1 The (Ongoing) Decipherment of Linear B

1.1 Introduction

On 1 July 1952, an architect named Michael Ventris delivered a broadcast on BBC Radio's Third Programme (now Radio 3) entitled 'The Cretan Tablets'. He spoke for around twenty minutes on the Linear B writing system from prehistoric Greece: more than fifty years after its first discovery at the palace of Knossos on Crete, this writing system still remained undeciphered, and the language it was used to write was unknown. Towards the end of the broadcast, Ventris calmly announced that 'During the last few weeks, I've suddenly come to the conclusion that the [Linear B] tablets must, after all, be written in Greek.'[1] He went on to describe some of the contents of the texts he had been able to read: '[they] record the prosaic and often trivial details of the palace administration. We have lists of men and women, for instance, where each name has the person's trade next to it, and we rediscover familiar Greek words like *poimēn,* shepherd, *kerameus*, potter, *k*^{h}*alkeus*, bronzesmith, *k*^{h}*rusoworgos*, goldsmith. Some of the persons have longer descriptions, like, "so-and-so, a goatherd watching over the quadrupeds belonging to so-and-so" or "three waitresses, whose mother was a slave and whose father was a smith"… Other tablets are lists of commodities, such as "wheels: so many of elm, so many of metal, so many with metal bindings, and so many of willow"."[2] Ventris had found the answer to a mystery that scholars around the world had been trying to solve ever since thousands of inscribed clay tablets had been discovered during the excavations of Knossos led by Sir Arthur Evans: the language of the Linear B tablets (Figure 1.1) was Greek, and the Mycenaean palaces' administrative records of the people, animals, and goods they controlled could now be read, opening a new window onto the societies of Late Bronze Age Greece.

[1] Ventris 1952: 17:10–17:19. For the full text as published in the BBC's *The Listener* (10 July 1952), see Ventris 1956 or 1988: 363–7.
[2] Ventris 1952: 17:52–18:44 (see n. 1).

Figure 1.1 A Linear B tablet[3]

The story of the decipherment of Linear B – from its first discoveries to Ventris' broadcast and his subsequent publication of the decipherment in collaboration with the classicist John Chadwick[4] – has become a well-known one, thanks to publications such as Chadwick's *The Decipherment of Linear B*, Andrew Robinson's *The Man Who Deciphered Linear B* and Margalit Fox's *The Riddle of the Labyrinth*.[5] Outside specialist circles, however, it is less well known that this decipherment is in some ways still ongoing. At the time of his broadcast, Ventris had actually assigned sound-values to only around two-thirds of the Linear B signs; almost seventy years later, and despite many attempts at establishing their sound-values, nearly one-sixth of the signs are still undeciphered, their sound-values remaining uncertain or entirely unknown.

[3] AN1910.218 'Page-shaped Linear B tablet, incomplete, 14 rows, listing women workers'. Image © Ashmolean Museum, University of Oxford (published as **KN Ap(1) 639** B).

[4] 'Evidence for Greek dialect in the Mycenaean archives', *Journal of Hellenic Studies* 73, 1953, pp. 84–103: *Evidence*.

[5] Chadwick 1958a, updated second edition Chadwick 1992; Robinson 2002; Fox 2013.

In this book, I set out a new methodological approach to establishing the possible values of these undeciphered signs. In most cases a full decipherment is not yet possible, largely due to the limited amount of evidence available: many of these signs are undeciphered simply due to the small number of examples found in the existing Linear B corpus. However, by analysing the writing system's structure and the functions of the signs whose values are known in order to establish the undeciphered signs' most likely potential sound-values, I aim not only to provide the best possible basis for any future decipherment, but also to offer a better understanding of the Linear B writing system as a whole, the processes by which it was developed and the ways in which it was used by its writers. I also use the undeciphered signs as a basis for exploring new methodologies in the palaeographic study of this writing system, demonstrating the wide-ranging potential of the close analysis of individual sign-forms in investigating the contexts in which these texts were produced. Both of these approaches involve analysing aspects of Linear B signs, whether deciphered or undeciphered, in ways which go beyond the simple question of their sound-values to focus on their place within the writing system as a whole, and thus to address wider questions relating to the writing system and its use. These analyses are therefore of crucial importance for deepening our understanding of the Linear B writing system, the texts it was used to write and the insight these documents bring into the world of the Mycenaean palaces.

In this introductory chapter I provide a brief history of the discovery and decipherment of the Linear B tablets (**Section 1.2**); an overview of the contexts in which Linear B was written and the current state of our knowledge of the writing system's signs, spelling conventions and language (**Section 1.3**); and a discussion of Linear B's relationship with other writing systems of ancient Crete and Cyprus, in particular its parent script Linear A (**Section 1.4**). Finally, I examine the various decipherment methodologies used since 1952 in establishing (or attempting to establish) the sound-values of individual signs, and their applicability to the signs which currently remain undeciphered (**Section 1.5**).

In Chapter 2 I set out the new methodological approach to be employed in addressing the question of the possible values of the undeciphered signs. By analysing the origins and usage of signs with known sound-values, I not only establish what types of values are in principle most likely to be found amongst the undeciphered signs, but also explore the development of the Linear B writing system, its relationship with its parent script Linear A and the motivating factors underlying the creation of new Linear B signs.

In Chapters 3 and 4 I apply the results of this methodological investigation to each of the undeciphered signs, combined with an in-depth study of their forms and attestations, based on the up-to-date corpus provided in the Appendix. As I show in Chapter 2, the origins of individual signs – whether inherited from Linear A or newly created within Linear B – are crucial in assigning potential sound-values. In Chapter 3 I therefore focus on the undeciphered signs known to have been inherited from Linear A, while in Chapter 4 I investigate the signs whose origins are less clear – those which are not certainly inherited from Linear A and which may be new inventions in Linear B. I discuss the results of both investigations and their implications for our understanding of the structure of the Linear B writing system at the end of Chapter 4.

In Chapter 5, following the detailed palaeographic analyses of individual signs carried out in Chapters 3 and 4, I use this group of currently unreadable signs as a case-study to discuss ways in which palaeography – a means of studying the script which does not rely on reading it – can contribute to our broader understanding of Linear B's context of use within the Mycenaean palaces. In particular, I demonstrate that palaeographic analysis can provide important evidence for the interrelationships between the scribes working in these palaces, and hence for reconstructing aspects of their administrative work and scribal training. Furthermore, I discuss the increasingly prominent use of palaeography as a tool for establishing the relative chronology of different groups of Linear B tablets, and hence of the deposits in which these texts are found, particularly at the problematic site of Knossos. Investigating the methodology involved in this usage of palaeography in the light of the patterns of variation shown by the undeciphered signs demonstrates that the assumptions underlying this method of dating Linear B texts are at odds with the actual processes of script development and the distribution of palaeographic variants visible in this group of signs. This is a conclusion with crucial implications not just for dating particular texts but more widely for key questions relating to Mycenaean archaeology and history. Finally, in the Conclusions I present a brief summary of this book's findings relating to the undeciphered signs' most probable values, to the development of the Linear B writing system as a whole, and to the ways in which these different strategies for approaching the undeciphered signs have contributed to our understanding of the writing of Linear B by the scribes of the Mycenaean palaces.

1.2 The History of the Decipherment[6]

The story of the decipherment of Linear B begins in 1895, when Arthur Evans visited Candia (modern Heraklion, the capital of Crete) and was 'shown a part of a burnt clay slip in the possession of a Candiote, Kyrios Zachyrakis, said to have been found on the site of Kephala [a hill in the nearby village of Knossos], presenting some incised linear signs which seemed to belong to an advanced system of writing'.[7] Possibly the fragment had been brought to the surface by the excavations carried out on the site by a Cretan, Minos Kalokairinos, who in 1878 had unearthed a storeroom containing several *pithoi* (large storage jars); five years after seeing Zachyrakis' fragment, Evans would begin his own excavations at Kephala, eventually uncovering the whole palace of Knossos, along with c. 3,500 more inscribed tablets. One of Evans' main goals in excavating at Knossos was in fact to look for further evidence of pre-alphabetic writing. He had already identified the symbols carved on prehistoric Cretan seal-stones as signs of a writing system, which he referred to as 'pictographic' or 'hieroglyphic' due to their pictorial appearance:[8] hence the now conventional term 'Cretan Hieroglyphic', although there is no direct relationship to Egyptian hieroglyphic (see **Section 1.4.2**). The less pictorial, more abstract appearance of the signs on Zachyrakis' tablet and those subsequently discovered at Knossos led to Evans' identification of this as another, more 'linear' writing system; later, Evans would distinguish between two different, though clearly related, linear writing systems, which he designated Linear A and Linear B.[9]

At this point, the language (or languages) represented by Linear A and B – named 'Minoan' by Evans – was completely unknown, and neither of these writing systems could be read; but some facts could still be deduced even without being able to read them. First, both were clearly syllabic writing systems, in which each sign stood for a syllable, with most signs representing either a vowel or a single consonant followed by a vowel (e.g. *ta*, *pe*, *mi*): the number of different phonograms (signs standing for the sounds of a language) – around ninety in each writing system – was far too high for them to be alphabets (cf. the twenty-six signs of the English alphabet, or the

[6] For more detailed accounts of Linear B's discovery and decipherment and for further biographical information on the individuals involved, see *Docs*²: 3–27; Chadwick 1992; Robinson 2002; Fox 2013; Judson 2017a.

[7] *SM* I: 17. The fragment itself no longer survives, but a photograph of a squeeze does (**KN *Ga(2)* <34>**: *CoMIK*).

[8] Evans 1895.

[9] See, e.g., *SM* I: 19–54; **Section 1.4.1**.

twenty-four signs of the Greek alphabet), but too low for a more complex syllabic or logosyllabic system (in which signs may represent whole words as well as syllables, such as the Chinese writing system or the Sumerian and Akkadian cuneiform systems), which may have hundreds or even thousands of signs.

Moreover, as well as these syllabic signs, both writing systems had another category of signs which stood for items or commodities. These 'ideograms' (signs standing for concepts rather than sounds or words)[10] were in some cases easily identifiable due to their pictorial resemblance to what they represented, and were also followed by easily identifiable numerals: 𐄴 ", for instance, clearly meant 'two horses'. The general contents of many of the tablets could thus be deduced, along with their function, which was evidently that of administrative records listing goods, personnel and livestock. Even the meanings of a few Linear B words could be established: the words 𐀀 𐀁 and 𐀀 𐀋, which often followed entries listing groups of women, were interpreted as meaning 'boys' and 'girls' (although it was not initially known which was which), while 𐀔 𐀖 and 𐀔 𐀗, which were often found at the ends of lists followed by the sum of all the preceding numerals, were clearly two different forms of the word meaning 'total'.[11] Some potential help in reading the scripts came from the Cypriot Syllabic writing system, which was used in the first millennium BCE to write Greek on the island of Cyprus (see **Section 1.4.3**), some of whose signs bore obvious resemblances to those of Linear A and B, as already noted by Evans:[12] for instance, Cypriot 𐠔 *na* is similar in form to Linear A 𐘔 and B 𐀔. However, the small number of these signs, and the difficulty of determining whether such resemblances meant that the Linear A and B signs had the same value as the Cypriot Syllabic signs, or were merely due to chance, meant that this alone was not enough to lead to a full decipherment of the Cretan writing systems.

Little further progress was made on deciphering the tablets over the next few decades, mainly due to their limited availability for study: until the early 1950s, only around 120 of the Linear B texts from Knossos had been published.[13] The publication of the remaining Knossos tablets was finally completed in 1952 by the ancient historian and archaeologist Sir John Myres, with considerable help from the American classicist Alice E.

[10] On the use of the term 'ideogram' rather than 'logogram', since these signs cannot be used in the same contexts as phonograms, see Thompson 2012.

[11] See Cowley 1927. Kober 1949 later demonstrated that these two forms represented 'total' in the masculine and feminine genders respectively.

[12] Evans 1895: 77–103. [13] *SM* I: 38–55 and *PoM* IV: §108–11, §114–15.

Table 1.1 *Kober's inflectional patterns*[14]

	1	2	3	4	5	6
1	𐀬 𐀑 𐀵	𐀒 𐀜 𐀰	𐀀 𐀖 𐀛 𐀰	𐀐 𐀊 𐀜	𐀁 𐀗	𐀅 𐀺
2	𐀬 𐀑 𐀴 𐀍	𐀒 𐀜 𐀯 𐀍	𐀀 𐀖 𐀛 𐀯 𐀍	𐀐 𐀊 𐀛 𐀍	𐀁 𐀖 𐀍	𐀅 𐀹 𐀍
3	𐀬 𐀑 𐀴 𐀊	𐀒 𐀜 𐀯 𐀊	𐀀 𐀖 𐀛 𐀯 𐀊	𐀐 𐀊 𐀛 𐀊	𐀁 𐀖 𐀊	𐀅 𐀹 𐀊

Kober;[15] the first finds of Linear B tablets from the mainland, discovered in 1939 at Pylos in south-western Greece in excavations led by the American archaeologist Carl Blegen, had only been published a year earlier by Blegen's student Emmett L. Bennett Jr.[16] This did not, of course, deter many people from attempting, and publishing, 'decipherments' which claimed, without any solid methodological basis, to have identified the language of Linear B to be anything from Greek to Basque.[17]

The first real breakthroughs towards a methodologically sound decipherment had come in the late 1940s from the two American scholars who were working on the publications of the Knossos and Pylos tablets respectively – Alice E. Kober and Emmett L. Bennett. Bennett's PhD thesis established the definitive list of signs belonging to the Linear B syllabary, clarifying which signs of similar appearance were separate signs with different sound-values and which were variants of a single sign – a crucial first step in any successful decipherment.[18] Kober made two particularly vital contributions: demonstrating through the identification of forms of the same words with different endings that the language of Linear B was, like Latin or Greek, inflected, and using this to establish a 'grid' of signs sharing the same consonantal or vocalic value.[19] In Table 1.1, each column contains a group of three related words, of which the second and third have inflectional endings added, which always end with -𐀍 and -𐀊.

The last sign in each group in row 1 and the penultimate sign in each group in rows 2 and 3 represent the ending of the word's stem and the beginning of the morphological ending. Since these are likely to be signs representing a consonant plus a vowel (*CV*) signs, this implies that pairs of signs appearing in different forms of the same word (e.g. 𐀵 and 𐀴 in column 1, 𐀰 and 𐀯 in column 2, etc.) should share the same initial consonant – the ending of the word's stem – but contain different vowels for the different

[14] Adapted from Kober 1946: 274, fig. 10 and 1948: 97, fig. 8. [15] *SM* II; see below. [16] *PT* I.
[17] See Chadwick 1992: 26–32. [18] Bennett 1947; see also *PT* I: 82.
[19] See Kober 1945, 1946, 1948 and 1949.

Table 1.2 *Kober's grid*[20]

Consonant	Vowel 1	Vowel 2
1	𐀀	𐀁
2	𐀂	𐀃
3	𐀄	𐀅
4	𐀆	𐀇
5	𐀈	𐀉

morphological endings; and since these six words all appeared to share the same pattern of inflection, the likelihood was that the last signs of each word in row 1 all shared the same vowel, as would the penultimate signs of each word in rows 2 and 3. Thanks to this realisation, Kober was able to set out a 'grid' showing how these signs were related to each other (Table 1.2).

Even without yet being able to assign any actual sound-values to individual signs, Kober had shown that it was possible to identify relationships between them, so that if the value of 𐀀, for example, was discovered, 𐀁, in the same row, would share the same consonantal value, while all the signs in the same column would share the same vocalic value.

Kober sadly did not live to see Ventris' decipherment, as she died, aged 43, in 1950. But her demonstration of inflection patterns in Linear B and establishment of the grid methodology would provide the key to Ventris' work: with the publication of a much larger number of inscriptions in 1951 and 1952, Ventris was able to expand Kober's grid significantly. Although Ventris was an architect by profession, he had been intrigued by Linear B since he was a schoolboy, and devoted much of his time to working on it. Various stages of his working were circulated to other Linear B scholars around the world in a series of 'Work Notes':[21] the grid in Figure 1.2, the last one to be circulated before the decipherment, is taken from one of these (many of the sound-values shown are actually incorrect, but the relationships between the different signs are mostly accurate).

For most of the time he spent working on Linear B, Ventris followed Evans in believing that the writing system was most likely to represent a non-Greek language, considering Etruscan (a language from ancient Italy, unrelated to Latin or any other Indo-European language) to be the best candidate. But early in 1952 he thought of a new approach: several of the terms which Kober had identified as inflected forms (see Table 1.1) frequently

[20] Based on Kober 1948: 98, fig. 10. [21] Published in Ventris 1988: 133–333.

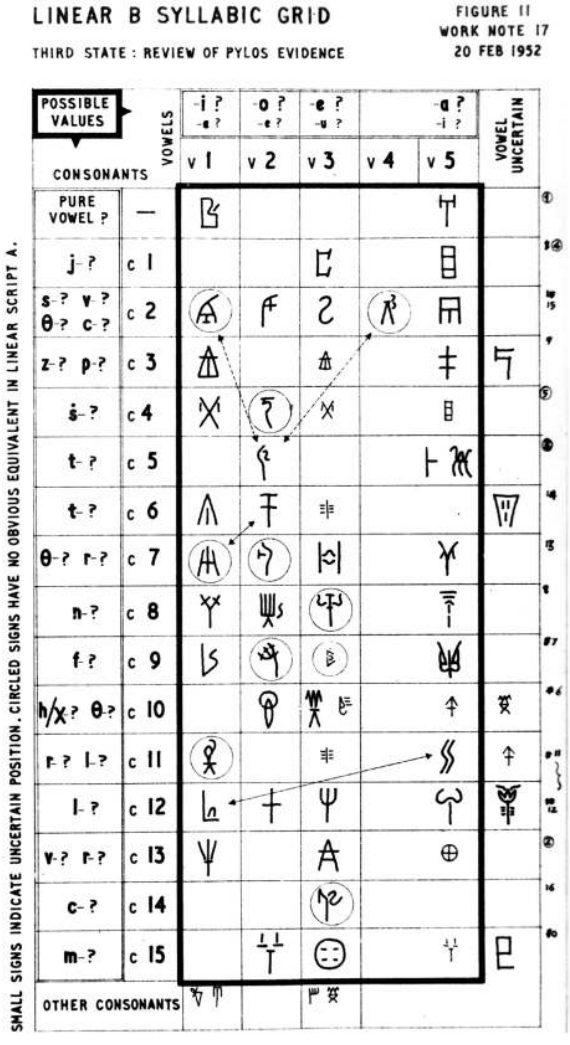

Figure 1.2 Syllabic grid from Ventris' Work Note 17[22]

appeared in the headings of tablets from Knossos, and Ventris thought that they might well be place-names, specifying the location referred to. If this was the case, then regardless of the language involved some of them might be the same names as were known from classical Crete, since place-names are frequently retained despite changes in language. One such possible name was *Amnisos*, the harbour of Knossos, which in syllabic spelling would be spelt *a-mi-ni-so* (since a syllabic script would have no signs

[22] Courtesy of the Institute of Classical Studies (London) Ventris Archive. Published in Ventris 1988: 317.

representing single consonants, these would be represented either with a 'dummy vowel', as in *mi* for /-m-/, or simply omitted, as in the final /-s/: see p. 18). Moreover, Ventris had reasonable grounds for identifying the sign 𐀀 as *a*, partly due to its frequency in word-initial position (in a syllabic script, signs representing vowels will rarely be found in the middle of words: since most medial vowels will be preceded by a consonant, *CV* signs will usually be used in this context), and partly due to its similarity to the sign for *a*, 𐔀, in the related Cypriot Syllabic writing system, which had already been deciphered (see **Section 1.4.3**). Similarly, the Cypriot Syllabic signs 𐠋 *na* and 𐠊 *ti* were sufficiently close to Linear B 𐀨 and 𐀆 for Ventris to feel confident in assigning the latter signs the same values. Putting this into the grid produced a series of other whole or partial identifications of potential sign-values, as the simplified grid in Table 1.3 shows.

Amongst Kober's inflected forms, the word 𐀀 𐀁 𐀍 𐀊 would thus be *a-?i-ni-??*: if this was *a-mi-ni-so* = Amnisos, then the consonantal value of *m* could be assigned to row 4 and that of *s* to row 2, and the vocalic value of *o* to column 2, as seen in Table 1.4.

It was not a great stretch to interpret the resulting reading of one of Kober's other inflected forms, 𐀏 𐀓 𐀊 = *?o-no-so*, as *ko-no-so*: the name of the palace of Knossos itself. Although these place-names themselves gave no information about the language of the tablets, they strongly suggested that Ventris was on the right track with assigning sound-values to the

Table 1.3 *Example grid with sound-values in progress*

Consonant	I	Vowel 2	A
T	𐀆 *ti*	𐠋 *t-*	𐔓 *ta*
2	𐀨 *-i*	𐀊	𐔀 *-a*
N	𐀍 *ni*	𐀓 *n-*	𐀨 *na*
4	𐀁 *-i*	𐀉	𐀖 *-a*

Table 1.4 *Example grid with sound-values completed*

Consonant	I	O	A
T	𐀆 *ti*	𐠋 *to*	𐔓 *ta*
S	𐀨 *si*	𐀊 *so*	𐔀 *sa*
N	𐀍 *ni*	𐀓 *no*	𐀨 *na*
M	𐀁 *mi*	𐀉 *mo*	𐀖 *ma*