglyphic archive, Evans Scripta Minoa I (1909); Mallia Palace Et.Cret.II (1930); Quartier M et.Cret.XXIII.1 (1978).

14) See A. Kober in AJA 52 (1948)p.91-99 for pre­decipherment observations.


17) Olivier (1975) reads with certainty the sounds of 10 Linear A signs (DA, I, JA, KI, PI, RI, RO, TA, TE AND SU). While Godart (1984) reads 13 signs (the same 10 as Olivier plus PA, SE and TO). These signs are the only ones which can be identified as having the same sound values as their Linear B counterparts, based on homomorphic sign-groups in both Linear A and Linear B. Throughout this work Linear B is transcribed by lower case letters e.g. pa-i-to and Linear A by capitals e.g. PA-I-TO.

18) See Warren and Hankey- Aegean Bronze Age Chronology (1989) especially p.169 Table 3.1 Aegean Absolute Chronology.


20) See Warren-Myrtos (1972)p.40-41 fig.97 pl.77c and Kadmos 9 (1970)p.29-37. Recent excavations from Trypiti (Lendas) have now revealed a slightly earlier sealing with a design of incised lines from EMIIA. I thank Dr. A. Vasilakis, the excavator for this information, and see Vasilakis 1986 and 1989.

21) This situation can be paralleled to the 200 sealings from the EHI-II House of Tiles at Lerna in the Argolid. See Hesperia 27 (1958)p.81-121 and Hesperia 38 (1969)p.500-521.

22) See Blasingham (1983) for a detailed discussion of Early Minoan seals.


25) I am grateful to Professor Smith of UCL Egyptology department for discussions on this and other matters.

26) Personal communication from the excavator, whom I thank.

27) See Warren in Function of the Minoan Palaces (1987) The Genesis of the Minoan Palace, for a discussion of how the First Palaces came into being in MMIA/B.

28) The finds from the German war-time excavations discussed in Matz-Forschungen (1951) are now in Khania Museum. They include 1 seal from room 18 and 9 sealings from the magazines CMS V.1 nos. 286-296. The University of Crete excavations uncovered an archive room with c.100 clay sealings in 1984. These have not yet been published, but see Kanta in BCH 111 (1987)p.577-8 fig.99-100 and a few are on display in Rethymno Museum. I thank the excavator, Dr.A.Kanta for discussions on this material.

29) See Kanta (1983) for some parallels between Minoan and Traditional Crete.

30) See GORILA 1 and 2 for the archival documents from Phaistos and Et.Cret.XXIII (1978) for Mallia Quartier Mu. It has also just been reported (May 1992) that a fragment of a Middle Minoan II First Palace administrative document
has been discovered at Knossos.

31) There is also a newly discovered painted inscription from Phaistos, to be published as PH Zc49 in Parola del Passato (1992) which has two signs AB58-AB24, the second of which is clearly the pictographic rendering of the "water-pitcher". It is clear that the medium of paint allows signs to be executed in a more cursive style (consider the scripts of Egypt), and in the light of new material it is becoming increasingly difficult to differentiate between Linear A signs executed in a pictographic manner (whether painted or incised on stone libation tables) and Cretan Hieroglyphic signs.

32) See Et.Cret.II (1930) and Scripta Minoa I (1909) for the Mallia and Knossos Cretan Hieroglyphic deposits.

33) This painted inscription has been studied in Heraklion Museum and raises the question again of the exact difference between the Cretan Hieroglyphic and Linear A scripts.

34) See Evans Scripta Minoa I (1909)p.179 for this Phaistos tablet (P121) and the Knossos tablet (P120) which it closely resembles.

35) For the 58 Palatial Linear A clay archival documents assigned to Middle Minoan, see Vandenabeele (1985). These Linear A syllabic signs (38 in number) do not include those Linear A signs attested just once in the MMII Proto-Linear A of the First Palace of Phaistos, as there is no certainty that they are used as syllabograms in these early records.

36) This Malliote Stone Block is the only monumental Cretan
Hieroglyphic inscription known but has similarities to signs on the Archalochori Axes, Phaistos Disk and stone libation tables.

37) The combined Linear A (1459 documents, 7282 signs) and Cretan Hieroglyphic (c.280 documents, c.1575 signs) corpus is subsequently enlarged by over 20% more than that recorded in GORILA 5 (1985). This has increased substantially the corpus of material of the first pre-Linear B script on Crete i.e. Linear A.
CHAPTER 2

1) See Peatfield (1987) for a discussion of "Palace and Peak".

2) At the 7th Cretological congress (Rethymno, September 1991) it was reported that both Cretan Hieroglyphic and Linear A inscriptions dating from the Middle Minoan period have been discovered on the island of Samothrace.

3) See Hallager et al. Kadmos 30 (1990)p.34-41 for 1 roundel KH Wc2122 and 3 tablets KH 94-96, all dating from LMIB.

4) This was re-confirmed by the discovery of a roundel at Haghia Triada, HT Wc3024, discovered in 1987 and published by Hallager, Godart and Olivier in BCH 113 (1989)p.431-7. The numerals on this roundel (6) correspond with the number of seal impressions around the edge.

5) To date 3 joins have been achieved among the Khania tablets (KH 20+48, KH 68+71 and KH 79+89).

6) 861 Linear A nodules from Haghia Triada in GORILA 2 p.3-78 plus HT Wc3024.

7) See Hooker (1990) for a detailed discussion of the structure of the administrative tablets.

8) A small exercise of this nature was performed by Bennet in AJA 94 (1990)p.199. He lists the following Linear B toponyms also found in Linear A records: ku-ta-to (HT) pa-i-to (HT) se-to-i-ja (PR) su-ki-ri-ta (PH, HT).

9) da-wo was identified by Bennet, convincingly I believe, in AJA 89 (1985)p.247 as Haghia Triada.

10) For Tylissos see Hazzidakis Et.Cret.II (1921); and
Brice in Kadmos 8 (1969)p.120-130 who also discusses Evans' unpublished ideas about these tablets.

11) From the Archanes area come the inscribed sealstones from Fourni bearing the Archanes script i.e. Cretan Hieroglyphic (EMIII-MMIA), libation tables from Iouktas (MMIII-LMI), tablets from Archanes Tourkogeitonia (LMIB), a stone libation table from Prassas (MMIIIIB-LMIA) and an inscribed stone ladle from Troullos (MMIII).

12) See Cameron in BSA 63 (1968)p.1-31 especially p.11; and Ph.D. thesis (unpublished). It would be profitable to examine the Linear A inscribed nodules microscopically to see if they show traces of having been attached to papyrus rolls as is known to have been the case in the contemporary Near East. I thank Professor Millard of Liverpool University for this suggestion. It is also a common feature on LMIB Crete that inscribed nodules are found with tablets; see Pope (1960) and Marinatos (1951), who identifies thin threads on the backs of clay sealings as the ties around the papyrus roll, rather than the roll itself. Pope also comments that Pliny informs us that Cretans wrote on palm-leaves, in his discussion about plants, papyrus and the production of paper in book 13 of the Naturalis Historia. The possible use of wax tablets for keeping records must also be considered. See Millard (1991) for a discussion of writing and materials in the contemporary Near East. It may be that bone "styli" which have one pointed and one spatulate end and which were found with Linear B tablets at Tiryns, Thebes and Mycenae are
more suitable for writing on wax tablets which have not survived than on clay tablets which have. I thank Dr. Olga Krzyszkowska for discussions on these objects.

13) This Phaistos inscription PH Zc49 is to be published. There is also another painted inscription on a larnax from Archanes Fourni, now in the store rooms of Heraklion Museum.

14) GORILA 5 (1985) records 318 tablets, to which must be added new tablets from Khania (5) and Petras (1) = 324.

15) I thank Dr. J.-P. Olivier for drawing my attention to this fact.

16) A Linear A tablet from the LMI villa of Petras, near Siteia in East Crete, was found in the summer of 1990. It is as yet unpublished but bears the ideogram WHEAT. See Tsipopoulou 1986, 1987, 1988 and 1991.

17) There is also a close connection between the pottery found at Mallia and that from Lasithi, strikingly so in the case of the Middle Minoan inscribed Chaimaizi vases, see Et.Cret.II (1930)p.88 and Et.Cret.XXIII.1 (1978)p.91-2. The most accessible route into Lasithi is from the north-west i.e. from the direction of Mallia. There is also some similarity between the pottery of Mallia and Myrtos-Pyrgos, suggesting that Mallia's sphere of influence extended across Lasithi to the south coast.

18) Perhaps future finds of Linear A documents in the Rethymno\Spili\Amari area will cover the lacuna in the administrative map of the fertile areas of LMIB Crete. See also the satellite photograph of Crete in the recently
published Aerial Atlas of Crete, which shows the mountain ranges and valleys of the island.

19) See n.2 concerning recent finds on Samothrace.

20) See 3 Thera Congresses (1969, 1978, and 1989); and Hood in Kadmos 29 (1990)p.84-86 for a summary of the latest congress and the consensus of opinion, both archaeological and geological, which dates the eruption to c.1625 B.C. within LMIA.

21) AB67-26 reads as KI-RE with Linear B syllabic values.

22) See Olivier (1988)p.255 where the inscription is published as TI Zbl. This is not accepted as a Linear A inscription by Palaima and Aravantinos (personal communication) who consider it a potter's mark or Cypro-Minoan in origin.


24) See GORILA 5 (1985)p.282 for A301 which stands within a sign group and clearly has a syllabic sound value, although no corresponding shaped sign exists in Linear B.

25) See Kanta (1983) concerning Monastiraki and the Minoan and relatively modern pithoi which can, and do, survive for centuries.

26) There is another possible mainland inscription. This consists of 2 signs on a bronze vessel from Shaft-Grave IV at Mycenae, see Grumach in Kadmos 1 (1962)p.85-86 pl.4. Although rejected by the editors of GORILA as not constituting an inscription, this mark/sign may be a syllabic sign or a potter's mark. At Mallia Quartier Mu,
one mark was found on a metal vessel, Et.Cret.XXIII.1 (1978) no.44 sign P.73.

27) See the papers in The Minoan Thalassocracy (1984) especially p.17-29, where Wiener presents conical cups, architecture, script and frescoes as evidence for Minoans abroad or Minoan culture in the Cyclades. See Wiener (1991) for a detailed recent discussion of Minoans abroad, and see Melas 1988.

28) Subsequent to Palaima (1982), the Linear A material from Kea, Milos, Thera and Kythera was published in GORILA 4 and 5, and a further inscription from Tiryns is now also known.

29) These 74 non-administrative Linear A inscriptions and the Minoan Libation Formula are discussed in Appendix 2. They constitute a small fraction of the Linear A corpus (c.5%) but are all from a single non-administrative context and thus form a body of data.

30) An updated statistical analysis shows that 95% of the Linear A inscriptions are administrative, and 88% of these are LMIB in date. The LMIB administrative documents make up 92.5% of the whole Linear A corpus. This is the body of material, from a known common context and from one period, that offers the best comparison to be made with the Linear B archive of Knossos. The following three categories of Linear A material (Middle Minoan, LMIB administrative and Religious) need further study, and will doubtless be added to as the corpus of Linear A inscriptions increases every year (see Appendix 1 GORILA 6 1985-1992 for 32 new
inscriptions since 1985)-

i) LMIB Administrative Records (92.5% of the corpus)

ii) Middle Minoan Palatial Records (2.5% of the corpus)

iii) Non-Administrative Inscriptions (5% of the corpus)
CHAPTER 3

1) See Pope and Raison in Kadmos 14 (1975)p.102-106 for a discussion of this inscribed vessel, and for mention of KN Zb35 an inscribed pithos still visible at a stage later than when it was made. There are also LMIA pithoid jars from the LMIB destruction of Zakros.

2) There may also be 2 other inscriptions on stone from Knossos, KN Ze41 from the Isopata Tomb and KN Ze42 on the Knossos Stone Block. See Boskamp (1990) who recognised the inscriptions on them previously described as complex mason's marks, as Linear A inscriptions. I do not however accept his readings. See Appendix 1.


4) See JHS/AR 1982-3 figs. 33-35.

5) "Warrior-grave" was first used by Hood (1951) to describe these burials. I do not confine this term to burials with swords and dirks, contra MacDonald (1984), but include those with spears, which are an instrument of war as shown by an entry in the Linear B archive, KN R 1815, and by numerous representations in art.


7) For the Dendra armour see SIMA IV (1977) where Astrom and Verdelis discuss this panoply.

8) See Sandars' typology and discussion of swords (1963), and her catalogue is brought more up to date by MacDonald (1984).
9) See Matthaus (1983) for a detailed discussion and definition of what constitutes a warrior-grave.


11) A useful hypothesis was recently offered by Doxey (1987), where Mycenaean influence and control is attested according to her arguments by pottery, the Linear B economy, burial customs and their mainland correlations. Although this article is constructive in placing LMII-IIIA1 Knossos within the wider context of the Aegean world, however the LMII and IIIA1 periods should be considered separately. For Driessen has shown that the RCT is likely to pre-date the main Linear B LMIIIA2 Knossos archive. See below where I argue that the Linear B tablets of the RCT are LMIIIA1 in date.

12) Evidence for metalworking from the Mansion, Popham (1984)p.220 and weapons from warrior-graves indicate a weapons workshop at Knossos, whose trademark was an intricate spiral design, see Caffing (1974) and MacDonald (1984).

13) See Hood and De Jong (1951) and Hood (1956) for these LMII warrior-graves complete with swords, daggers, spears, javelins, "staples" from a figure of eight shield and a helmet. Although positive evidence that Mycenaean warriors were present in Crete before the LMIB destructions is lacking, there do exist jars painted with boars-tusk helmets, though to be a Mycenaean design, from the LMIB level of the SME excavations next to the Unexplored mansion
weapons workshop, and from a Katsamba burial which seems to date right from the beginning of LMII. The evidence for a Mycenaean military presence at Knossos prior to the LMIB destructions is not yet conclusive, but it is suggestive, and it is growing.

14) Driessen (1990)p.125 stated "The present reconstruction of Cretan settlement history accepts a break in the occupation of most sites after the widespread LMIB destructions, and the writer believes that a Mycenaean ruling class established itself at Knossos after these destructions—which it may have caused itself—from where gradually larger parts of the island became occupied." The reasons for not wholly accepting this view will be subsequently discussed in this chapter.

15) See McArthur (1985) and Bennet (1985 and Ph.D 1986 unpublished) for a study of Cretan toponyms. Contrary to some stated opinions, there is no indication of any Linear B toponym east of Knossos. The identification of di-ka-ta (a religious location where offerings were made and with no geographical location that can be ascertained through textual evidence) by Crowther in BSA 83 (1988)p.37-44 as Palaikastro is erroneous.

16) A comparable position, on a purely strategic level, of a centralized kingdom being taken over wholesale by the capture of its capital is the Spanish conquest of Mexico.

17) See BCH 115 (1991) for 2 painted stirrup jars with Linear B inscriptions from Mallia, dated to LMIIIB, and p.735-41 for the latest report on Quartier Nu, especially
figs. 28-29 for the Mycenaean floor pebble mosaic.

18) A well-preserved Linear A tablet (unpublished) was found in a villa at Petras in the Siteia area, attesting yet another administrative centre in Easy Crete in LMIB.

19) See n. 17 for Mallia; Kanta (1980)p.122 for Mycenaean pottery and finds from Lasithi; and Kato Syme on the south slopes of Dikte has produced many votive offerings including 2 Ci type swords which are otherwise found in warrior-graves from Knossos and the Argolid.


23) N. Platon (1971) and P. Warren (personal communication) consider earthquakes to have destroyed the LMIB sites. This is an unsatisfactory explanation as there are no signs of earthquake damage at Knossos in LMIB such as is seen in the LMIA destructions and the movement of blocks at Amnissos and Zominthos—where there are no traces of fire. And how on this view is the almost total lack of LMIB damage at Knossos to be explained? Knossos alone escaped the LMIB destructions which cover all of Crete. Hood maintains that they are man-made (1990 p.84). This appears the most likely
hypothesis, although the seemingly unlooted state of Zakros is admittedly difficult to explain within this framework.

24) See Warren (JHS/AR 1982-3 and 1984) for a discussion of the LMIIIA1 evidence and circular platforms. Threshing floors are still places of dance in Cretan villages.

25) No other mason’s marks can be dated later than LMI by Hood (1984); and see Warren in JHS/AR 1980-81 p.73 fig.1 for a plan of the Palace, Royal Road, Mansion and Museum Extension excavations.


32) It is of note that LMIIIA2/B1 Mycenaean finds including Linear B are now known from both Mallia and Khania. The continuity in cult is shown by Mycenaean swords of the Ci type dedicated post LMI at Kato Syme, and Mycenaean finds from other religious sites such as Iouktas and the Psychro
33) In view of the lack of any LMII documents from Knossos, it is surely more justified to consider a Minoan ruler to have continued to rule, as in LMIB, rather than to hypothesize a LMII Mycenaean administration when the earliest Mycenaean text is LMIIB1 in date. The LMII epigraphic lacuna still exists, but the only possible LMII inscription from Knossos, KN Zel6 from the Kephala tomb, is written in Linear A and is not Greek.
CHAPTER 4

1) See Duhoux (1988) for a general discussion of the Linear B script and especially p. 26 where he discusses sign B90 and claims that dwo is formed by 2 times the sign wo i.e. duo wo = dwo. He sees this as being created by Greek speakers. But this sign is not unknown in Linear A (A118), contra Duhoux, and if his hypothesis is correct regarding the formation of the word then it must have been created by such a process in the Minoan language, not in Greek.

2) Weingarten's hypothesis (1990 p. 110) is too simplistic and does not account for administrative records from Petras, Palaikastro, Myrtos-Pyrgos, Papoura, Tylissos or Archanes.

3) The ligatured signs have been excluded from this study, as have the units of weight and measure, but see Hooker (1979 p. 21-32) and Bennett (1950) for a more detailed discussion of these aspects. There are also many ideograms in common between the two scripts e.g. compare A418 with B227 when both are clearly bull's head rhyta.

4) A deficiency of Driessen's extremely useful work is that he considers the RCT only as the earliest stage of Linear B, and not also as an LMIIA1 development of Linear A.

5) I discussed these untransliterated syllabograms at the Mycenaean Seminar of the Institute of Classical Studies (11/3/92) and the values 34/35=hai, 47=dwi, 49=po2 and 63=nwi were suggested.

6) On this subject see Pope and Raison (1978 p. 38) whose work serves as a good survey of work on the Linear A script
in the 20 years following the decipherment of Linear B.

7) Palaima's survey is of much value for discussing previous literature on the subject and for presenting much epigraphic evidence.

8) I am greatly indebted to the assistance and encouragement of James Hooker on this and other matters.

9) Stage 1, the Middle Minoan script includes the so-called Cretan Hieroglyphic script which I believe to have been executed in the pictographic tradition of the Linear A script. It is hoped that future research will allow the last stage of LHIIIB to be sub-divided into categories i.e.

i) Linear B from the LM/HIIIA2/B1 archives of Thebes and Khania c.1300 B.C. and ii) Linear B from the LHIIIB2 archives of Pylos, Mycenae and Tiryns c.1200-1190 B.C.

For a better understanding of the Linear B tablets from Khania it is necessary to await the publication of the excavator (Kadmos 1992). But I thank the excavator, Dr. E. Hallager and Dr. J. T. Killen for discussions on the important matter which these tablets have raised, i.e. the similarity between the Khania scribe and scribe 115 at Knossos who had responsibility for West Crete.

10) The one possible LMII inscription from Knossos and the language in which it is written is considered in Appendix IV. It is of course possible that Linear A and the Minoan language continued to be used in the Mycenaean era by Minoans on Crete, perhaps for religious dedications if not for administrative purposes.

11) It is of course possible that some AB signs may have
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 Greek alphabet via the Etruscans. Likewise the letters C, G, H, J, Y and W of our modern alphabet have not always had these values. I thank Dr. P. Considine (personal communication) for drawing this to my attention.

12) In contrast it is interesting that the o vowel is not utilized by the Etruscan language, nor by Semitic languages which use only 3 vowels (a, i and u).

13) On this particular sound see Melena (1987) and especially p. 232 where in reply to Melena’s paper, Bartonek states that "whereas in the EteoCretan inscriptions from Praisos and Dreros there are practically no examples of the letters THETA and KHI, we find in these inscriptions a considerable number of instances of the letter PHI". It is noteworthy that the EteoCretan inscriptions from Praisos preserve words including PHRAISOS, surely the Minoan pronunciation of this pre-Hellenic toponym.

14) See Gordon (1966) where the identification of KU-RO, kull, total (p. 27) is used as the starting point to identify Minoan words as N.W. Semitic. But one word does not a decipherment make.


16) I do not accept the identification of the Minoan language by Gordon as N.W. Semitic, see note 14 above, nor
do I accept the decipherment of the Minoan language by Faure as Greek, most recently expressed in Cretan Studies 2 (1990)p.119-134.

17) For the creation of the Greek alphabet and the possible role of Crete in this transmission, see Duhoux (1981).

18) For the important publication and study of the Eteocretan texts see Duhoux (1982).

19) See Bile (Et.Cret.XXVII 1988) for a study of the Cretan alphabet and dialect in classical times.

20) The overlap between the repertoire of signs used for Linear B, Linear A, Cretan Hieroglyphics and Mason's Marks in the Aegean is clear. The forthcoming corpus of Cretan Hieroglyphic inscriptions (CHIC) and corpus of Mason's Marks (Hood), may go some way to giving a better view of which signs were used for which purposes.

21) See Bonafante (1955) for a discussion of the Samothracian non-Greek language.

22) See also Packard (1974 p.107) for sign L69=AB34/35 for a discussion of the possible sound value MINA for this "crescent-moon" shaped sign, which raises comparison with IE *men- as the root of moon and month; and the possibility of bi-consonantal signs in the syllabary. There is a possible alternation between 39-34-04 PI-34-TE on HT 116a.4 and ]39-73-06-04 ]PI-MI-NA-TE on AP Za2.2.

23) See Hooker forthcoming, "Names in Linear A and Linear B". James Hooker was kind enough to give me an advance copy of this article. I am also grateful to Dr. David Hawkins of SOAS for discussions on the Anatolian languages. Is it co-
incidence that in both Hieroglyphic Hittite and the scripts of Crete that the ideogram for bull\oxen also has the syllabic sound value MU?

24) Foreign names are often adapted to conform to other languages, e.g. the Celtic GARETH is Hellenized by Greek speakers to GARETHOS, GARETHOULIS AND GARETHAKOS.

25) See Baumbach's papers on this subject (1983, 1987 and in MYKENAIKA forthcoming). I am grateful to Dr. Baumbach for discussions we had on Minoan personal names, at the 9th Mycenaean colloquium in Athens, October 1990.

26) The subject of the coming of the Greeks, has been further discussed by Drews (1988), and a critical discussion of the work of Drews and others was published by Hooker (1989).

27) I am indebted to Professor J.L. Melena of the University of the Basque Country for discussions on this and other matters.

28) See JHS/AR 1990-91 p.78 for the first possible evidence of Mesolithic material on Crete, from the Samaria Gorge, contemporary to the Lower Mesolithic of the Francthi cave (11000-7000 B.C.). See also J. Evans (1968 and 1971) for discussions on the Neolithic material from Knossos.

Recently (1989) more Neolithic buildings were brought to light as a result of joint Greek/British rescue excavations in the East Bastion area of the Palace of Knossos (to be published by A. Karetsou).

29) It may be a simplistic question, but nonetheless one worth asking, whether the contacts between Minoan Crete and
Mycenaean Greece would have been facilitated by the two languages being perhaps at least partially intelligible to each other. But of course, some level of relationship between two languages, does not necessarily imply mutual intelligibility.

30) The Linear A corpus in increasing every year. See Appendix 1 for the 32 inscriptions discovered since 1985. Continuing excavations at Boukatas, Kato Syme, Khania, Palaikastro, (Akrotiri on Thera ?) seem destined to continue producing Linear A inscriptions. I am grateful to all the excavators who have kindly allowed me to study their epigraphic material on Crete, often in advance of publication, with special gratitude to Dr.Kanta, Dr.Karetsou and to Dr.Hallager. A much larger corpus of material is necessary before a decipherment will be possible. However the direction of future research is now much clearer.
APPENDICES

1) See McArthur (1985) and KT5 (1989) for the tablets relating to se-to-i-ja.

2) See Bennet's review of Aegaeum 5 (1989) in AJA 96 (1992) where he refutes Weingarten's suggestion that Archanes is a better candidate than Mallia as a second-order centre.

3) See Hallager (1977); and I thank John Bennet for sending a copy of his Ph.D thesis (unpublished) to the Villa Ariadne at Knossos.

4) See Warren and Hankey (1989), according to whose dating the gap between LMIB and LMIIIa1 is c.35 years, and the gap between LMIIIa2 (early) and LMIIIB (early) is 30-40 years.

5) For "owners/collectors" see Baumbach (1983 and 1987); and the 4 relevant papers devoted to this subject given at the IXth Mycenaean Colloquium (Athens 1990).

6) For different discussion of the "Great Tablet" see Driessen (1985) and Hooker (1988).

7) The exact meaning of these terms can not be established (a feminine noun -i-ja derived from titles), but the order of rank of wa-na-ka, ra-wa-ke-ta and qa-si-re-u in the Bronze Age can be established from the Linear B documents.

8) See Bennet (1990)p.199 where he regards Linear A SE-TO-I-JA (PR Zal) as a doubtful place-name.


10) See E.Sapouna-Sakellaraki (1990)p.77-83, especially
figures 18-21.
1 Kythera
2 H. Stephanos
3 Thera
4 Milos
5 Keos
6 Tiryns
7 Samothrace
MAP 2
MINOAN CRETE-SITES MENTIONED IN THE TEXT
MAP 3
THE KNOSSOS AREA

1 Knossos
2 Prassas
3 Amnissos
4 Louktas
5 Archanes
6 Vathypetro
7 Tylissos
8 Sklavokampos
9 Zominthos
10 Mallia
FIGURE 1
MIDDLE MINOAN LINEAR A AND CRETAN HIEROGLYPHICS

i) PH 7a

ii) AB 80

iii) KN 22a

iv) ARKH. FO ZC1

PHAISTOS P. 21
FIGURE 2
EXAMPLES OF LINEAR A TABLETS FROM THE LMIB ARCHIVES
OF ARCHANES, KHANIA, ZAKROS AND HAGHIA TRIADA
FIGURE 3
LINEAR A TABLETS FROM THE LMIB VILLA OF TYLESSOS

TY2

TY3
FIGURE 4
THE LINEAR A INSCRIPTION FROM THE KEPHALA
THOLOS TOMB AT KNOSSOS KN Ze16 LMII(?)

---

THA
08-39

KN Ze 16

---

ZA7 HI1 HT14 ARKH1 KH39 10 Za7

HT Wa1148
FIGURE 5
ETEOCRETAN SIGNS AND COMPARABLE MINOAN AND MYCENAEAN SIGNS AND MASON’S MARKS

ARC (?) B

Linear A

41–20–28

Linear B

Mason’s Marks
## TABLE 1  DIACRONIC TIME CHART

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(1) LMIB DESTRUCTIONS AT ALL SITES EXCEPT KNOSOS
    LMII DESTRUCTIONS AT KNOSOS (SEM AND MUM) AND MALLIA MAISON E

(2) LINEAR B -LMIIIA1 ROOM OF THE CHARIOT TABLETS
    LMIIIA2 KNOSOS PALACE ARCHIVE
    LMIIIA2/B1 KHANIA TABLETS AND THEBES
    LMIIIB2 CRETE- INSCRIBED STIRRUP JARS
    LHIIIB2 MAINLAND- ISJs AND TABLETS
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TABLE 3 - MIDDLE MINOAN COMPARABLE CRETAN HIEROGLYPHIC AND LINEAR A SIGNS

GORILA LINEAR A SYLLABIC SIGNS WHICH APPEAR IN MIDDLE MINOAN PALATIAL RECORDS ON CLAY AND COMPARABLE CRETAN HIEROGLYPHIC SIGNS (OLIVIER 1989)

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THERE ARE 38 SYLLABIC SIGNS USED ON THE PALATIAL LINEAR A DOCUMENTS OF THE MIDDLE MINOAN PERIOD INSCRIBED ON CLAY. OF THESE 15 CAN BE COMPARED TO THE TENTATIVE LIST OF CRETAN HIEROGLYPHIC SYLLABIC SIGNS INSCRIBED ON CLAY.
**TABLE 4 - A COMPARISON OF SIGNS FROM THE ARCHALOCHORI AXE MALLIOTE BLOCK AND PHAISTOS DISK WITH CRETAN HIEROGLYPHICS**

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TABLE 5 - LINEAR A SIGNS FROM TYLISSOS

On the two Tylissos LMIB Linear A Tablets (GORILA 1 p.324-329) there are 77 signs excluding numerals. There are 34 different signs used on these two tablets. These signs are given below.

AB signs 01 03 08 17 26 39 41 50 51 53 54 67 69 70 73 77 79
81 100/102 171

A signs A302 A321

A signs only found at Tylissos A309a,b,c A361

A adjunct signs 610(302+10) 611(302+21f) 612(302+24)
618(302+67) 619(302+67+10) 620(302+67+13)
621(302+69) 622(302+73)

Different signs used=
26 AB signs (21 syllabograms+1 ideogram and 8x0.5 adjunct components)
6 Canonical Linear A signs (2 AB signs and 8x0.5 adjunct components)
2 Tylissos Linear A signs

But Statistical frequency of signs=
AB signs = 69.5%
Tylissos Linear A = 17%
Canonical Linear A = 13.5%
### TABLE 6 - WARRIOR GRAVES ON CRETE

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<td>II</td>
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<tr>
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<td>III</td>
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<td>V</td>
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<td>pa-re</td>
<td>phales</td>
<td></td>
</tr>
<tr>
<td>a-ko-to</td>
<td>aktor</td>
<td></td>
</tr>
<tr>
<td>we-wa-do-ro</td>
<td>-doros</td>
<td></td>
</tr>
<tr>
<td>pa-wa-wo</td>
<td>di-so</td>
<td></td>
</tr>
<tr>
<td>a-ka-to</td>
<td>agathos</td>
<td></td>
</tr>
<tr>
<td>a-64-jo</td>
<td>aswios</td>
<td></td>
</tr>
<tr>
<td>si-jo</td>
<td>-sios</td>
<td></td>
</tr>
<tr>
<td>jo</td>
<td>-ios (4 times)</td>
<td></td>
</tr>
<tr>
<td>wa</td>
<td>-ta</td>
<td></td>
</tr>
<tr>
<td>o</td>
<td>-tas</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 8 - A STATISTICAL ANALYSIS OF THE SYLLABIC SIGNS OF LINEAR A AND LINEAR B

#### i) AB SYLLABIC SIGNS

<table>
<thead>
<tr>
<th>AB SYLLABIC SIGNS</th>
<th>AB</th>
<th>A OR B</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 06 NA 07 DI 08 A</td>
<td>-93</td>
<td>65 28 A</td>
</tr>
<tr>
<td>09 SE 10 U 11 PO 13 ME 16 QA 17 ZA 20 ZO 21 QI</td>
<td>-75</td>
<td>65 10 A</td>
</tr>
<tr>
<td>22 PI2 23 MU 24 NE 26 RU 27 RE 28 I 29 PU2 30 NI</td>
<td>-10</td>
<td>65 10 A</td>
</tr>
<tr>
<td>31 SA 34 ? 37 TI 38 E 39 PI 40 WI 41 SI 44 KE</td>
<td>-13</td>
<td>65 10 A</td>
</tr>
<tr>
<td>45 DE 46 JE 47 ? 49 ? 50 PU 51 DU 53 RI 54 WA</td>
<td>-25</td>
<td>65 10 A</td>
</tr>
<tr>
<td>55 NU 56 PA2 57 JA 58 SU 59 TA 60 RA 61 O 65 JU</td>
<td>-60</td>
<td>65 10 A</td>
</tr>
<tr>
<td>66 TA2 67 KI 69 TU 70 KO 73 MI 74 ZE 76 RA2 77 KA</td>
<td>-90(=118) DWO</td>
<td>65 28 A</td>
</tr>
<tr>
<td>78 QE 79 WO2 80 MA 81 KU 82 TWA 85 AU 86 DWA 87 TWE</td>
<td>-185</td>
<td>65 28 A</td>
</tr>
<tr>
<td>TOTAL SYLLABIC AB SIGNS = 65</td>
<td>65 28 A</td>
<td></td>
</tr>
</tbody>
</table>

#### ii) LINEAR A SYLLABIC SIGNS MMII-LMIB(LMII?)

<table>
<thead>
<tr>
<th>LINEAR A SYLLABIC SIGNS</th>
<th>AB</th>
<th>A OR B</th>
</tr>
</thead>
<tbody>
<tr>
<td>301 305-6 310 312 314-5 318-325 329 331 333 340 342-3349 350 352 361-4</td>
<td>-122</td>
<td>65 28 A</td>
</tr>
<tr>
<td>TOTAL SYLLABIC SIGNS = 65 AB + 28 A = 83</td>
<td>65 28 A</td>
<td></td>
</tr>
</tbody>
</table>

#### iii) LINEAR A SYLLABIC SIGNS FROM LMIB, EXCLUDING REGIONAL VARIATIONS 310 305-6 310 312 314-5 318 321-2

<table>
<thead>
<tr>
<th>LINEAR A SYLLABIC SIGNS</th>
<th>AB</th>
<th>A OR B</th>
</tr>
</thead>
<tbody>
<tr>
<td>310 305-6 310 312 314-5 318 321-2</td>
<td>-90</td>
<td>65 28 A</td>
</tr>
<tr>
<td>TOTAL SYLLABIC SIGNS = 65 AB + 10 A = 75</td>
<td>65 28 A</td>
<td></td>
</tr>
</tbody>
</table>

#### iv) LINEAR B SYLLABIC SIGNS OF THE RCT LMIIIA1

<table>
<thead>
<tr>
<th>LINEAR B SYLLABIC SIGNS</th>
<th>AB</th>
<th>A OR B</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONLY 57 OF THE 65 AB SIGNS (THOSE ABOVE WITHOUT 34 ? 49 ? 56 PA2 66 TA2 79 WO2 82 TWA 85 AU 90 DWO PLUS 16 B SIGNS 12 SO 14 DO 15 MO 19 NWO 25 A2 32 QO 36 JO 42 WO 43 A3 48 NWA 52 NO 62 PTE 64 SWI 68 RO2 71 DWE 72 PE 75 WE</td>
<td>-122</td>
<td>65 28 A</td>
</tr>
<tr>
<td>TOTAL SYLLABIC SIGNS = 57 AB + 16 B = 73</td>
<td>65 28 A</td>
<td></td>
</tr>
</tbody>
</table>

#### v) LINEAR B SYLLABIC SIGNS FROM THE KNOSSOS ARCHIVE LMIIIA2

<table>
<thead>
<tr>
<th>LINEAR B SYLLABIC SIGNS</th>
<th>AB</th>
<th>A OR B</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 AB SIGNS PLUS 12 SO 14 DO 15 MO 18 TO2 19 NWO 25 A2 32 QO 36 JO 42 WO 43 A3 48 NWA 52 NO 62 PTE 64 SWI 68 RO2 71 DWE 72 PE 75 WE 83 NWE</td>
<td>-179</td>
<td>65 28 A</td>
</tr>
<tr>
<td>TOTAL SYLLABIC SIGNS = 65 AB + 19 B = 84</td>
<td>65 28 A</td>
<td></td>
</tr>
</tbody>
</table>

#### vi) LINEAR B SYLLABIC SIGNS FROM THE MAINLAND LHIIIB. AS FOR v) MINUS 47 ? AND 49 ?, BUT PLUS 33 RA3 [35(=34)]

<table>
<thead>
<tr>
<th>LINEAR B SYLLABIC SIGNS</th>
<th>AB</th>
<th>A OR B</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 ? 91 TWO</td>
<td>-92</td>
<td>65 28 A</td>
</tr>
<tr>
<td>TOTAL SYLLABIC SIGNS = 63 AB + 22 B = 85</td>
<td>65 28 A</td>
<td></td>
</tr>
</tbody>
</table>

### CONCLUSIONS

<table>
<thead>
<tr>
<th>CONCLUSIONS</th>
<th>MMII-LMIB LINEAR A</th>
<th>LMIB LINEAR A</th>
<th>LMII</th>
<th>LMIIIA1 LINEAR B RCT</th>
<th>LMIIIA2 LINEAR B KN</th>
<th>LHIIIB LINEAR B</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL AB A OR B</td>
<td>-93 65 28 A</td>
<td>-75 65 10 A</td>
<td>-</td>
<td>- (73) 81 57 65 16 B</td>
<td>-84 65 19 B</td>
<td>-85 63 22 B</td>
</tr>
<tr>
<td>LINEAR B</td>
<td>LINEAR A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>---------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a e i o u</td>
<td>A E I O U</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>da de di do du</td>
<td>DA DE DI DU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ja je ju</td>
<td>JA JE JU</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>ka ke ki ko ku</td>
<td>KA KE KI KO KU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ma me mi mo mu</td>
<td>MA ME MI MU</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>na ne ni no nu</td>
<td>NA NE NI NU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pa pe pi po pu</td>
<td>PA PI PO PU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>qa qe qi qo</td>
<td>QA QE QI QO</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ra re ri ro ru</td>
<td>RA RE RI RO RU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sa se si so su</td>
<td>SA SE SI SU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ta te ti to tu</td>
<td>TA TE TI TO TU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>wa we wi wo</td>
<td>WA WI WI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>za ze - zo -</td>
<td>ZA ZE - ZO -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a2</td>
<td>a3</td>
</tr>
<tr>
<td>pa2</td>
<td>pe2</td>
</tr>
<tr>
<td>ra2</td>
<td>ra3</td>
</tr>
<tr>
<td>ta2</td>
<td>to2</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>dwa</td>
<td>dwe</td>
</tr>
<tr>
<td>nwa</td>
<td>nwe</td>
</tr>
<tr>
<td>s/twa</td>
<td>s/twi</td>
</tr>
</tbody>
</table>

**UNTRANSLITERATED SYLLABOGRAMS**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>34 (=35)</td>
<td>a4 hai</td>
</tr>
<tr>
<td>47</td>
<td>dwi</td>
</tr>
<tr>
<td>49</td>
<td>po2</td>
</tr>
<tr>
<td>63</td>
<td>nwi</td>
</tr>
</tbody>
</table>

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.
ABBREVIATIONS

AJA-American Journal of Archaeology.
BCH-Bulletin de Correspondance Hellénique.
BCILL-Bibliothèque des Cahiers de l'Institut de Linguistique de Louvain.
BSA-Annual of the British School at Athens.
CMS-Corpus der Minoischen und Mykenischen Siegeln.
JHS-Journal of Hellenic Studies.
Mont.Ant-Monumenti Antichi.
OJA-Oxford Journal of Archaeology.
SIMA-Studies in Mediterranean Archaeology.

GORILA-Godart et Olivier Recueil des Inscriptions en Linéaire A.
   GORILA 1-1976
   GORILA 2-1979
   GORILA 3-1976
   GORILA 4-1982
   GORILA 5-1985

ET.CRET-Etudes Crétoises.
   eds. R.Hägg and N.Marinatos.
   eds. R.Hägg and N.Marinatos.
   J.T.Killen and J.P.Olivier.


Chapouthier 1930. F. Chapouthier. Écritures Minoennes. ET.CRET.II (1930).


CORRIGENDA AND ADDENDA

COrrigenda

Chapter 1 —page 19, paragraph 2, line 7 —"rectilinear"
Chapter 2 —page 35, paragraph 1, line 5 —"whose importance", and, "times is"
—page 56, paragraph 1, line 8 —"Weingarten (1990 and 1992)"
Chapter 3 —page 65, paragraph 2, line 14 —"at Knossos"
—page 78, paragraph 3, line 3 —"occurred"
—page 79, paragraph 2, line 4 —"MonoPalatial"
—page 83, paragraph 1, line 11 —"Linear A"
—page 86, paragraph 1, line 10 —"prosperity"
—page 95, paragraph 1, line 18 —"were"
—page 96, paragraph 2, line 17 —"differences"

Notes —page 154 note 21 —"AB 67-26 reads as KI-RU with Linear B syllabic sound values".
—page 155 note 30 —"(see Appendix 1 GORILA 6 1985—1992 for 36 new inscriptions ..."
—page 158 note 13, line 7 —"thought"
—page 161 note 31 —"Minos 25 (1992)"
—page 168 note 30 —"See Appendix 1 for the 36 inscriptions discovered since 1985."

ADDENDA

Notes to Chapter 1
—page 145 n.1 —For an interesting discussion of interest in the site of Knossos before Evans, in both antiquity and in more modern times, see Evans (1909) p.106-110.
—page 146 n.10 —There are now 36 post—GORILA 5 Linear A inscriptions. See Revised Appendix 1—GORILA 6 (1985—1992).
—page 148 n.26 —This repeated combination of signs i.e. "double-axe" and "sepia" has now been found on a sealing from Samothrace, SA Wc1, see Matsas 1991.

Notes to Chapter 2
—page 151 n.4 —For a further discussion of the purpose of the Minoan roundel, see Perna (1991).
—page 153 n.15 —See Olivier (1991) for a discussion of large numbers and what this suggests about Minoan administration.
—page 153 n.16 —Another Linear A tablet from the Minoan villa of Petras (PE 2) has now been reported.
—page 155 n.28 —For a recent overall view of Minoans abroad, see Davis (1992)
—page 155 n.28 —There are now also inscriptions from Samothrace.
—page 155 n.30 —These non-administrative inscriptions constitute c.5% of the corpus but carry c.10% of all known Linear A signs.
Notes to Chapter 3
-page 157 n.2 - A discussion of these Knossos Stone inscriptions (now designated as KN Ze 44 and KN Ze 45) is to appear in Minos 26 (1993) forthcoming.

Notes to Chapter 4
-page 164 n.10 - This has now been borne out by a recently discovered (1992) figurine from the LMIIIA settlement and tombs at Poros which bears Linear A signs of the Minoan Libation Formula.
-page 166 n.18 - An interesting example of a Minoan word which survived into the Mycenaean period is the word NIKOULEON, (which also survived into the Classical period), for FIGS which was retained by the Linear B scribes as the abbreviation for FIGS i.e. NI even when they wrote su-ka. This word is actually still in use among the farmers of Crete to describe a ripe fig, in the form KOUNALI, which is the same Minoan word in use some 4000 years later, but which has clearly undergone metathesis.

Appendix I—See Revised Appendix 1 — GORILA 6 1985-1992
This Appendix offers a c.2.5% increase in material over that recorded in the GORILA 1-5 corpus. This is a small but welcome increase.

Appendix II - There are now 75 non-administrative Linear A inscriptions, 10 Za 16 was found on Iouktas in the summer of 1992, and PO Zg 1 at Poros. I thank the excavators for allowing me to study these inscriptions. The Minoan Libation Formula is the subject of a current research programme.

Bibliography


GARETH ALUN OWENS-UNIVERSITY COLLEGE LONDON 31-12-1992