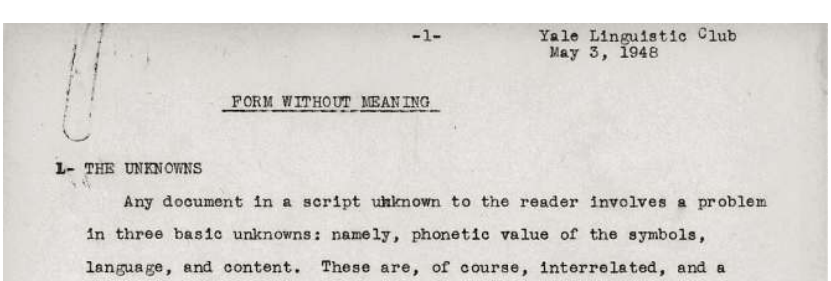
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0 Introduction

0.1 "Form without Meaning"

In May 1948, the brilliant American classicist and philologist Alice Kober – who was to make significant advances in the decipherment of Linear B, advances that would afford crucial assistance to Michael Ventris in his eventual decipherment of the script and underpin that decipherment – presented a lecture to the Yale Linguistic Club (Fig. 0.1) in which she asserted that anyone whose aim is to decipher a script without the benefit of a bilingual text[1] must be willing to inhabit a land of "form without meaning," and to inhabit it for as long as necessary: that is, one must find ways of extracting linguistic information from the signs themselves, without yet having any idea what the *words* that the signs spell might mean.[2]

This book is a foray into that land of "form without meaning," a series of sorties into the undeciphered scripts of the Aegean, especially Linear A, in a search for clues as to the nature of the languages behind these scripts. The mission behind this foray is simple but strategic: the most important key to the decipherment of any script is the identity of the language behind the script. For some scripts (such as Egyptian), the affiliation of the language


-1- Yale Linguistic Club
May 3, 1948

FORM WITHOUT MEANING

1- THE UNKNOWNS

Any document in a script unknown to the reader involves a problem in three basic unknowns: namely, phonetic value of the symbols, language, and content. These are, of course, interrelated, and a

Figure 0.1. Beginning of the script for Alice Kober's lecture to the Yale Linguistic Club.[3]

[1] See Glossary of Linguistic Terms.
[2] For a brilliant, captivating and scholarly account of Alice Kober's contribution to the decipherment of Linear B, see Fox 2013.
[3] See Figure Credits.

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was known or suspected before decipherment began; for other scripts (such as Hittite), the affiliation was discovered at the start of decipherment, through the recognition of words and phrases also present in known languages.[4] In the case of Linear B, the affiliation of the language remained unknown until decipherment was nearly complete.

With Linear A, and indeed with all the undeciphered Aegean scripts, we are in much the same position as Ventris was with Linear B: the languages behind these scripts have never been convincingly identified, despite more than a century of effort. As with Linear B before decipherment, the only currently available evidence for identifying the linguistic affiliation of these scripts lies within the scripts themselves, such that at present, we have no choice but to rely on whatever clues we can glean from the ways in which the scripts were used to build words and sentences. This book consists entirely of a search for such clues.

However, before I begin Part I – a linguistic analysis of Linear A – I would like to offer a few important observations about the process of decipherment itself, especially of the Aegean scripts. There are right ways to conduct work on decipherment, no matter what the script, and there are many wrong ways to go about this work, all of which retard progress, muddy the waters, and produce false and misleading results. So let me clearly set out a good example of a right way to work on decipherment. The methodology I am about to outline happens to be focused on the decipherment of Linear A, but it can be read as if it were focused on any of the undeciphered Aegean scripts, as it is equally applicable to work on the decipherment of any of them.

0.2 Duhoux's Methodology for Decipherment

In a well-known article on the Aegean scripts, Duhoux proposed an eleven-step methodology that ought to underpin the decipherment of Linear A.[5] His methodology is a straightforward, commonsense one, designed to help scholars of Linear A avoid the discredited approaches that have so often devalued past studies of this script. I follow Duhoux's methodology in this book both because it is well known, and because I agree with him that any convincing decipherment will need to satisfy *at least* these eleven basic requirements:

[4] Watkins 2004, 555.
[5] Duhoux 1998, 34–35.

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1. *Use correctly edited Linear A texts.*

   In this work, I use the standard edition of the Linear A texts[6] and avoid basing important arguments on texts containing signs that are difficult to identify.

2. *Correctly distinguish between syllabic and ideographic signs in Linear A.*

   In distinguishing between syllabic and logographic[7] signs, I adhere strictly to the established readings in the standard edition.

3. *Give a sound methodological justification for the phonetic readings of Linear A signs.*

   Duhoux himself points out that we cannot *know* the phonetic readings of Linear A signs until the language behind them is finally identified.[8] In the meantime, as he advises, I "read" Linear A signs using the phonetic values of their Linear B counterparts, while keeping in mind that the original Minoan values of some Linear A signs may have differed to some degree from these values. This issue is treated in more detail in Chapter 1.

4. *Reconstruct the morphological system of Minoan.*[9]

   Linear A is distinguished by a notable lack of *obvious* grammatical elements: we have, for example, almost nothing analogous to Kober's Linear B "trios,"[10] which were so important to Ventris' decipherment.[11] Perhaps as a result, there have been very few studies *by linguists* on the nature of Minoan morphology, aside from Duhoux's early linguistic analysis of the script (in which he identified a small set of likely morphemes).[12] Certainly, the Linear A corpus will need to be much larger before we can reconstruct any substantial portion of the morphological

[6] *GORILA I–V* and its online transcription in Younger 2024a–b; the latter work also contains all inscriptions published since the appearance of *GORILA V* (which have now been assembled into *RILA-S1*, a supplement to *GORILA*). *RILA-S1* – which appeared in print well after this book had already gone into production – includes a few new inscriptions that were not in Younger 2024a–b, while some of the post- *GORILA V* inscriptions in Younger 2024a–b were revised for (or more rarely, excluded from) *RILA-S1*; but a thorough inventory and examination of these additions, revisions, and exclusions shows that they do not substantially alter the outcomes of any of the analyses in this book.

[7] "Logographic" is a more precise term than "ideographic" for signs that stand for whole words, which is what Duhoux is referring to here.

[8] Duhoux 1998, 9.

[9] For the argument that Linear A encodes a single language (referred to as "Minoan" in this book), see Section 2.2.5.

[10] Patterns of three Linear B word endings suggestive of inflection, first noticed by Kober (1948, 96–99). Ventris dubbed them "triplets," and many past scholars have followed his lead, but I call them "trios" for an important reason; see Davis & Bronzo 2023, 83 n. 2.

[11] Ventris 1951–52, 135.

[12] Duhoux 1978.

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system of Minoan; yet I believe that it is already possible to progress further than we have. In Chapter 4 (Linear A Morphology), I present a new statistics-based analysis that confirms most of Duhoux's results, while also leading to the identification of an additional set of elements that have a high probability of being involved in Minoan inflectional or derivational affixation.

5. *Reconstruct the phonological system of Minoan.*

   If there have been few linguistic studies of Minoan morphology, there have been even fewer of Minoan phonology. This is surprising, as there is substantial overt evidence for the sounds of Minoan: Minoan phonemes have left their traces in Mycenaean and alphabetic Greek spellings of Minoan words and names, and (I believe) in the very structures of Linear A, Linear B, and (more indirectly) Cypriot Syllabic. Furthermore: since the 1960s, phonology has been one focus of an enormous amount of scholarly work in the field of language universals,[13] leading to scores of phonological principles which are true of the overwhelming majority of the world's languages ("statistical universals"), and thus are highly likely to be true of Minoan as well. A number of these principles have no known exceptions ("absolute universals"), and thus are almost certainly applicable to Minoan.[14] Aside from a few brief works in the 1970s,[15] there have been almost no investigations into the ways in which these universals might inform our study of the sounds of Minoan, or how they might illuminate the various (and sometime alternating) ways in which Minoan words and names were spelled in Linear B and alphabetic Greek. Chapter 3 (Linear A Phonology) contains what I believe is the first systematic attempt to reconstruct a complete, coherent set of Minoan phonemes, one that reconciles phonological universals with all the orthographic evidence.

6. *Produce a set of precisely defined orthographic rules for Linear A.*

   As almost all Linear B syllabograms represent syllables consisting of a consonant plus a vowel – *da*, *ke*, *mi*, *so*, *tu*, and so on – the Mycenaeans

[13] See Plank & Mayer 2006 for an online compendium of over 2000 language universals, with references and commentary; for an overview of the database, see Plank & Filimonova 2000.

[14] The application of language universals to ancient languages is an expression of the principle of *uniformitarianism* that underpins historical linguistics: because the earliest written records demonstrate that ancient languages had the same range of complexity as modern languages, and consisted of the same variety of structural types, we assume that the rules now governing language structure were the same in ancient times, and will be the same in the distant future (Croft 2003, 49–50).

[15] For example: Stephens & Justeson 1978.

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had to adopt special strategies for spelling the consonant-clusters that are so common in Greek. Linear A syllabograms also represent syllables consisting of a consonant plus a vowel; yet toponyms of clear Minoan origin such as **Kn**ossos, A**mn**isos, Phai**st**os and **Pr**aisos leave little doubt that consonant clusters occurred in Minoan as well. Thus discovering the ways in which such clusters were expressed in Linear A will form an important part of any eventual decipherment of the script. In the orthography section of Chapter 5 (Linear A Syntax and Orthography), I discuss one important aspect of this problem: the spelling of *word-internal* clusters in Linear A. The conclusions reached in this section are interesting, in that they suggest that one principle of Linear A orthography may have included some spelling rules that reappear only in Linear B, but others that reappear only in Cypriot Syllabic.

7. *Reconstruct the syntactic patterns of Minoan.*

   A complete reconstruction of the syntactic patterns of Minoan will no doubt require a larger Linear A corpus than we currently have; yet as with Minoan morphology and phonology, I believe that some features of Minoan syntax can be investigated now. In particular, it would be invaluable if we could determine the basic order of the *subject* (S), *verb* (V), and *object* (O) in Minoan: research in the field of language universals over several decades has demonstrated that certain deductions can be made about a language simply by knowing the order in which these elements usually occur.[16] Thus knowing the predominant order of these elements in Minoan would help determine which language families it could belong to (and which families can effectively be eliminated from consideration). The syntax section of Chapter 5 (Linear A Syntax and Orthography) accordingly contains a comparative study of a set of Linear A inscriptions, including the various varieties of the "offering formula"[17] inscribed on a large number of Minoan ritual vessels, with the aim of formulating a supportable hypothesis as to the predominant order of S, V, and O in Minoan.

[16] Chapter 5 contains examples, with references.

[17] In the past, this formula has conventionally been called the "libation formula" on the presumption that the Minoan ritual vessels on which the formula is most often found (conventionally called "libation tables") were receptacles for libations; but in fact, we have no way of knowing what kinds of offerings these vessels held. Thus I refer to the formula as the "offering formula," and to the vessels as "offering tables."

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8. *Ensure that the results for Minoan morphology and phonology, as well as any interpretations of Minoan words and sentences, are compatible with words and morphemes suspected of being pre-Hellenic loans into Greek.*

   Throughout Part I (Linguistic Analysis of Linear A), Greek words of pre-Greek origin – especially those closely associated with Crete – are extensively cited as potential sources of evidence for Minoan morphology and (especially) phonology.

9. *Constantly respect the principle of* ***economy*** *by ensuring that*

   - *Phonetic and orthographic rules are* ***regular****;*
   - *Interpretations of Minoan words and sentences rely upon a minimum number of lexical and morphological borrowings into Minoan;*
   - *Interpretations of Minoan words and sentences are compatible with their (direct and indirect) archaeological and historical contexts;*
   - *… and so on.*

   The aim of Part I is to produce (as far as possible) a *holistic* view of the Minoan language, one which is consistent with a large, interconnected network of evidence. Economy, simplicity, and regularity are the focus of all the hypotheses in those chapters.

   The remaining two steps in Duhoux's methodology are reserved for the eventual decipherer of Linear A:

10. *Explain the major part of the Linear A lexicon.*
11. *Completely interpret the largest possible number of Linear A documents, especially those which are syntactically most complex.*

Let me say at the outset that I do not decipher Linear A in this book; nor do I identify the specific language behind the script. Instead, the aim of Part I is to lay a significant amount of groundwork for the application of Steps 10 and 11 sometime in the future – no doubt after the corpus of Linear A inscriptions has grown considerably larger than it is today. In Part I, however, I do go some way toward indicating which language families the Minoan language most likely does *not* belong to.

Notice that Steps 8 and 9 contain warnings to ensure that interpretations of Minoan words and sentences are grounded in the linguistic and archaeological contexts of the inscriptions. Duhoux is here referring (indirectly) to one of the main problems with past analyses of this script: the choice of discredited methods for recovering *meaning* from Linear A. Most attempts to recover meaning from undeciphered scripts (such as Linear B in the period before Ventris) or poorly known languages (such as Etruscan) have used one of two opposing methods: the *etymological* method, and the *combinatorial* (or *contextual*) method.

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0.3 The Etymological Method of Recovering Meaning

In the etymological method, (1) the inscriptions are compared against known languages; (2) similarities are noted between the inscriptions and one of these languages; (3) based on those similarities, that language is tentatively identified as the one behind the script; and (4) "readings" of the inscriptions are assembled by finding words in the target language that resemble words in the inscriptions. Typically, in a classic example of circular reasoning, these "readings" are then put forward as evidence that the language was correctly identified in Step 3.

The chief problem with this method as applied to the Aegean scripts lies in the way in which Step 4 is performed. As Linear A inscriptions resemble no known language as they stand, those using the etymological method assume that Linear A orthography *omits* certain phonemes, in the same way in which Linear B orthography does;[18] thus there are several ways to "restore" each syllable, making it possible to "fit" Linear A to a wide range of languages.[19] The fallacy of this method is best illustrated by the results of Georgiev,[20] who applied it to Linear B in the early 1950s: even though he correctly identified the underlying language as Greek in step (3), his readings were still nonsensical.[21]

For this reason, the etymological method has long been identified with the efforts of amateurs,[22] who have used it over the past century to identify both Linear B and Linear A with a large array of languages. As Ventris and Chadwick noted more than fifty years ago, "The etymological method as a means of interpretation *in the absence of contextual confirmation* is rightly out of favor, and has recently been strongly condemned …"[23] The key phrase is italicized: it is worth remembering that Ventris himself was

[18] For example: Linear B omits continuants [l, m, n, r, s] at the ends of syllables; thus (for example) the syllabogram < da > can stand for [da], [dal], [dam], [dan], [dar], or [das]. (See n. 26 for an explanation of the difference between the square brackets and the angle-brackets.)

[19] See Jasanoff & Nussbaum 1996, esp. 182, for a linguistically informed criticism of the practice of conjuring etymologies based on phonetic similarity rather than actual phonology.

[20] Georgiev 1953.

[21] For example: a phrase from Knossos tablet Fp7 meaning "in the month of Karaerios" is translated by Georgiev to mean "to the great Grandmother-Eagle" (Chadwick 1958, 31–32).

[22] For example: Campbell-Dunn (1999) identifies the language behind Linear A as a member of the (hypothetical) Niger-Congo family. Szałek (2005) identifies the language as a relative of both Etruscan and Sumerian, based on superficial resemblances that emerge after heavily correcting (!) the phonetic values of Linear B syllabograms. Zebisch (1987) assumes that all Linear A signs are ideograms, deducing the meaning of each sign from its appearance as if the script were a rebus.

[23] *Docs*², 71.

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initially attracted to the etymological method, assuming that Linear B encoded Etruscan, but this approach got him nowhere for more than a decade.[24] He began to make progress only once he adopted the *combinatorial* (*i.e.*, context-based) method that Kober had so ardently practiced: he (1) *first* recovered the meaning of a number of words from their contexts, (2) *then* realized that Linear B was Greek, and (3) *last of all* worked out what the spelling rules must be.[25] Those using the etymological method address these steps in precisely the opposite order, (3) first formulating spelling rules that (2) "reveal" a particular language, leading to (1) interpretations of a few inscriptions (but never a substantial part of the corpus), often without regard to context of any kind.

0.4 The Combinatorial Method of Recovering Meaning

It is possible to use Linear A material to illustrate the combinatorial method. For example, whenever the Linear A word < ku-ro >[26] appears in a list, the number next to it is equal to the sum of all the numbers above it; thus we can deduce that < ku-ro > must mean "total" or something similar. Notice that we can deduce this meaning without *needing* to identify the language behind Linear A. This is also the way that Ventris ended up working: once he had deduced the meanings of enough words in this way, the conclusion that Linear B was Greek (and not Etruscan) "finally imposed itself upon him"[27] – and only then was he able to work out which phonemes were being omitted from the spelling.

The strengths of the combinatorial method are immediately obvious, in that the results are incontrovertible. There has been a great deal of debate as to the possible etymology of < ku-ro >, the most widely accepted argument being that it is a loanword from a Semitic language;[28] but the fact that it does mean "total (*vel sim.*)" is beyond doubt. Furthermore, we would still

[24] Chadwick 1958, 34. [25] *ibid.*, 50.

[26] The notational apparatus used throughout this book is the standard linguistic one:
Written forms are in angle-brackets: < >;
Spoken forms (*i.e.*, phones, or actual pronunciations) are in square brackets: [ ]; and
Underlying forms (*i.e.*, phonemes) are between slashes: / /.

[27] Chadwick 1958, 34.

[28] A comparison of Proto-Semitic **kwall-* "all" with Akkadian *kalû* (East Semitic) and Arabic *kull*, Hebrew *kol*, and Ge'ez *kwəllu* (all West Semitic) shows that if Linear A < ku-ro > is a loanword, the source language was most likely a West Semitic one.

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know that this word meant "total," even if the phonetic values of the signs remained unknown, and we were still (as in the days before Ventris) forced to transcribe the word as "98-22."[29] This is why the combinatorial method is so valuable: it produces a body of indisputable data about the script, solid ground that slowly accrues until the nature of the language begins to come into focus.

Most importantly, the combinatorial method has an excellent record when it comes to deciphering scripts – and in fact, all important decipherments have been the result of this sort of method (usually with the help of at least one bilingual inscription). As described above, Ventris used this method to decipher Linear B (without the advantage of a bilingual). The combinatorial method has been responsible for most of what we know about Etruscan, and we actually now know a great deal.[30] Champollion used the combinatorial method (with a bilingual – the Rosetta Stone) to produce a successful decipherment of Egyptian.[31] Bedřich Hrozný, around the time of WWI, used the combinatorial method (without a bilingual) to demonstrate that Hittite is an Indo-European language, thus paving the way for its decipherment;[32] and there are many other examples.

Thus any attempt to recover meaning from Linear A sign-groups, or sign-groups in any of the undeciphered scripts in this book, must be based first of all on the combinatorial method; yet the etymological method need not be entirely ignored. It does have its uses, if employed prudently: "It is as absurd to deny any validity to the etymological method as it is to rely on it exclusively."[33] In this book, any attempts to recover meaning rely on the combinatorial method; and while there are occasional etymological observations comparing Linear A with known languages (especially in the linguistic analysis in Part I),[34] meaning is never assigned to a sign-group based solely on an etymological comparison.

[29] Chadwick (1958, 41) explains: "The application of this method to unknown languages … enables the decipherer to determine the meaning of sign-groups *without knowing how to pronounce the signs*. Indeed it is possible to imagine a case where texts in an unknown language might be understood without finding the phonetic value of a single sign."

[30] For a recent detailed summary, see Rix 2004, 943–966.

[31] Loprieno 2004, 169. [32] Watkins 2004, 555. [33] *Docs*², 395.

[34] As detailed in Chapter 3, these comparisons do not exclude Semitic languages. Some work on Linear A, especially by classicists and Indo-European scholars, displays a certain bias against the possibility of Semitic influence on Minoan. In my view, this bias is pointless: we should expect the Minoan language to have incorporated loanwords from a wide variety of languages in the region (Barber 1968, 105–106). (See Chapter 2, however, for some well-founded linguistic objections to the notion that Minoan was itself Afroasiatic.)

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0.5 The Structure of This Book

Chapter 1 provides an overview of the Aegean family of pre-alphabetic scripts; it should prove helpful to anyone who is not well acquainted with them.

Part I, comprised of Chapters 2 through 5, contains a linguistic analysis of Linear A and its underlying language,[35] beginning with Chapter 2, which presents evidence relevant to the *character* of the language behind Linear A. The chapter begins by situating Minoan within a detailed, multifaceted typology of the known languages of the ancient eastern Mediterranean and Near East. Subsequent sections discuss archaeological, archaeogenetic, and other evidence for the nature of the Minoan language.

Chapters 3 through 5 contain the linguistic analysis itself, based on steps 4–9 of Duhoux's methodology for decipherment.[36] In keeping with Duhoux's recommendations, these chapters contain preliminary investigations into four major aspects of Linear A and Minoan:

- Chapter 3 on **phonology** draws on a wide variety of evidence to postulate likely phonetic values for the Linear A syllabograms, and to draw some conclusions about the nature of Minoan phonemes.
- In Chapter 4 on **morphology**, a new statistical method for analyzing the frequencies of Linear A syllabograms is devised, tested on Linear B, and applied to Linear A in an effort to isolate those syllabograms likeliest to be involved in affixation.
- Finally, Chapter 5 on **syntax** focuses on the "offering formula,"[37] a standard set of Linear A sequences[38] appearing on a large number of ritual vessels; some parts of this formula vary from vessel to vessel. Various versions of the offering formula are compared to each other in an effort to discern something about Minoan word order, and perhaps to identify some of the semantic roles being played by various parts of the offering formula. At the end of the chapter, a short section on **orthography** focuses on a few potential principles of Linear A spelling.

[35] This linguistic analysis is a much-needed update of the one in Davis 2014.
[36] See Section 0.2. [37] See n. 17.
[38] As Linear A remains undeciphered, Palaima suggests speaking in terms of Linear A "sequences" rather than "words" when possible (pers. comm.).

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