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Aspects of Non-Greek Vocabulary in Mycenaean Greek

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Chapter 1 | Introduction

It is a plain fact that some languages have a longer recorded history than others, and such is the case of Greek, the earliest ever written of all remaining languages of Europe. The first known form of Greek appeared on the Linear B tablets c. 1400,[1] from here on Mycenaean Greek, also referred in literature as Early Greek. It was later written in alphabetical script, a format in which it has been uninterruptedly recorded for almost three millennia. Like most European languages, modern and ancient ones, Greek belongs to the Indo-European family. This relation has been made clear by comparative linguistics long ago, even if some details still elude us. It was Sir William Jones who in 1786 first remarked on the similarities between Latin, Sanskrit and Greek, introducing the idea of a common ancestor. The term 'Indo-European' was later coined by the polymath Thomas Young in 1813. Ever since, much has been debated about a hypothetical Indo-European homeland and when each language branched out.[2] For Greek this has fuelled the dispute on its possible date of arrival in Greece.

It seems pertinent to this discussion to determine how to define a language, or rather, how to define its boundaries, to isolate it from others. The boundaries of a language, geographical and temporal, likewise, are fixed artificially, as are dialectal divisions.[3] Curiously Greek maintained its identity, even though much of its lexicon and grammar has changed, but to call the language of Linear B and the language spoken nowadays in Greece both Greek, is largely our decision. Before Greek there was of course, at some point, a language not recognizably distinct from the rest of its Indo-European branch so when, and where, did the Proto-Indo-European dialect that became Greek, become Greek?

[1] Most of the Linear B archives date to the final phase of the palaces, associated with their last layer of destruction, between Late Helladic IIIB and C. Knossos, however, has deposits of different dates, the oldest, the Room of the Chariot Tablets, is argued by Driessen (2000) to date from Late Minoan IIIA, preceding the other deposits on the Mainland by about two centuries.

[2] Many models have been devised, combining archaeological and linguistic evidence to pinpoint this language family's place of origin. The premise consists of identifying common vocabulary between Indo-European languages as well as common lack of vocabulary to reconstruct their culture and natural environment. Indo-Europeanists speculate that the homeland was somewhere forested, where it snowed and had no mountains, and that the Indo-European people knew horses and the wheel. This approach is problematic in many ways because a reconstructed lexicon is sure to contain anachronisms. Archaeologists take other approaches; Renfrew (1987), among others, proposed Anatolia as the homeland and the neolithization of Europe as the expansion of Indo-European people, crediting all later developments in the Aegean to local progression. More recently DNA analyses have also been employed in this search, like Reich (2018), who through this method claims that the Indo-Europeans originated in the Steppes surrounding the Black and Caspian seas.

[3] Chambers and Trudgill (1998, 3-4) exemplify that Norwegian, Swedish and Danish are considered different languages, despite being mutually intelligible, while the same is not true for all varieties of German.

Our grouping of these dialects is first and foremost defined by grammar and syntax. Greek is Indo-European. Proto-Indo-European had eight grammatical cases, by historical times Greek only conserved five, but in the second millennium BC it likely still had the ablative (syncretized with the instrumental) and the locative. The core of the Mycenaean vocabulary matches the Homeric and historical Greek dialects and a significant part of it is rooted in Indo-European etymologies. However, Greek has many particularities that distinguish it from the other Indo-European 'offspring' and define it as its own language. For example, Greek has a unique suffix '-ευς' which is especially common in Mycenaean names,[4] and certain unique lexical elements, that despite being Indo-European (formed with inherited roots), has cognates in no other language.[5] Greek also contains a considerable number of exogenous words, many of which were already present in Linear B.

To call the vocabulary that will be presented here non-Greek can be misleading, so I want to clarify how I mean it to be understood. Greek is not the Proto-Indo-European language brought from abroad (henceforth Proto-Greek), but the language that resulted from it, after branching out and, very importantly, in contact with other Aegean and Eastern Mediterranean languages. Proto-Greek is the stratum of Greek, the hypothetical language, or even languages, which provided Greek with the features that made it unequivocally Indo-European.

Non-Greek is to be understood as that which was not inherited from the stratum, that was either taken from one or more substrate languages or borrowed from other languages. These words have been embedded in Greek at the very least since Mycenaean times, possibly for longer, and are, in a sense, properly Greek. For the sake of clarity and conciseness, all the vocabulary here will be called, *a priori*, non-Greek, even those that have known origin, for example, the Semitic vocabulary, because it concerns more to the purpose of this dissertation to understand their *via* of assimilation than to know their linguistic affiliation. That is, it matters less to know what linguistic family a word belongs to than it matters to ask what circumstances made it a part of the Greek lexicon.

The substrate is usually defined as the linguistic layer underlying a language, chronologically preceding it in the territory where this language develops. It is another

[4] *Docs*^{2}, 100: "There are over 100 names in -e-u, corresponding to the archaic Greek type in -ευς". Many of the heroes in Homer also have names ending in this suffix (Ἀχιλλέυς, Οἰλεύς, Ὀδυσσεύς), but in the historical Greek dialects, it is considerably rarer. Word formation with this suffix finds no convincing cognates in other Indo-European languages, but it could have been formed from inherited material. This is an agent suffix and many of the words formed with it have no Indo-European etymology, leading to the alternative suggestion that it was borrowed from another language. In either case, it is a Greek innovation. For more on the subject see Meißner 2016.

[5] For example, the Greek words thronos 'throne' and sképtron 'sceptre' have Indo-European roots (**d*^{h}*er*- and **skap*-), but neither has cognates in other languages. Petrakis 2020, 63-64.

language that, to a lesser extent than the stratum, influenced the formation of the new language. I adopt the premise that Greek had a substrate, Mediterranean or Anatolian, that corresponds to the language or languages (more on this matter in chapter 2) of the inhabitants of Greece who preceded the Indo-European stock. This does not rule out the possibility of early arrival, or the formation of Greek inside of Greece, but rather suggests that this formation was influenced by a native group of languages that left traces in Greek and are otherwise unattested and unknown to us.

This premise also does not rule out the possibility of loanwords to explain the non-Greek vocabular, either from sporadic contacts or from and *adstratum*, a neighbouring language that exerts influence on another. Not all non-Greek words necessarily derived from a substrate, many are known to have come from other languages and many more could also have been borrowed, even if presently we cannot assess their origin. It would be very difficult to find a language that at some point in its history did not incorporate external elements. A high degree of prolonged isolation would be required for such and that was never the case for Greek. Foreign words can be explained by a number of situations. When in contact, two languages will have a dynamic dictated by the nature of their interaction and intensity of contact.[6] Trade will likely create a more balanced one, where words are adopted to designate material or product coming from outside, either due to the lack of an existing one in the language or the repeated use of a foreign term in transactions.[7]

Contexts of war, slavery, and conquest result in unbalanced exchanges, where one group's language is imposed on another. Conquest is possibly the most intensive example, when it is expected that the language of the conqueror would supplant that of the defeated.[8] However, this intensive contact goes both ways, and the autochthonous language will leave its marks on the new one. That is always true for at least the first few generations, though it often happens that the native language coexists with the "official" one. The elites more rapidly adopt the conquerors' language to integrate themselves in the new regime, but the masses preserve

[6] Neither of these things can be objectively measured, but they relate to socioeconomic power, numerical proportions of the groups in contact in relation to one another, frequency of contact, degree of cultural exposure, and many other factors. Thomason (2001, 70-71) cautions that these cannot exactly predict the resulting influence on language exchange but provide a general idea of the possible results.

[7] This situation falls into Thomason's 'Casual contact' category (2001, 70), when non-basic vocabulary (usually nouns) is borrowed through sporadic contact between non-bilingual/few bilingual speakers.

[8] That is of course not *always* true. While Latin, for example, was spread by the Roman Empire, and later Latin languages were spread through colonization and Christianity, in Hellenistic Egypt both Egyptian, the native language, and Greek, the language of the foreign rulers coexisted.

their customs in general for longer.[9] Certain words which are rooted in core aspects of a cultural identity are stubbornly kept, while others, needed to describe new concepts, are quickly adopted. Geographical proximity, exogamy, and diplomatic interactions are also scenarios that create opportunity for language contact.

Greek has many loanwords that entered the language through a variety of ways and not all of them can be securely ascribed to an origin. They can be identified through a variety of methods. Many of these lexical items seem to lack Indo-European cognates or etymology, and these are easily classified as non-Greek. Some of them can be assigned to known languages or language families, like the Semitic loanwords that will be here presented. Certain cases of variation between the historical dialects, not explicable through Indo-European phonology, can too be indicative of a non-Greek word. For example, δάφνη has the variants λάφνη, δάφνη, δαύχνα, and δαυχμός. The different spellings can be explained by an ancestral form with a labiovelar,[10] a common feature of the loanwords because often the differences are the result of divergent phonological development or difficulty in rendering sounds alien to Greek. Some glossaries can provide obscure words, like the work of Hesychius of Alexandria, 5th or 6th century AD, where he compiled many uncommon or out-of-use lexemes.

I will focus solely on the vocabulary attested in Linear B because it provides the earliest *terminus ante quem* for their adoption and it can therefore be best compared to the Bronze Age Aegean archaeological record. Words unattested for the second millennium even if plausibly already present in the Mycenaean dialect can be misleading due to semantic shifts and the context in the tablets should provide a better idea of their use. While often the meaning of the words remains the same from pre- to historical times, in some cases, there is considerable change. For example, the later Greek term βασιλεύς /basileus/, spelled as /gwasileus/ (qa-si-re-u[11]) in Linear B, is a chief or local headman, whereas in Homer it means sovereign, being almost synonymous to ἄναξ in certain contexts.

For the Mycenaean words, transcribed in syllables according to the conventions, apart from the translation I will also provide the historical Greek word, but I would like to remind that they are separated in time by centuries, meaning they are not representative of how their Mycenaean cognates would have looked or sounded. In the same way, even for classical

[9] For example, in the Roman period, in the provinces the evidence for 'Romanization' is always more strongly felt in the urbanized centres and rich villas, while in other areas the native component lingers for longer in the form of language (non-Latin epigraphical inscriptions using the alphabet), religion (rural open-air sanctuaries for local deities), and architecture (Alarcão 2017, 241-50).
[10] Beekes 2014, 55.
[11] Aura Jorro 1993, 189-90.

dialects the reconstructed pronunciation is merely an approximation. Most of the tablets are dated to the last days of the Mycenaean palaces, meaning most archives are from around 1200 and only record a short period of time preceding the destruction. They are all preserved by chance, accidently baked by fires, and were not intentionally made to last.

The difficulties Linear B poses as a script should be mentioned. It is the general opinion of the specialists that it is ill-suited to write Greek.[12] It does not distinguish phonetic elements inherent to this language like voice and aspiration. Only the apical stops (/d/, /t/, /th/) have different series for voiced (/d/) and voiceless (/t/, /th/). The other stops, labials (/p/, /ph/), and velars (/k/ /g/, /kh/), each have only one series and both liquids (/r/, /l/) have a single series. It also does not register the consonants at the end of syllables, which poses limitations for the study of some developments, and it does not mark long and short vowels.

The source from which the script was derived might explain this shortcoming.[13] Linear A or some closely related variant of it was the likely 'parent' of Linear B. Sharing a total of 64 signs, or c. 80% of the signary, it would seem that many of the characteristics of Linear B that are not fitted for Greek were perhaps better suited for the pre-Greek language of Minoan Crete. At any rate, we do not really know how reflective Linear B is of the actual spoken language, the terminology between palaces is quite similar, suggesting perhaps that Linear B records an 'artificial'/solely administrative language. Even if that is not the case, we should expect the tablets to provide a limited grasp of the Mycenaean language and society, given its administrative nature and exclusive concern with palatial affairs. Though it would be helpful to have an ampler sample of vocabulary, this limitation should be but a minor hindrance for the purpose of this thesis, for, much like the tablets, the archaeological record too provides a more complete documentation of the palatial and elite life, than of the lower layers of society.

The proposed approach is to examine the vocabulary and compare it to the archaeological record, aiming to identify potential sources and dates for the adoption. From there, questions like 'how this vocabulary came to be part of Greek' and 'what that says about the cultural dynamics between the early Greeks and other Mediterranean peoples' can be explored. For example, morphemes for native fauna and flora, and culturally significant sites (such as sanctuaries and conspicuous topographical features) tend to remain unchanged. Though the precise location of the Indo-European home is still debated, the dominant theories

[12] Schwink (1999, 549-54), on the other hand, countering the popular opinion, defends that the script was efficient in conveying the needed information, and its shortcomings are perhaps more troublesome to modern scholars than they ever were to the people who wrote and read the tablets.
[13] *Docs*^{2}, 72.

do not consider Greece as a likely option, meaning it is not surprising that many of the words related to the Aegean fauna and flora should be non-Greek in origin. We can from that infer that the language(s) from which they were adopted had to be local and the Greeks must have had contact with it in an early stage of their language's formation because Proto-Greek naturally lacked the vocabulary.

The same principle can be applied to other semantic fields, such as the ones related to the Mycenaean industries herein discussed. I should note that the adoption of a word for a technological innovation does not need, necessarily, to accompany it, for it could have been re-signified to designate the invention, or a descriptive term could have been adopted. In some cases, however, it becomes clear that a word is very much tied to the concept it describes.

I have excluded from this thesis words of unknown meaning, as well as personal names, toponyms, ethnonyms, and theonyms, as their consideration would necessitate broad discussions of continuity in onomastics, political geography or religious beliefs and practice. The words selected are only a few concerning four major economic sectors of the Mycenaean palaces: metals, precious materials, textiles and perfumes and in each section only a minor selection is presented. These are the ones I felt could be best contextualized within the archaeological record of the Bronze Age Aegean. Whenever pertinent, the use of the vocabulary in Homer, as it is the chronologically closest historical source, will be considered. I will also make mention of other non-Greek words not recorded in the tablets where they can add to the discussion, but I want to stress that without attestation we cannot be certain of the date of their borrowing.

Chapter 2 | The Bronze Age Linguistic Panorama

To understand the implications of the archaeological record on non-Greek vocabulary, it is first necessary to know which languages Greek contacted with that it could have sourced them from. We know that our geographical frame is the Eastern Mediterranean, but for our timeframe there is still need to establish when this language was first spoken in Greece and whether it was ever spoken elsewhere. The possible answers follow two alternative premises: either Greek was formed out- or inside of Greece. In either scenario we must ask when the language (Greek or Proto-Greek) was brought to Greece.

For a long time, it was thought necessary to postulate three different groups of migration which would correspond to the main groups of historical dialects, Ionic, Aeolic and Doric. This theory, which prevailed until about the middle of the past century, proposed that all these dialects descended from Common Greek, a hypothetical language formed and spoken somewhere north of Greece, likely the Balkans, later brought south by successive invading waves. Different dates have been suggested for each incursion. Harland, for example, in 1923, proposed that the first wave came in around 2000 BC and corresponded to the Middle Helladic culture. The next, the Achaeans, came in c.1400 BC, and these corresponded to the Mycenaeans, with the Dorians arriving at the end of this period, around 1100 BC.[14] That the Dorians arrived last and were responsible for the decline of the Mycenaean civilization was a broadly accepted theory at the time, but finding no ground in archaeology, it has been mostly abandoned.

The entire model has been since shown to be unnecessary, though there is still a case for an early separation of Doric even with the idea of a 'Dorian Invasion' dismissed. Doric and other West Greek dialects preserve some archaic elements and lack other developments that were already present in Mycenaean Greek. For example, -σι frequently replaces -τι in Mycenaean and in the East Greek dialects, like in the third person plural active of thematic verbs. In West Greek, however, like in other Indo-European languages such as Latin and Sanskrit, the original -τι is still preserved.[15] A couple of solutions have been proposed to this issue that do not resort to a second invasion. Chadwick suggested that the Dorians were the lower stratum of the Mycenaean society, and consequently their language was not recorded in the tablets but was already spoken in Greece.[16] Renfrew states that the 'Dorian Invasion' was

[14] Harland 1923.
[15] Chadwick 1975, 817.
[16] Chadwick 1998, 5.

but a minor movement of population within Greece.[17] As for the other dialects, Linear B showed that many of the developments are post-Mycenaean and therefore occurred in Greece.[18] Though the evidence makes it unlikely that Greek was brought by successive waves of migration, we are still left with the possibility that it was brought from outside in a single migration event.

In 1928, Blegen and Haley published a seminal article titled 'The Coming of the Greeks".[19] They matched the distribution of place-names, seemingly of non-Greek origin, with that of Early Bronze Age sites, dating their arrival to the end of this period, for these names had to belong to a time before Greek was spoken here, therefore associating the substratum with the Early Bronze Age cultures of the Aegean. It was later demonstrated that the most visible cultural discontinuity of this period happened not at its end, but between Early Helladic II and III,[20] pushing the date further back a little, but the point still sustained.

However, though before the discovery of the first Linear B tablets out of Crete by Carl Blegen in 1939, the Greekness of the Mycenaeans was still up for debate, after that, it became commonly accepted that their language could not be Greek, a notion that was only disproved by the decipherment of the script in 1952.[21] The Mycenaean language, not yet identified as Greek, was thus regarded by some scholars as the substratum, thought by many to be Indo-European.[22] The prevalent opinion became that suggested by Arthur Evans: according to it, the Minoans had taken over the Mainland and theirs was the language recorded in the tablets.[23] It was regarded that any date before 1600 was too early for the Greek arrival and many layers of Indo-European languages were devised to account for the time gap.[24]

But not only the decipherment proved this assumption wrong, as also the very notion of a "coming of the Greeks" began to be disputed. Myres has famously observed that the Greeks were "ever in a process of becoming".[25] Dickinson expresses different concerns regarding the concept, for he sees very little beyond language to link the Indo-European people who migrated

[17] Renfrew 1973, 272.
[18] For example, the replacement of long α by η in Attic-Ionic is shown by Attic to have taken place after the loss of the digamma, dating this development to the historical period. Unlike Ionic, Attic preserves α when it follows ρ, ε, or ι, but not in κόρη, showing that the digamma was still preserved when this shift took place. See Emde Boas et al. 2019, 20.
[19] Blegen and Haley 1928, 141-54.
[20] Caskey 1960, 285.
[21] Evans overemphasized the influence of Crete on the mainland and his view dominated scholarship for a very long time. Mostly, only Alan Wace and Carl Blegen openly questioned Evans' position before the decipherment.
[22] E.g., Georgiev (1950), in which he proposes reading Linear B as Pelasgian.
[23] E.g., Evans 1928, 321.
[24] Like Devoto's Peri-Indo-European (1943, 8) and Merlingen's Akhaean and psi-Greek (1967, 152).
[25] Myres 1930, 538.

here and the Mycenaeans, to the people who in the historical period called themselves Greeks.[26] Though I agree with this statement, his criticism seems beyond the point. Greek is an Indo-European language, and its Indo-European component therefore cannot have originated here, even if we accept that the language itself was formed in Greece. Despite the aversion that seems now attached to the concept, and the general unwillingness to explain change through migration, at some point either Greek or Proto-Greek (or however we want to call the Proto-Indo-European stratum) was brought from abroad.

It is perhaps time to circle back to the discussion from before, about how to define the boundaries of a language. As seen in the previous chapter, it is possible to argue that Greek is the resulting language of the interaction between the Indo-European stratum and the Eastern Mediterranean languages neighbouring it. In other words, I propose that Greek is a different language from the hypothetical Indo-European Proto-Greek, and that it emerged in its recognizable in Greece, when it had contacted with the other languages that influenced its formation and when it had acquired its unique features (discussed in chapter 1), whenever that was. Both the occurrence of loanwords in every dialect and the variants in each, suggest that the contacts from which the borrowings resulted must have happened before any dialectal split, especially those that refer to native fauna and flora. It could be argued that it was formed outside and then contracted these words when still a single language, but my point is precisely that before these borrowings and other developments of foreign influence that make Greek unique in its linguistic family, Greek is not truly yet Greek.

As for the date of arrival of Proto-Greek, Renfrew has gone as far as to propose the beginning of the Neolithic for the arrival of the Indo-European stock, downplaying the possibility of any significant incursions in any period after that.[27] It is the opinion of most that the changes from Middle to Late Helladic can be easily explained by local developments (even if stimulated by contacts with neighbouring Aegean regions) leaving no space for a migration in this transition.[28] That leaves only the Early Bronze Age and Neolithic. Renfrew's proposal emphasises the element of continuity between these two periods, but Early Helladic, despite all criticism, is still a valid solution albeit with a few adjustments necessary (see further in chapter 4). Our timeframe will therefore be the entirety of the Bronze Age to account for all possibilities, but the Neolithic too will be referred to whenever there is evidence allowing for

[26] Dickinson 2016, 18.
[27] Renfrew 1973, 269.
[28] Dickinson 1999.

it. With Greek established, we move to what the Indo-Europeans encountered in Greece upon arrival.

Much has been debated about the character of the Greek substrate. In the end of the nineteenth century a German linguist, Paul Kretschmer suggested a pre-Greek language to account for certain suffixes present in placenames that were recognizably non-Greek.[29] These suffixes were -s(s)- and -nth-, found in names like Korinthos, Parnassos and, Knossos. Later in the thirties Georgiev called this unknown language 'Pelasgian'.[30] It was by some considered to be Indo-European, but others thought it to be an autochthonous, an either Mediterranean or Aegean language.[31] In their article mentioned above, Blegen and Haley added a few suffixes to those two, significantly expanding the list.[32]

When Kretschmer remarked on the similarities between the pre-Greek place-names and Anatolian vocabulary present in Lycian, Lydian and Carian, it was not known that they belonged to a branch of the Indo-European family, so naturally he concluded that the substrate was a non-Indo-European language with Anatolian affinities. Though not in the way Kretschmer imagined, this is still a valid supposition, only not that the Greek substrate was related to those languages, but rather that all of them had a common substrate and preserved from it the suffixes that he observed. Apart from linking the placenames with the Early Bronze Age cultures, Blegen and Haley's article also showed on the map their even distribution throughout Mainland Greece, Crete, and the Cyclades, supporting that there was once a language common to all of them of Anatolian origins.

Crete is, however, a separate issue from the mainland. It feels safe to say that out of all the cultures that interacted with the Mycenaeans, the Minoan was the most influential. It is therefore only logical to expect that influence to extend over language too, not only because of the proximity, multiple instances of contact and, of course, the adapted script, but because by the time of the Mycenaean presence on the island, whichever language or languages were spoken there, became a proper substratum of the – intrusive, as evidence shows – Greek language.

Many have argued for multiple substrates in Greek,[33] but Beekes emphatically remarks on the uniformity of the vocabulary, believing them all to belong either to the same language

[29] Kretschmer 1896, 401-09.
[30] Georgiev 1950.
[31] Devoto 1943; Alessio 1944; Hester 1965.
[32] The suffixes l, m, mn, n, r, and t. E.g., Πάλα, Σαλαμίς, Λίκμνα, Λέρνα, Πάρος and, Καίρατος.
[33] See note 22 above.

or a family of closely related languages.[34] If then, the Cretan language is expected, according to what archaeology testifies, to have influenced Greek both in the capacity of an ad- and sub-stratum, the solution is that the languages of Bronze Age Crete and the pre-Greek language of the mainland were related, which is perfectly in line with the common pre-Anatolian substrate model. Howbeit a possibility, I must recognize that this is very speculative, for little is known about the Minoan language.

Though the Minoans cannot be certainly credited for independently inventing writing, an idea which they must have borrowed either from the Near East or Egypt, the scripts found there do not display clear influence from known writing systems. Two main systems were used on the island, beginning in the Protopalatial period, but, as they are undeciphered, neither can provide much clarity on the language of Crete.[35] We know that Linear A does not record Greek. Many of the sound values of the signs can be reconstructed through Linear B,[36] and while certain place-names and anthroponyms common to both scripts have been identified, especially in the Knossos tablets, the rest of the vocabulary finds no parallel.[37] Its language is much more prefixing than Greek and where Linear A uses *u* Linear B often has *o*, especially in examples that may well be Hellenised 'Minoan' names.[38]

There is no definitive way to tell if the other script's language, Cretan Hieroglyphic, is the same of Linear A, for neither have been so far deciphered, and it is unlikely that, with the current restricted number of documents, they will be.[39] Evans originally saw the three scripts as directly 'evolving' from one another, progressing from a pictorial character with free arrangement to more linear and syllabic.[40] Since, it has been made evident that the relation between Cretan Hieroglyphic and Linear A is not as straightforward as that. The two scripts coexisted for some time, during the Neopalatial period, at both Knossos and Malia.

There is still another group of documents to consider, however not from the Bronze Age, but considerably later in date. Eteocretan, meaning 'true Cretan', is a language recorded in alphabetic script in the first millennium BC. There are only six securely identified

[34] Beekes 2014, 45.
[35] Other inscribed artefacts were found on the island, the Phaistos Disk, the Axe of Arkalochori, and the Archanes seals, but with such limited attestations they can hardly be called scripts.
[36] Steele and Meißner 2017.
[37] Finkelberg 2001, 81-86.
[38] Meißner 2019, 21-46.
[39] Linear A has about 1500 documents, while Cretan Hieroglyphic has even fewer, less than 400. Recently Brent Davis has approached this question through statistical syllabotactic analysis, showing the statistical probability that both scripts record the same language (https://sites.utexas.edu/scripts/2022/03/04/brent-davis-university-of-melbourne-syllabotactic-analysis-of-linear-a-and-cretan-hieroglyphic/).
[40] Evans 1909, 18.

'Eteocretan' inscriptions and though this could be just a non-Greek 1st millennium language, it is of interest to this discussion because it is likely that it was a surviving indigenous pre-Greek language of Crete. It is notable that it is so far confined to central and east Crete, just like Hieroglyphic was in the Bronze Age, making it a potential descendent.[41] In Homer, the multilingual make-up of Crete is stressed,[42] but this could refer to a later period when Greek and Eteocretan were spoken there and, of course, it should be unnecessary to remark that epic poetry is not the most reliable source, not meaning, however, to dismiss the possibility of multiple languages.

Apart from the one already mentioned, many languages and linguistic families have been suggested for Minoan Crete, both non- and Indo-European. Finkelberg defends it to be an Anatolian language, related to Luwian and Lycian, but she relies heavily on the premise that the vowel system was restricted to *a*, *e*, *i*, and *u*, an assumption not unanimously agreed upon.[43] Others too have suggested Luwian[44] and Semitic.[45] Neither of these proposals have been sufficiently substantiated to reach consensus.

On the subjects of Eastern languages, we now turn to Anatolia where the scenario is much clearer. The Bronze Age languages of the area are well attested, and its scripts deciphered. The Hittite Cuneiform documents are the earliest examples of a written Indo-European language. Like Greek, it is not possible to determine with certainty when this group first arrived in Anatolia, but the structure of the language suggests it branched out from the family at an early stage. Their script was adopted from the Assyrians and their name is derived from the Hatti, who previously inhabited the area. The Hattic language is a non-Indo-European substrate of Hittite and though it was seemly dead around 1400, it was still preserved in some religious texts. Hurrian was another non-Indo-European language of the area, known through many bilingual texts in the Hattusa archives. Luwian too heavily influenced Hittite, but this one is Indo-European, belonging to the same branch, and it is preserved in two different scripts, Hieroglyphic and Cuneiform. Distributed more to the West and South, Luwian seems to have contacted with a substrate of unknown character, different from those of Hittite. Palaic is the

[41] Duhoux 1998, 17.
[42] *Od*. 19.75.
[43] Of the 25 Linear B signs that find no cognate in Linear A, 7 correspond to syllables with the vowel *o*, leading to the suggestion that they are Mycenaean creations, and the others were re-assigned sound values. Steele and Meißner (2017, 93-110) however, believe that *o* and *e* were just rare in Minoan, but nevertheless part of the phonemic system.
[44] Huxley 1961.
[45] Cyrus Gordon (1957, 126) attempted to read Linear A using Semitic etymologies. For example, the totalling word in Linear A (ku-ro) finds parallel in Semitic *kull-*, meaning all.

third of the main Indo-European Anatolian languages from this period, but much less is known about it given the limited number of preserved documents.

The Bronze Age language of Cyprus is unknown. There, a script was in use which too shows certain affinities to Linear A, Cypro-Minoan. This script remains unfortunately undeciphered, much like Linear A and Cretan Hieroglyphics, largely due to the reduced number of documents (little over 200). Its successor, however, the Cypriot-Syllabary was used to write Greek in historical times. This syllabary shares a few signs with Linear A, which coincide in sound value with Linear B.[46]

Moving farther south, in Egypt the language spoken there was part of the Afroasiatic linguistic family, of which Semitic too is a branch. It was recorded in the Hieroglyphic script from c. 3100 BC. The Egyptian sources mention a land they call *Tnj* which seems to correspond to Mainland Greece. "The Aegean List" is comprised of some fifteen placenames carved on the base of a statue in Amenhotep III's funerary temple at Kom el-Hetan. In the list Mycenae and Nauplion, among others, are listed under *Tnj*. The order of the list, from east to west and then from west to east, repeating Amnissos could suggest that this list was in fact a travel itinerary of a round-trip. Though the contacts between Egypt and Greece seem relatively more limited, *Keftiu* is also mentioned, the Egyptian name for Crete, which appears more frequently in their sources, both textual and iconographical, and overall, the Egyptian influence is better felt on the island than on the mainland.

Lastly, I want to cover the Semitic languages only briefly because I will return to this issue later. They are recorded since the third millennium, starting with Old Akkadian. Dialects of this languages in the Bronze Age were spoken throughout the Near East, such as Ugaritic, the Canaanite languages, and Akkadian, which is especially important given its function as a *lingua franca* for diplomatic transactions. As I have mentioned, some of the vocabulary to be presented has Semitic origins, but the explanation for their borrowing does not require direct contact between them and the Greeks. In any case, there is extensive evidence for trade between the Mycenaeans and the Levant, though not nearly as extensive as for coastal Anatolia and Cyprus, and perhaps a little too late to justify some of the vocabulary which in most of the cases seem to have been assimilated at an earlier date.

[46] Such agreement in the values of Linear B and Cypriot may be the most promising basis for further exploration of the sound values of the certainly related Linear A script (see Steele and Meißner 2017).

Chapter 3 | Vocabulary

3.1. Metals

3. 1. 1. Introduction

Of the most commonly used metals of antiquity, all but one are of non-Greek origin. Silver (Gr. ἄργυρος, Myc. a-ku-ro[47]) is the only which has a clear Indo-European etymology. This section includes the non-precious metals, leaving out gold, for reasons that should become clear in the next section.

It seems common that metals' names, in their etymological root, are descriptive of colour or other qualities. Such is the case of ἄργυρος, meaning brilliant white, or the English word 'gold' originally meaning yellow. A similar phenomenon may happen with the non-Greek roots as shown below.

Sporadic metal artefacts are found in Greece dating from the Late Neolithic; however, it is from the Final Neolithic onward that they became increasingly more common. In Early Bronze Age, copper and lead were the most abundant metals, but gold and silver, though rare, also occur. The objects from this period are mostly utilitarian, tools and weapons. The tomb depositions are interpreted as indications of social differentiation, with metals taken out of circulation to communicate wealth, that are to us also indicative of more availability.[48] The burial grounds of Nidri on Levkas is an unusual site, yielding more metal than average, with a significant portion of all the weapons from the mainland coming from here.[49] Otherwise, most metal objects from this period come from Lerna. Middle Bronze Age in the Aegean sees a decline of metal production, in all regions but Crete.[50] In the Early Mycenaean Period (MH III – LH II) there is a 'explosion' of precious metals on the mainland, especially gold, which makes for a significant portion of the finds (though there has to be taken into account that gold preserves better than most metals). Large quantities of ornaments and jewellery as well as weapons of bronze come from this period, that has a more diversified assemblage of shapes. The remaining of the period is characterized by abundant copper-based artifacts and new

[47] There is only one occurrence of this word, in PY Sa 287.
[48] Tzachili 2008, 15.
[49] Levkas and Manika are examples of sites used by particularly 'open' -yet diverse- communities during this period.
[50] Mangou and Ioannou 1999, 81.

shapes. Such diversification accompanies the development of intense contact within the southern Aegean, now including mainland communities.[51]

A great difficulty in analysing metal artifacts within a broader context is that the record they represent can often be misleading. Unlike pottery that once broken goes out of circulation, metal is valuable and not always locally available. Obsolete objects are not wasted as they can be melted and recycled. The exceptions are when they are deliberately removed from circulation, for example, in funerary depositions or hoards (the latter though common in central and western Europe are rare in the Aegean).

3. 1. 2. Vocabulary

3. 1. 2. 1. Lead | mo-ri-wo-do[52]

The Mycenaean form is unexpected and poses a complication in explaining all dialectal variations.[53] It is possibly connected to the Lydian 'mariwda', used to designate a goddess, which seems to have root in the IE **morkw-iyo-*, meaning dark. Beekes does not disregard the possibility that it could have been taken by the Mycenaeans from the Minoans,[54] but he is, however, more inclined to consider it an Anatolian loanword.[55]

In the Mycenaean texts it appears only four times in a single and unfortunately small fragment of a tablet from Knossos (KN Og 1527), followed by weigh measurers. That it does not appear more often in the records should not be surprising considering the nature and employment of this metal. It is not precious or expensive, and it was mostly locally sourced.

Lead and silver often occur in the same ores. Given its low melting point (327ºC), it was likely the first metal to be smelted from its ores.[56] Lead is soft and malleable, therefore easy to mould, but also dense. These properties make it arguably the easiest metal to work and give it the widest range of applications. Its unremarkable appearance, however, makes it unattractive for the production of ornamental and decorative objects[57] and the same properties that make it versatile, also make it unsuitable for weapons and tools. Prolonged exposure to

[51] Kayafa 1999, 427.
[52] Aura Jorro 1985, 457.
[53] Μόλιβος attested in *Il.* 11.237 cannot continue the Mycenaean form, while the Ionic variant, derived from Homeric μολύβδαινα, *Il.* 24.80 can be derived from *mo-ri-wo-do* (Beekes 1999, 10).
[54] Beekes 1999, 10-11.
[55] Beekes 2010, 964-65.
[56] Evidence from Çatal Huyük suggests it could have begun as early as the 7th millennium. Gale and Stos-Gale 1981, 178-79.
[57] Examples though rare are not unheard of, e.g., four lead bracelets from Antiparos (Renfrew 1967, 18).

lead can be harmful and lead fumes are highly toxic although it is unknown to what extent these properties were acknowledged by the Bronze Age communities.

The earliest evidence for the use of lead in Greece comes from Late Neolithic, but it is in the Early Bronze Age, that it becomes more widespread.[58] Common uses include rivets to mend broken pottery and it also appears in the form of ingots.[59] It occurs in many Mycenaean sites, including Mycenae, Tiryns, Pylos, and Athens taking the form of vessels, weighs, hoops, spindle whorls, wire and even figurines. Figurines are uncommon, there are only two occurrences, both from Pylos. Wires are frequent in tombs, but not as much in settlement sites. In the Aegean, lead weights are generally common, but infrequent in Mycenaean sites. Though vessels occur they are unsurprisingly few, given the impracticality of this metal (i.e., its density and tendency to deform). Lead can also be used in the production of pigments and Akrotiri has evidence for it in pigments in Late Cycladic I, none, however, attested in painting, only in stone tools and vessels.[60]

The Cyclades have abundant sources of lead ores, but isotope analysis on lead objects from Greece indicate that Lavrio was the main provider of this metal throughout all the Bronze Age.[61] From as early as EH II, Lavrio was the source to the mainland as attested in sites like Petromagoula and Raphina where there were lead artefacts consistent with ores from Attica.[62] Siphnos was also an important source in this period, mainly for Crete and the Cyclades. In the Cyclades silver-lead metallurgy may have preceded copper metallurgy (though not by much) where it is m-ore abundant than in Crete and the Mainland for the same period.[63] Middle Helladic Lerna too sourced its lead from Lavrio. Middle Bronze Age saw a considerable decline of lead use, that increased once again in the Late Bronze Age.

Because it was sourced locally and used to produce mostly mundane objects, besides being known and used since the Neolithic, the substratum seems a likely option. It would be very curious if the Greeks had adopted an exogenous word for a material that was neither introduced, imported, or technically/artistically influenced by foreigners. As for the connection

[58] Liritzis 1996, 208-09.
[59] Renfrew 1967, 4.
[60] Sotiropoulou et al. (2010) speculate that the pigments could have been used for cosmetics, but possibly on timber and hides.
[61] Kayafa 1999, 362. It should be noted that this method is problematic for two main reasons: 1. there can be overlapping characteristics between metal sources and 2. metals, as noted above, can be re-melted and new items made from various objects. With lead this should be less problematic since most finds are lumps and rivets and it was of lesser value, but with the other metals, this kind of analysis should be used mainly in support of what archaeological evidence can attest.
[62] McGeehan-Liritzis and Gale 1988, 209-10.
[63] Gale and Stos-Gale 1981, 182.

with Lydian, if the etymology is correct, a common substratum, as proposed by Blegen and Haley and heavily insisted on by Beekes, could account for it.

3. 1. 2. 2. Copper/Bronze | ka-ko[64]

There should be no need to emphasise the importance of this metal since our main frame period borrows its name from it. Indo-European had a word for copper that many languages preserved, but not Greek. Χαλκός could be related to the Hittite word for iron *hapalki*- (or *apalki*-) which has roots in Hattic-Hurritic.[65] It is likely related to κάλχη, a Greek word for purple that also appears as κάλκη, and χάλχη, in which case χαλκός could have originally meant "red metal" (χαλκός ερυθρός, *Il.* 9. 365).[66]

Mycenaean, much like classical and modern Greek, seems to have used the same word for Bronze and Copper, leaving open the question of whether the metal recorded in the tablets should be interpreted as the alloy or the raw material. In *Docs*^{2}, it is noted that it usually appears qualifying finished objects that are normally made of bronze.[67] Considering the lack of mentions of tin in the tablets, it would seem that bronze is the metal recorded. However, in one tablet (KN Oa 734) it appears with the ideogram *167, which stands for oxhide ingots that are always made of copper (fig. 1), making it possible that it was used for both. Ka-ko can be represented by the ideogram AES (*140), which resembles an axe, and it also appears in the compound ka-ke-u, 'coppersmith', later a generic term for metalworker.

Bronze is an alloy of copper and either tin or arsenic, and Lead can also be added to facilitate casting. Copper ores contain arsenic, but not tin. In the Neolithic and Early Bronze Age mainly copper and arsenical copper were used.[68] Gradually they were replaced by tin and copper alloys, which produce harder bronze but also with better deformability, allowing for new forms like, for example, the first long swords and thin wall vessels.[69] Copper smelting was already a widespread practice in the Early Bronze Age II. The mainland, Crete and the Cyclades all have evidence for this practice in a total of at least thirteen sites.[70]

Most mentions of copper came from Pylos where allotment of copper to coppersmiths is recorded in 20 tablets of the Jn series. The ta-ra-si-ja system used here consists of distributing

[64] Aura Jorro 1985, 308.
[65] Pisani 1966, 46.
[66] Beekes 2010, 1611-2.
[67] *Docs*^{2} 351.
[68] Papadimitriou 2008, 277.
[69] Papadimitriou 2008, 280-81. Arsenic is also harder to work with and highly toxic, likely why arsenic bronzes disappear almost entirely when tin becomes more easily available.
[70] Georgakopoulou 2016, 4.

the raw material to craftsmen who in turn return to the palace finished products. This system is also employed in the textile industry (see 3.3). The quantities allocated to the smiths varies from 1,5 to 8 kilograms. The two most common quantities are 1,5 and 5 kilograms which Ventris and Chadwick estimate could produce up to 1000 arrow heads and fourteen swords or spears, respectively.[71]

Copper in the Aegean could be sourced from the Greek mainland where there were a few and sporadic deposits, but primarily from the Cyclades, and also Anatolia (especially the north-western) and later from Cyprus and Sardinia, when it circulated in the form of oxhide shaped ingots (fig 1).[72] In the Early Bronze Age, evidence suggests that from the raw material to finished product, the metal travelled around the Aegean, with the chain of production (from mining to casting) conducted in dispersed sites often far from each other.[73] It is only in the Late Bronze Age that Cyprus becomes a major exporter of copper across the Mediterranean, so important that the metal takes its name after the island.[74] Correspondence between Egypt and Alasya add to an impressive total of 29.000 kilos of copper over no more than three decades, likely representing only a small portion of the total deliveries.[75]

Χαλκός was probably assimilated into Greek early on, likely in the Early Bronze Age if not before. Despite Cyprus' clear importance in copper supply in the Late Bronze Age, there does not seem to be a moment when Greek bronze production was so intensely influenced from abroad to suppose the adoption of a new vocabulary. A relation with Hittite, in the same way as lead, could be explained by a shared substratum, but a loanword from Anatolia too seems possible, not on the account of influence, but on the close contacts in the early stages of development.

3. 1. 2. 3. Tin | ka-te-ro (?)

This is a controversial identification. Like lead, ka-te-ro also probably appears in one tablet from Knossos (KN Og 5515) in a fragmented state, while the expected Mycenaean form would be *ka-si-te-ro.[76] There being a chance this could correspond to a syncopated form of κασσίτερος, I decided to include it. Beekes considers Κασσίτερος a Pre-Greek word, on the

[71] *Docs*^{2}, 356.
[72] Gale and Stos-Gale 1982.
[73] The farthest travel distance attested so far is between Lavrio, where the ores were sourced and Chrysokamino (Crete) where they were taken for smelting. Berg 2020, 291.
[74] In Latin *aes Cyprium* (Cyprian brass), from Greek Κύπρος, Cyprus.
[75] Kassianidou 2013, 138.
[76] Freeman 1999, 223.

account of the double sigma.[77] If we are to believe that the origin of this word is in the answer to where the Mycenaeans imported tin from, Beekes' suggestion is unlikely. There have been a few attempts to connect it to Celtic roots[78], and other proposals to assign a Near Easter origin, like Freeman's. He proposes that, given that the Near East used tin long before Greece and the Sanskrit cognate word for tin (*kastira*-), an Eastern origin is probable.[79] A Semitic loan too has been suggested.[80] Alternatively, Michailidou suggests it could be interpreted as καρτερός, meaning 'reinforced', referring to bronze.[81]

Analyses of copper-alloys from Early Bronze Age Troy indicate that most were composed of high percentage of tin.[82] In the Aegean, however, evidence for this metal is very limited, though it rises significantly from the first to the second half of the period.[83] Pure metallic tin hardly ever occurs in nature, but they can be extracted from ores for which there are no sources in the Aegean, or taken from alluvial deposits, much like gold.[84] Naturally it had to be imported. It seems, therefore, very normal that this should be a loanword.[85]

Many suggestions have been made for where the Aegean could import tin from. There are options both to East and West, and it is likely there was more than one source. The significant deposits of tin that could have been used in the Bronze Age were Cornwall, in southern England, which is still to this day largely exploited for this metal, France, Iberia, Bohemia, Italy, Anatolia (Taurus Mountains) and the Near East. The Late Bronze Age sees increased contacts between the Mediterranean and Central and Western Europe, with the amber trade for example, and because of that it has long been speculated that Cornwall could have been a major supplier of tin. Muhly dismisses this possibility, as well as Central and Eastern Europe, favouring a Near Eastern source, where there is early evidence for tin-copper alloys.[86] Recent chemical and isotopic analyses on a tin ingot from Mochlos indicate central Asia as the most probably source.[87] However, analyses on tin ingots from Israel indicate western Europe as its most likely source, suggesting a trade route between east and west passing through the

[77] Beekes 2010, 654-55.
[78] Dinan 1911 after Freeman 1999, 224.
[79] Freeman 1999, 224.
[80] Hoffman 1950 after Hester 1965.
[81] Michalidou 525-26.
[82] Stos-Gale et al. 1984, 26.
[83] Gillis and Clayton 2008, 134.
[84] Gillis 1991, 2.
[85] Κασσίτερος was also borrowed by Latin and other languages, directly from Greek. Latin had no specific word for it and used the same as lead '*plumbum*' differentiating them with '*album*' and '*nigrum*', light and dark, but '*plumbum*' too was a loan word.
[86] Muhly 2010.
[87] Berger et al. 2019, 35.

Greek mainland. Berger et al. conclude that there was an east trade that declined with the Levantine states and the new west trade rose with the Mycenaeans who ventured farther west.[88]

The rarity of this metal certainly afforded it some prestige, but perhaps precisely for its rarity added to its unappealing aspect, there are very few Bronze Age objects made of tin alone, besides ingots. Not many examples of adornments can be given, from Early Bronze Age there is a bracelet from Lesbos and from Late Bronze Age III two rings from Phylakopi.[89] There is, however, a curious category of tin artifacts, normally found deposited in rich burials: tin covered pottery. Evans originally thought the remains of oxidized tin were "black 'varnish'".[90] It was not until 1966 that Farnsworth and Immerwahr realized that it was tinfoil covering the vessels.[91] The use of such vessels seems to have been more popular during the Late Helladic/ Late Minoan IIIA period. This had two implications. First, there was enough tin circulating to dispose of, or at the very least, some people were able to access enough tin that they could dispose of. Second, the burials accompanied by tinfoil covered vases were remarkably wealthy. Farnsworth and Immerwahr comment that only two of the forty-one Mycenaean tombs in the Agora that had until then been excavated contained this type of vase, the two richest.[92]

If we had to establish a probable date for the borrowing of this word, the late Middle Helladic would appear a reasonable suggestion, when this metal began to be more widely used on the Greek mainland. As for the place of origin, the name is likely tied to the first large scale influx of tin to the Aegean, but as long as its provenance remains debated, all sources for this metal within reach could have provided the vocabulary.

3. 1. 3. Conclusions

Metals do not form a homogenous group and are therefore difficult to judge as such. Lead was used since the Neolithic. It is easy to work, accessible in the Aegean, versatile and for these reasons has been consistently used since the beginning. Copper too was used since the Neolithic, but bronze alloys gradually changed, from arsenic copper to arsenic bronze to finally, what may be considered 'proper' bronze, copper and tin alloys. Tin is present from the Early Bronze Age, but likely due to its inaccessibility, was not widely employed until the Middle Bronze Age.

[88] Berger et al. 2019, 37.
[89] Gillis 1999, 142.
[90] Evans 1914, 35.
[91] Farnsworth and Immerwahr 1966, 384.
[92] Farnsworth and Immerwahr 1966, 388.

Though the metal economy is at its zenith at the Mycenaean period, it is defining of the Bronze Age as a whole. While many of the other vocabulary items to be presented find no place in Early and early Middle Bronze Age, the vocabulary here was likely assimilated at these earlier phases. As mentioned in the introduction, metals' names can often be descriptive of their physical characteristics. Copper/bronze and lead, which have such troublesome etymologies with *possible* Anatolian ties, could plausibly also have been descriptive words, inherited from the substratum.

On the other hand, especially Early Bronze Age was a very dynamic moment for the Aegean cultures, and both the Cyclades and Crete could have influenced this vocabulary, but this is highly speculative. Tin, however, it seems clear, could not have been borrowed before its use became widespread. Its name must have derived either from the language of the main source, from the name of this hypothetical source, or from the language of a trading intermediary.

It is curious that silver differs from the other metals; it not only has an Indo-European root but also derives from the same Indo-European word of all its cognates.[93] It is even more curious that silver and lead' etymologies have different origins when they occur in association and in the Aegean can be sourced from the same areas. It seems proper to warn against attempting reconstructing a culture through linguistic evidence, but it is tempting to speculate why that happened. If adoption of new vocabulary is linked to external influence over the area it semantically relates to, should that mean that all metals but silver, were subjected to external influences?

[93] The word for silver in Old Iranian, Sanskrit, Hittite, Avestan, and Latin, all derive from *h_2r^g-nt-o-. Beekes 2010, 127.

3. 2. Precious Materials

3. 2. 1. Introduction

This section has a more limited chronological range. Sporadic imports of precious materials are known from the earlier periods of the Bronze Age in mainland Greece, but it is not until the Early Mycenaean Period, at the onset of the Late Bronze Age, that they became a significant portion of the mainland finds.

Imports and luxury goods are symbolic of social status and their display is often meant to reinforce differentiation. Their access, even if to a limited section of the population, is resultant of interconnectivity and complex networks of trade. For those reasons, I have decided to separate gold from the other metals. Economically and symbolically, it belongs to a different sphere of society, one not concerned with practical employment but rather ideological, although it is acknowledged that such a division may be permeable. This section will discuss gold, glass-paste, and ivory.

3. 2. 2. Vocabulary

3. 2. 2. 1. Gold | ku-ru-so[94]

Ku-ru-so can be represented by the ideogram abbreviated AUR (< aurum) (*141). It also appears in the compound ku-ru-so-wo-ko, gold worker. Χρυσός is a Semitic loan word, cognate with Akkadian *ḫuraṣu*, Phoenician *ḥrṣ*, Hebrew *ḫarûṣ*, all of them with the same meaning, gold.[95]

Gold can be extracted from ores, alluvial deposits and from pyrites (the latter method was not practiced until Roman times). Its qualities make it particularly attractive, especially to produce ornaments. It does not oxidize, it is gleamy and easy to work. Because gold and other metals can be reused, melted, and made into knew objects, it is hard to determine their origin. Crete could have sourced its 'gold' from the Balkans, northern Greece, Anatolia, Syria, Egypt, and the Cyclades.[96]

Gold is known to have been used since the Late Neolithic. Greece has natural sources, most of them in the Northern region, from where, unsurprisingly, most known objects from Early Bronze Age come from (e.g., from Sitagroi, Dimitra, Saratse and Dikili Tash).[97] At the same time, southern Greece has less examples of gold artifacts than any other region in the

[94] Aura Jorro 1985, 409.
[95] Beekes 2010, 1652.
[96] Hickman 2008, 95.
[97] Liritzis 1997, 241.

Aegean.[98] Precious metals are rare until late Middle Helladic, especially compared to contemporary Crete and the Cyclades where gold and silver predominated respectively.[99]

Though the period in which gold is most abundant in the mainland is marked by a lot of international contact, trade and the import of luxury goods, in gold artifacts, the Minoan influence is distinctively pronounced. Crete had a long tradition in gold metallurgy since the Prepalatial period.[100] Though they contain some elements of originality in the motifs, in technique, conventions and symbolism, the jewellery of the Shaft Graves are highly reminiscent of the Minoan productions, when they are not so similar as to be ascribable to Cretan artisans.[101] The gold leaf tablets (fig. 2), for example, found in graves III and IV represent a typical Minoan imagery of a tripartite temple with horns of consecration, items which were likely imported.

Despite the ultimate Semitic origin of the Greek word, Crete seems, given the archaeological evidence, a more likely source for the borrowing. The period when gold appears more frequently in mainland Greece coincides with deep Minoan influence in gold metallurgy. As for how this word came to compose the Minoan lexicon, Crete is not only known to have been extensively influenced by the Near East and Egypt early on, but is also poor is mineral sources, meaning they naturally had to import gold, perfectly justifying a Semitic borrowing. As its origin is known and relatively safely reconstructed, Greek /khrusos/ offers a most didactic example of how the linguistic evidence, although important, must be carefully examined in its cultural context.

3. 2. 2. 2. Glass Paste | ku-wa-no[102]

Κύανος is similar to the Hittite word *ku*(*wa)nnan*- which besides designating copper, is also a determinative for stone and the name of a substance that can be used to make beads, perhaps blue glass.[103] This could suggest an Anatolian borrowing, but the origin of either is uncertain. Gasbarra categorizes this as a "wondering word" (Wanderwörter), a type of word that spreads over multiple languages that adapt it, and it is therefore difficult to etymologize of identify its origin.[104]

[98] Liritzis 1996, 210.
[99] Tzachili 2008, 11.
[100] Hickman 2012.
[101] Mylonas 1983, 183.
[102] Aura Jorro 1985, 415-16.
[103] Muhly 1973, 176.
[104] Gasbarra 2014, 165.

There is a lot of debate surrounding the use of this term in Homer. In the poems it is applied to many different things that we would not consider to share the same colour. It is used to refer to the colour of ships, eyes, hair, and people. It gives the impression to mean something like "lustrous dark" rather than a hue.

Though ku-wa-no clearly corresponds to Greek κύανος, the precise meaning in the Mycenaean texts is debatable. It appears in the Ta series of Pylos, which deals with furniture and in the Oi series of Mycenae (701-705), where ku-wa-no-wo-ko-i (kyanos workers) figure. This material was employed in the ornamentation of chairs, footstools, and tables. Theophrastus mentions two different types of κύανος, one artificial and another naturally occurring.[105] He likely refers to Lapis-lazuli and Egyptian blue frit, both consistent with the material from the tablets.

Lapis Lazuli is a semi-precious stone that does not occur naturally in Greece. Although finds of, or containing it, are known from Bronze Age mainland, they are not as common as the use of ku-wa-no would suggest, judging by its frequency in the tablets. A sample from Gla shows it was used in the composition of a purple pigment for fresco painting, the first ever attested use in wall-painting in Greece.[106] Besides that occurrence, Lapis Lazuli is usually reserved for seals and jewellery, but it certainly cannot justify specialized workers at the palace.

Egyptian Blue, however, was broadly employed in wall painting around the Mediterranean. This is a synthetic pigment can be obtained from a mixture of copper, quartz, and lime.[107] In Crete, it was used as early as the beginning of the 2nd millennium BC. It was the major, if not exclusive blue pigment used in Mycenaean, Tiryns, and Pylos around 1400. [108]

Blue glass, frit or some vitreous paste are also likely options and macroscopically have the same aspect. In the Bronze Age, glass circulated in the Mediterranean in form of ingots (fig. 3) just like tin and copper. Some of this type are known from the Ulu Burun shipwreck.[109] Egyptian blue frit was similarly exported in the form of lumps or 'small cakes'.[110]

Not only occurs in the Early Mycenaean period the first instances of significant glass in the Aegean, but they were among the first everywhere, for it had only begun to be widely produced and used recently.[111] There is no evidence that the Mycenaeans ever produced glass, despite having all the needed resources, but they rather imported it from the East. Burns affirms,

[105] *On Stones*, VIII. 8, 55.
[106] Brysbaert 2006.
[107] Panagiotaki et al. 2015, 1770.
[108] Filippakis et al. 1976, 149.
[109] Bass 1986, 274.
[110] Panagiotaki et al. 2015, 1770.
[111] Burns 2010, 100.

given the heavy Minoan influence in the contexts where the first examples are found in the mainland, that Crete initially brought glass to Greece, and worked as an intermediary between the Mycenaeans and the Near East in that aspect.[112]

It is plausible that the name was re-signified from a colour or other qualitative word, and it belonged originally to the substratum. But in face of all the other words in this category that rise in importance and volume around the same period, it is more probable that this is a loanword, first borrowed in the Early Mycenaeans period, likely of Anatolian origin, possibly introduced by the Minoans.

3. 2. 2. 3. Ivory | e-re-pa[113]

A connection with Hittite *lahpa-* (ivory) has been suggested, but Simon claims all the attempts to conciliate the phonetic disparities are unsubstantiated.[114] According to Heubeck, the word is likely of Egyptian origin.[115] Like ku-wa-no it figures in the Ta Pylos series, ornamenting the same types of furniture and also in the Knossos Sd series, recording ornaments employed on chariots.

Ivory is obtained from the tusks (prolongated incisors or canines) of large mammals, like elephants and hippopotami, none of which were native to the Aegean.[116] Where elephant tusks could be sourced from is complicated to access, there is some speculation that Syria might have had elephants, either native or introduced around 2000. In Egypt, elephants where extinct since the early dynastic period, but ivory could be taken from the hippopotami were found along the Nile. It was likely from there that Crete imported its ivory since the earlier examples of ivory artifacts are made from hippopotamus tusk.[117]

Crete imported and worked ivory as early as Early Minoan. On the Prepalatial period, ivory from hippopotamus tusks was mainly employed in crafting seals.[118] Only in the Neopalatial period the first elephant ivory is attested on the island.[119] It could be suggestive of a new source, but Egypt could also access elephants, though in less significant quantities, from surrounding areas.

[112] Burns 2010, 102.
[113] Aura Jorro 1985, 240.
[114] Simon 2018, 390.
[115] Heubeck 1958, 58.
[116] On the possible existence of Bronze Age dwarf elephant populations in the Aegean, see Massetti 2001, though it is unlikely that they would have been explored.
[117] Krzyszkowska 1988, 219.
[118] Krzyszkowska 1988, 215.
[119] Krzyszkowska 1988, 217.

Burns claims that the mainland too, from Middle Helladic, had developed its own tradition, with relative independence from Crete and the ivories from the Shaft Graves, stylistically, are Helladic.[120] Krzyszkowska, however, emphasised the Minoan influence in the mainland development of this craft and states that before Late Helladic "there had been no previous tradition of ivory carving on the Greek mainland."[121]

In Mycenae, the so called 'Ivory Houses' group, outside the citadel, receives this name for the large amount of ivory found in the House of Sphinxes, House of Shields and, to a lesser extent, the House of the Oil Merchant. Examples of ivory artefacts include *pyxides,* ideally made from elephants' tusks, pommels, mirror, combs, and inlays with a variety of motifs and figurines (fig. 4) were also produced and attested through many examples.[122]

The abundance of ivory that suddenly appeared in this phase is a product of the same phenomenon responsible for the increased consumption of the other luxury goods and is therefore resultant to some extent of Cretan influence. Regardless of the ultimate origin of the word, the strong Minoan stylistic associations, makes it very likely that, like all the other ones in this section, it was introduced to Greek by the Minoans.

3. 2. 3. Conclusions

The Shaft Graves of Mycenae are remarkably rich, furnished with the most lavish contents, many of which were either imported from afar or manufactured from exotic material (metals, glass and ivory but also semi-precious stones, ostrich egg). None of these materials appear or are exclusive to the Early Mycenaean period, but the level of luxury of the furnishings of the tombs is unparalleled. Aside from figuring much more prominently in the archaeological record than either of these materials had thus far, there is a clear shift in their use and perception about how wealth and prestige is to be expressed in material means.

This section did not originally exist. Gold was included in the Metals section and the other two materials were supposed to be left out. However, when researching gold, it soon became clear that it did not belong there, for it had a much different place in Mycenaean society than the other non-precious metals. It is not within the scope of this paper to explore the potential implications they have for the Mycenaean society in terms of social organization, but rather, what is their implication on the external interactions these early palatial societies had.

[120] Burns 2010, 99.
[121] Krzyszkowska 1988, 230.
[122] For a representative range of ivories see Poursat 1977.

Crete was the intermediary between Egypt and the mainland, as one may infer from the strong 'Minoan' influence on the artifacts that are made of exotic materials making up the Early Mycenaean elite funerary assemblages. Many of the items from the graves seem to have been reworked in Crete, like an Egyptian alabaster jar, modified to be resemble more a Minoan type, or an ostrich egg with Minoan-style additions.[123] The Cretan and Cretan-style artifacts from the Grave Circles are a clear testimony of the cultural prestige the Minoans had on the mainland, reflecting perhaps an attempt to emulate cultural features and, possibly, selectively adopt (or adapt) certain Minoan ideas, as the appropriation of cult implements (namely rhyta) and new weapon types might indicate.

Cretan influence over the Aegean in this period has been described as a facet of the 'Versailles effect', meaning cultural rather than political preponderance.[124] Artifacts and iconography indicate that both Minoan fashion and art were appreciated and imitated in the palaces of the mainland and very much part of the formation of the Mycenaean identity. If in language too that happened, it would not be surprising. Perhaps claim that Minoan could function as a *lingua franca* would be too farfetched, but if the Versailles analogy can to any extent be applied to the linguistic field, not only it is natural given the evidence for intensive trade and, in general, contact that some Minoan vocabulary would have found its way to Greek but also that they were deliberately adopted as a reflection of that cultural influence.

In the previous section it was mentioned that many of the vocabulary to be presented had no place in Early Bronze Age, and while that is not objectively true for gold and ivory, though it is for glass, the moment when external influence is more heavily sensed and when they are more systematically employed as proper ideological mechanisms is the late Middle Bronze Age/ early Late Bronze Age. They are representative of the emerging dynamic that would dominate during the formative palatial phases (c. 1450-1200 BC).

[123] Burns 2010, 94.
[124] Wiener 1984.

3. 3. Textile Industry

3. 3. 1. Introduction

Because of their perishable nature, textiles, when they leave any trace, it is little. Fortunately, there are other types of evidence that denounce their presence such as loom weights and spindle whorls, used in their production and usually made of durable material like clay, stone or bone. Textile imprints on clay and metal foils are rare but a few are known throughout the Aegean.[125] Iconographical representations in wall-paintings and jewellery are essential visual complements to our knowledge, providing some idea of the fashion, the colours and patterns that they were able to achieve. The depictions, however, usually appear in palatial and religious settings with fantastical components, meaning that even if they are realistic representations, they are unlikely to be representative of the type of commodity that steered textile production as an economic activity.[126]

Much of the vocabulary related to textile production will be left out, even though they do not have secure Indo-European etymology, because their provenance is extremely difficult to identify. If Mycenaean works with no later Greek form known were to be included, this section would have been considerably longer. Many types of textiles have no etymology, specifically at Knossos (some of which may appear on other sites) possibly indicating Minoan terminology.[127] Additionally, there are many non-Greek terms that have not so far been identified on the tablets also relating to textiles.[128] If we accept the possibility that at least some of these words had already been assimilated by the Bronze Age, we can further see the extent of external influence in this semantic field and therefore on the textile industry itself.

In the Linear B documents a stark gender division of tasks is observed in the economic activities of the palaces and the same division is followed across centres. In the Bronze Age, much like in the later periods, spinning and weaving are female-dominated activities. While maintaining its diachronic significance as a domestic labour, performed in seclusion and symbolic of the virtues of the dutiful high-class woman, the Linear B tablets show the

[125] Dating from Early to Late Helladic, they are found in the Cyclades, Crete, and mainland Greece, most in funerary contexts, with a few exceptions in Akrotiri. Ulanowska 2020, 128.
[126] Burke 2010, 64. On the other hand, our written sources come from these same settings.
[127] Olsen 2014, 168. te-pe-ja (makers of te-pa), ko-u-re-ja (maker of ko-u-ra) and e-ne-re-ja (maker of e-ne-ra) are all occupational titles from Knossos referring to the production of specific cloth types that do not have plausible etymology.
[128] Barber (1991) draws attention to the double vocabulary Greek has related to textile production (table 12.1) in which many terms with no Indo-European etymology have an Indo-European counterpart.

employment of numerous groups of women invested under the palace supervision in large scale production.[129]

Tablets from Thebes, Mycenae, Pylos, and, especially, Knossos attest to large-scale, organized and centrally monitored textile industries. A significant portion of the texts is occupied with its management. The textile workers recorded are highly specialized, with at least twelve occupational titles listed in the Pylian personnel tablets alone,[130] performed almost entirely by women, sometimes further divided into even more specialized roles, two of which we will discuss below. The same ta-ra-si-ja system, also employed in metalwork (discussed above in Section 1) is observed in this industry. Out of all centres, Knossos kept the most detailed record of the production, with the stages of the process registered from flock management to the storage of the final product. While the administration in this palace seems more closely controlled, the production itself, however, is somewhat decentralized. For example, in Pylos, workers are brought from other sites to the palace where, as well as Leuktron, the production was centralized, whereas in Knossos they are scattered through the villages from where they work.[131] The different approaches taken by the two centres could be indicative of an earlier, already established, Minoan industry.[132]

Textile production on Crete dates back to the Middle Neolithic as evidenced by spindle whorls in the Central Court at Knossos, found along with a bone needle and two pottery discs.[133] In total, the spindle whorls from the three last Neolithic strata add to over 150. The warp-weighted loom was used there too at least since the Final Neolithic.[134] Although in the Neolithic, spinning and weaving seems to take place in the same area, in the Bronze Age evidence for both hardly ever appears together on the island,[135] maybe suggestive of that decentralization of production discussed in the paragraph above.

In the Cyclades, the earliest evidence for the use of warp-weighted loom comes from Ayia Irini, where fifteen flat oval weights of Anatolian type were found,[136] but later in the Period IV of the site (roughly corresponding to MM IIA) Cretan-type discoid weights appear

[129] This is not only an activity dominated by women but also the main one where they are employed. In Pylos, 60% of the female workers in the personnel tablets are employed in textile production, and the majority in Knossos too, where up to 1000 are estimated to take part in this industry. Olsen 2014, 86 and 164.
[130] Olsen 2014, 71.
[131] Burke 2010, 97. Though Palmer believes this could be a "concentration measure" resulting from the instability of the place's final months. Palmer 1963, 118.
[132] Killen 1977 after Burke 1997, 414.
[133] Evans et al. 1964, 172.
[134] The earliest loom weight found in Knossos is a group of seven rectangular weights along with another rounded one, all from the FN IA period. Cutler 2021, 61.
[135] Burke 2010, 23.
[136] Cutler 2021, 169.

from the earliest phase (IVa) when the area is reoccupied following a period of abandonment.[137] In other Cycladic sites, like Phylakopi and Akrotiri, weights only appear in the MC period and are of discoid type. Around this period, this Cretan-type weight spread throughout the Aegean appearing in many other sites, including the coast of Anatolia, where they represent the earliest evidence for the use of warp-weighted loom. A few of the weights found outside of Crete are made of non-local clay, likely meaning that they were transported with the user, perhaps to be used as model for new weights.[138] The adoption of this technology is not only suggestive of Cretan influence, but possibly of the production of Cretan-style fabrics out of the island.[139]

Crete has yielded archaeological evidence for palatial centralized textile production before the Late Bronze Age. Seal impressions and graffiti on loom weights indicate administration and the sizable deposit containing about 400 of these items in the 'Loom Weight Basement' from Middle Minoan II at Knossos might be indicative of early palatial control.[140] Militello makes an argument for a decentralized production, with the Minoan Palaces as 'consumers' rather than producers. He argues that the palace could not be regulating the production of textiles based on the lack of evidence for it in the written documents, but an *argumentum ex silentio* based on a very limited record, such as the Cretan Hieroglyphic and Linear A corpora are, seems to me rather weak. He also supports his argument on the archaeological evidence for textile production found in other sites, far from the administrative centres. While this argument is more sound, textile workers listed on the Knossos tablets are situated at their home villages, showing that evidence for production (i.e. loom weights) which he deemed insufficient in Knossos, needs not to be present on the centre to be administrated by the palace.[141]

Evidence for possible external influences in textile production may be attested in Aegean sites as well. Early Helladic Tiryns, has yielded cylindrical, conical and crescent-shaped weights, the latter a common Anatolian type, otherwise rarely found in the Aegean.[142] Evidence from Lerna (Va), in the mainland during Middle Helladic indicates that the horizontal ground loom was the principal type in use, and the warp-weighted loom, though also utilized,

[137] Cutler 2021, 171-2. It is not clear whether the new inhabitants were from the island or came from elsewhere.
[138] Only about 15% of the weights from Ayia Irini from c. 1280 and 30 out of 213 weights from Miletus are made of non-local clay. Cutler 2012, 149-150.
[139] Cutler 2012, 152.
[140] Burke 1997, 417-18.
[141] Militello (2007). The difference between Knossos and Pylos on the placement of the workers could be further indication that in Crete the industry takes after an older practice, hence the dispersal of the workers, continuing what the archaeological evidence for the Minoan period seems to indicate.
[142] The only two other occurrences are from EH Geraki in Laconia and EBA Thermi on Lesbos. Their presence could point to Anatolian cultural influence in the late EH II/early EH III. Siennicka 2012, 70.

given the reduced number of loom-weights, could not have been the dominant technology.[143] In this period, it is clear that the Minoan textile industry was widely influential around the Aegean with the adoption of the warp-loom in many sites coinciding with the appearance of Cretan loom-weights, suggesting they were responsible for this introduction. In the mainland, however, the impression one gets is that this influence did not antedate the Mycenaean period. The discoid loom weights, after Lerna V, only reappear in LH II-III, first at Nichoria in the Peloponnese (12 weights of Cretan-style) and then spread to many other sites. Curiously, despite the records of textile production, there is not much evidence for it on the mainland, with Mycenaean sites yielding very few loom weights.[144]

3. 3. 2. Vocabulary

3. 3. 2. 1. Linen | ri-no[145]

Linen appears in the tablets both as a noun (ri-to) and an adjective (ri-ta), and it is present in the occupational titles ri-ne-ja, interpreted as 'linen worker' and ri-na-ko-ro 'linen collector'. The syllabograms *RI* and *SA* are used as ideograms for linen. The relation between *RI* and *SA* is confusing. *RI* usually accompanies textile ideograms and *SA* seems to work as an abbreviation for the commodity and as a metrogram, similarly to GRA and OLE. It has been suggested that SA was the plant's name and ri-no the fibre either ready for spinning or the thread.[146] The word ri-no is not considered to be Cretan, since the sign *SA* is taken to be the acrophonic abbreviation of the Minoan term.[147] Beekes suggests that λίνον had an European, and perhaps more specifically Mediterranean origin.[148] Greek also had another loanword for linen, βύσσος, of Semitic origin, but this one was much more recently adopted, appearing only from the 5th century BC onwards.[149]

Wild flax is native to the Mediterranean, growing all around it, except in Egypt where domesticated flax was introduced from western Asia.[150] Flax has a wide range of uses, and besides the fibre, other parts of the plant could be utilized; the stem for basketry and the seeds

[143] Cutler 2021, 241.
[144] Mycenae, for example, has ample evidence for the spinning of varied types of yarn, but almost none for weaving. It is possible that a loom other than a vertical warp-weighted was employed or that the weaving took place elsewhere, outside of Mycenae. Tournavitou et al. 2015, 261-2. In Tiryns, once again, loom weights are scarce, but appear in much larger numbers in Postpalatial than in the preceding period, when the discoid weight type is replaced by spools. Siennicka 2014, 172.
[145] Aura Jorro 1993, 2, 255.
[146] Rougemont 2007, 46-47.
[147] Nosch 2008, 139.
[148] Beekes 2010, 863.
[149] Gasbarra, 2014, 162.
[150] Forbes 1956, 27.

for food and oil. The fibre is versatile, it can produce fine textiles, but it is also strong, much more so than wool for example, making it ideal to produce ropes and sails. It was cultivated since the Neolithic in the mainland, but not in the islands, where the soil is less fertile.[151]

Linen was in the Bronze Age a luxury good, prized in Mediterranean trade. It was the main vegetal fibre exploited for textile production in Near East and Aegean.[152] Egypt famously produced high-quality linen since the Old Kingdom, with trade intensifying in the New Kingdom. The Amarna Letters show that Cyprus acquired linen from Egypt, that other documents show they sold to the Hittites. [153] It is hard to determine if Greece had a place in this network. According to the textual evidence, in Crete wool was the main fibre exploited, but in the mainland, we know flax was extensively cultivated, though we can hardly assume it was in enough quantity or quality to attract foreign interest. The international trade and prestige of linen, however, could have on an earlier period influenced the rise of this industry.

In the Mycenaean world, flax was cultivated extensively at Pylos, likely because the regional climate is well-suited for it. As indicated by the *SA* ideogram, linen only appears in Knossos three times. In Pylos, however, the N series registers the taxation of this commodity with either the expected contributions or the delivery from villages thoroughly listed.[154] While flax figures more prominently in the Pylian archive, there are only about ten documents where finished linen garments are registered, and most come from Knossos.

In the texts, record of linen is followed by the ideogram *146, *166+*WE*, pa-we-a (see somewhere), TUN+*KI*, TUN+*RI* and ki-to. That these garments appear with linen specified is probably indicative that they were otherwise made of wool (although *146 seems to have been a primary linen fabric). Out of these, TUN+*WE* is the most complicated to explain. WE could stand for we-a_2-no (‘garment’), but we-a-re-pa/we-ja-re-pa (‘<treated with> unguent’), has been proposed, implying that the cloth was treated with oil.[155] The flowy, semi-transparent dresses, such as depicted in the ‘*Adorants* fresco’ from Akrotiri (fig. 5), have been interpreted as flax, possibly imbued with oil to achieve the lustrous look.[156]

[151] Vakirtzi, 2020, 118.
[152] Other vegetal fibres are attested for the Aegean, nettle and hemp, and many other could have been used. For animal fibres, mostly sheep’s wool was employed, but there are occasional mentions of lambswool and goatshair.
[153] In EA 34, the King of Cyprus requests 42 bolts of linen, 50 linen shawls and a few robes, some more bolts and shawls of the ‘king’s linen type’ in exchange for the 100 talents of copper he had delivered. Correspondence between Cyprus and Egypt never mentions Cypriot linen, which led Vigo (2010, 292-93) to assume that the linen traded between the Hittites and Cyprus was of Egyptian origin, was produced on the island.
[154] PY Nn 831, for example, registers 45 SA from a village, probably Kori(n)thos, with specified quantities for individuals, some referred by name, some by title, with the ko-re-te (‘mayor’) contributing alone more than half.
[155] Robkin 1981, 213.
[156] Ulanowska 2020, 130.

3. 3. 2. 2. Spiner | a-ra-ka-te-ja[157]

There seems to be a difficulty in the translation of the Greek word ἠλακάτη which is often taken to mean 'distaff'. Barber clarifies that this word is more accurately translated as spindle.[158] Though this term is not recorded in Linear B, an occupational title containing this root, a-ra-ka-te-ja, seemingly meaning spinner, preserves it.

This occupation is attested at Pylos, Knossos, and Thebes. It appears on the Lc series, on KN Ak(1) 5009, PY Aa 89, 240 and Ad 380 and TH Of 34. According to KN Lc 531, however, the a-ra-ka-te-ja were not only in charge of spinning but had also to deliver finished cloth of the types pa-we-a ko-u-ra and tu-na-no. Luján thinks this is reason enough to question the actual relation between what the name suggests and the occupation.[159] Both wool and flax are collected seasonally, making unlikely that there would have been fibre to wove into tread all year and it possible that this tablets is just indicative that the workers accumulated many functions, on top of their specialty.

Spindle whorls are "the oldest known tools used in fibre crafts".[160] There is evidence for woven treads as early as 7000 BC, but even before that, fibre strings were manually twisted.[161] In the Aegean, Crete and Thessaly have yielded spindle whorls from Neolithic levels.[162] Whorls can be very informative on the kind of textile much in the same way as loom weights are. For example, heavier loom weights indicate a type of fabric that requires more tension on the warp treads, and those are usually coarser. With spindle whorls the heavier they are the faster they spin and more tension they provide. Heavy spindles are indicated for longer fibres. Whorls can have as little as 8 mm of diameter, but those are used for cotton, which was not adopted in the Mediterranean until much later.

There is evidence for two techniques being used in the East Mediterranean. This is less related to the whorl shape than to its placement on the distaff. The low-whorl was used in Bronze Age Cyprus, Anatolia, and Aegean, while the high-whorl was preferred in Egypt, Mesopotamia and Ugarit. In Anatolia, however, there is also evidence for the middle-whorl. As for the direction, the Egyptians opted for s-spin consistent with the natural twist of linen fibre. Where wool predominated, a z-spin is preferred, though wool has no natural twist and

[157] Aura Jorro 1985, 93.
[158] In *Od.* 4.125-35 Helen has her servants set her equipment for spinning. With wool and only a distaff it is not possible but if we translate it instead as spindle Helen is ready to spin. Barber 1991, 164.
[159] Luján, 2010, 383.
[160] Vakirtzi 2017, 111.
[161] Barber 1991, 51.
[162] Baber 1991, 54.

can be as efficiently spun in either direction. While this could be a consequence of from where the technique was acquired (maybe from an area where hemp or nettle that have natural z fibres predominated, for example) it is more likely due to the type of spindle, high or low, and the direction that feels more comfortable to a right-handed person.

Spindle whorls of 'Anatolianizing' type appear in many Cycladic islands in the Early Bronze Age, incised with geometric decoration. Vakirtzi suggests that the appearance of these whorls was linked to a rise in prestige of the textile industry, following the shift in the east from a vegetal fibre to a wool economy, while their presence in the Cyclades is resultant from contact with Anatolia and subsequent emulation of their practices.[163] The restricting environment of islands, i.e., the limited space for pastoralism, made them dependant on trade, creating occasion for exogenous influence.

On the etymology Barber notes that it is "curious that there is no common Indo-European word for the spindle whorl and that instead Greek and Latin (which uses *fusus*) seem to have picked up a loan word for this little utilitarian object."[164] According to Beekes it is probably a Pre-Greek word.[165] Solmsen assumed it to be an Anatolian loanword, but according to Simon, there is no known Anatolian word to support that supposition.[166] Given the antiquity of the evidence for spindle whorls in the Aegean, a substrate inheritance seems plausible, but so does an Anatolian borrowing, perhaps directly, or possibly through the Cyclades.

3. 3. 2. 3. Purple | po-pu-re-jo

The tablets show that many colours were used to dye textiles. Cloth appears in grey (po-ri-wa), white (re-u-ka), red (e-ru-ta-ra) and purple. Despite the richness of information on the production stages, we lack, however, information on dying. Tread and fibres if they were coloured, it is never noted, but the final product is registered dyed and decorated, with no record of how that came to be.[167]

Purple was in antiquity the most expensive colour to obtain and as such, it was regarded as symbolic of high-status and wealth. The Phoenician coastal city of Tyre was famous for producing purple dye, which often receives its name, Tyrian Purple, but also Phoenician Purple and Royal Purple. The dye was produced by extracting mucus from marine molluscs, murex,

[163] Vakirti, 2020, 121-22.
[164] Barber 1991, 263-64.
[165] Beekes 2010 513-14.
[166] Simon 2018, 391.
[167] Colour can be applied both to the finalized cloth or to the fibre, but we have to assume at least some fibres were dyed before weaving to achieve multi-coloured patterns.

which produced colours varying from blue, crimson and shades of purple. This produced the best quality purple cloth, but there were other, and cheaper, ways to obtain it.

In Homer it is used to describe blood, a dark cloud, the sea under stormy weather, and Death,[168] but also multiple textiles, like a cloth Helen weaves, Agamemnon's garment, carpets, the bed Achilles orders to be made for Priam and the cloth in which Hector's ashes are wrapped, to give a few examples.[169] The colour is also called ἁλιπόρφυρα, 'sea or marine purple', to differentiate it from cheaper dyes.[170] In the tablets it is exclusively used for a type of cloth, pu-ka-ta-ri-ja (discussed above in this section), translated as 'a thick double folded garment'.[171] In the Mycenaean texts, it appears in the tablets KN X 976, L(7) 474, and L 758 (in which it is accompanied by wa-na-ka-te-ro). It is possible that the acrophonical abbreviation PO refers to this colour, in which case we could include KN L 7380 and 7393.[172]

Beekes defends that πορφύρα is likely inherited from a Mediterranean substratum.[173] Astour, on the other hand, suggests it to be a Semitic loanword along with phoenix, without, however, proposing any etymology.[174] It seems unrelated to the verb, πορφύρω, which has an Indo-European Etymology. The lack of any convincing etymology leads Palaima to propose a Minoan source, especially since all mentions came from Knossos.[175] About the material, its exclusive application on an especial fabric, along with its 'royal' ties (L 758) suggests that this was an expensive type of dye. Apart from alkane, dyer's madder (*Rubia tinctorium*) was also common around the Mediterranean, but since πορφύρα is later attested as a synonym of Tyrian Purple, it would not be too farfetched to assume we are dealing with a murex-based dye.

Murex trunculus, *Murex brandaris*, and *Purpura haemostoma*, are all species of Murex native to the Mediterranean, with the former two being the most commonly found in Crete. Though the Canaanites were often credited with the pioneering production of this purple, there is ample evidence for an earlier industry in Crete. The first evidence in the Levant comes from Minet el-Beida in the 15-14th century,[176] whereas in Crete there is evidence for its production in the Middle Minoan period. Murex shells are found in many sites throughout the island, but just the shells are not enough to suggest industrial activity, as these molluscs are suitable for

[168] All in *Il.*: Blood 17.361; Death 5.830; Sea 16.391.
[169] All in *Il.*: 3.126, 8.221, 9.200, 24.645 and 796, respectively.
[170] *Od*. 6.53.
[171] *Docs*^{2}, 321.
[172] Melena 2014, 132. The problem with this identification is that the other endograms that appear with TELA usually refer to the type of textile and not to its colour/decoration. Nosch 2012, 311.
[173] Beekes 2010, 1223-4.
[174] Astour 1965.
[175] Palaima 1991, 289.
[176] Stieglitz 1995, 48.

human consumption and can be used as fish bait. A few sites, however, have yielded evidence consistent with the production of dye, Pefka, Chrissi, Palaikastro, and Kommos.[177] Kommos is likely the earliest, with installations dating to around 1900 BC, some 400 years before the Levant. Kythera too has abundant murex shells and purple-painted MM III pottery.[178] In later periods, many other sites in Greece have yielded murex, but also Troy, Cyprus, other cities in the Levant and Tunisia.

3.3.2.4 Φοῖνιξ? | po-ni-ki-jo[179]

In the Linear B tablets, the term appears both as a commodity (po-ni-ki-jo) and as an adjective (po-ni-ki-jo/-ja). The commodity is recorded by weigh, while the adjective seems to be refer to colour[180]. In Knossos this commodity is registered by two hands 136 and 137 (Ga(2) and B series). Hand 136 worked in the West Wing where aromatics, honey and olive oil were dealt with and hand 137 worked in the North Archive and dealt exclusively with po-ni-ki-jo. The instrumental form (po-ni-ki-pi) also appears in the Ta Series of Pylos (e.g., 714), as some incrusted decoration motif on footstools and chairs, made of gold, ivory and *kyanos* (see Section 2). The adjective is used to qualify wool (KN Od 5082) and chariots (Knossos series Sd, Se, Sf), alternating with another non-Greek colour adjective mi-to-we-sa.[181]

Ventris and Chadwick interpreted the qualification of the 'spice' ideogram (AROM) with *po-ni-ki-jo* as indicating the provenance of the condiment ('Phoenician spice').[182] Melena defended that it was rather an agrarian product destined for consumption, likely dates of palm (φοῖνιξ in later Greek), distributed as ration for groups of workmen.[183] Foster, however, equates it with Alkanet (*Alkanna tinctoria*), a type of plant with red root used for dye production, that in Knossos she believes was employed both in the perfume and textile industry.[184] Murray and Warren list the same plant among many others used in antiquity for dye as possibilities.[185] Burke, however, rules out Alkanet, which he believes to correspond to Mycenaean wi-ri-za,

[177] See Apostolakou et al. (2016) for evidence from Chryssi and Pefka; Reese (1987) for Palaikastro; Ruscillo (2005) for Kommos.
[178] Huxley 1972, 36-37.
[179] Aura Jorro 1993, 139-40.
[180] This term was hard to place. Depending on how it is interpreted it could fit in this section as well as with perfumes (Section 4). It could be related to perfumery because it was recorded in a department that likely dealt with perfume ingredient distribution (see Section 4), but it does not figure in any perfume ingredient lists.
[181] Aura Jorro 1985, 455.
[182] *Docs*^{2}, 222.
[183] Melena 1975.
[184] She points out that the body of the chariot, likely made of leather, could hardly be painted with murex dye, for it was too expensive and Alkanet a known substitute was locally available. Foster 1977a, 60-62.
[185] Murray and Warren 1976, 57.

often associated with wool.[186] Though po-ni-ki-ja never appears qualifying textiles it appears once for wool and alkanet is known to have been used as a base colour to prepare cloths for the more expensive murex dye.[187]

In Homer it is a colour between for purple and dark red[188]. In later Greek, the term indicates the ethnonym Phoenician, palm-tree or date-palm, a mythological bird, and an instrument, similar to a guitar, which possibly received its name after the ethnonym.[189] It is hard to establish an etymology for a word with such a varied range of meanings. The Indo-European etymology relating to murder and blood does not hold in face of the Mycenaean form, without the labiovelar.[190] According to Beekes, the suffix -ik- is non-Indo-European and likely Pre-Greek.[191]

The relation between the ethnonym Phoenician and the colour purple poses a chicken-and-egg type of problem. Did the Phoenicians receive the name of the colour, or did the colour receive the name of the Phoenicians? Billigmeier defends that the original meaning was palm-tree, which in turn gave name to the people and the region, for there were many of this plant there and only later the colour and dye received their name from the country, where it was first/most famously produced.[192] He adds that po-ni-ki-pi found in furniture in the Pylos Ta series is the palm-tree, well known from Aegean art. Palmer had suggested that po-ni-ki-ja used as an adjective for chariots too meant palm-tree, rather than the colour.[193] Ventris and Chadwick translate it as 'griffin' also known from Aegean art and better matching the decorative tendencies observed in this series.[194]

Astour proposed that the relation between the two semantic attributions worked the other way around, that the word phoenix, meaning red, was first borrowed from the Levantine people, and them adopted to designate them. Insisting on a Semitic etymology, Astour proposes to derive it from *puni*.[195] Murray and Warren argue that the commodity of the tablets is not dates. They draw attention to the fact that not only the fruits themselves are lacking from iconography, though the trees are present, but also that the climate of Crete is unsuitable for

[186] Burke 1999, 78. This word is interpreted by Ventris and Chadwick as ῥίζα (*Docs*^{2}, 225)
[187] Pliny *NH* 22.48.
[188] In *Il.* 23.454, for example, Idomeneus' horse is described as a phoenix.
[189] Herodotus (4. 192) claims it was invented by the Phoenicians, hence the name.
[190] Chadwick and Baumbach 1963, 55.
[191] Beekes 2010, 1583.
[192] Billigmeier, 1977, 2-3.
[193] Palmer 1965, 316. Unlikely, since in the tablets from the same series the alternating adjective is a colour.
[194] *Doc*^{2}, 344.
[195] Astour 1965, 349-50.

extensive cultivation of date and therefore could not be the locally sourced commodity we find in the texts.[196]

It seems impossible to prove what semantic progression φοῖνιξ went through. There is no way to tell if the Mycenaeans and Minoans already called the Levantine cities Phoenician, but this is unlikely since the adjective does not appear as an ethnonym in any tablet. Determining an origin depends on how we chose to interpret the word in the Mycenaean texts. Except for the inlaid decoration, all other occurrences are consistent with colour and dyestuff, regardless of which material was used to obtain it. Moreover, a potential conflation of different, but phonetically akin, foreign loanwords should not be ruled out. In this case, either a Minoan or substrate origin seem plausible.

3. 3. 3. Conclusions

One word that was not included, for it is not technically attested in Linear B, but it is still worthy of comment on, is μαλλός. This is a similar situation to *SA* as an ideogram for flax, where it seems like the sign was adopted from Linear A, but not the word. Wool in Mycenaean Greek is */werwos/ (Myc. we-we-e-a), found later in Homer with the same meaning, and which has a common etymology with Latin *vervex* '<castrated> ram'. The ideogram (*145), however, formed by the junction of Linear A signs AB 80 and AB 26, MA+RU, was likely the Minoan term for it and appears in at least four Cretan tablets.[197]

It was mentioned on the introduction of this section, and it is now opportune to circle back to it, the idea that the influence of Crete on textile industry is better felt on the mainland on Mycenaean times. Iconography shows a strong Minoan influence over Mycenaean fashion, though the Mycenaeans depicted more simplistic patterns, either for preference or they were not able to achieve the same degree of detail complexity.[198] However, around this period, weaving and spinning had already long been established there. Of course, that new vocabulary can be adopted, and old vocabulary abandoned, but the examples of flax and wool demonstrate otherwise. We see that just as they did not adopt the Minoan language for their administration, they too did not borrow technical terminology whenever they already had a word for it, and

[196] Murray and Warren 1976, 45-46.
[197] PH 3, HT 12, 24 and KH 43. Admittedly, there is no guarantee that AB 80 and AB 26 were respectively ma and ru/lu, because we cannot know for sure that the sound value of the syllabic signs was kept. Steele and Meißner (2017, 93-110) make a good case for backward projection but while AB80 can be verified for *ma*, evidence is still needed for AB 26 as *ru*.
[198] Trnka 2007, 128.

perhaps it happened only when there was no other designation, like in the case of the many cloth names we only find in Mycenaean Greek

Once again, like in the case of metals, we have a semitic loanword (chiton) and its presence does not need to be resultant from direct contact with semitic speaking populations. But unlike in the case of metals, where borrowed techniques and cultural influences can be easily demonstrated by archaeological comparisons, we are limited to written and iconographical sources. Without written documents it is hard if not impossible to prove textile trade, but we can speculate with the evidence we have. We know that Crete had an early production and we do know that they were trading abroad, especially in MM, both because we have evidence of imported luxury goods and because Crete is scarce in some resources, like metals. Logically they had to have something valuable to exchange. Burke suggest that the lack of Cretan exports around the eastern Mediterranean, compared to the number of imports from abroad could be explained by cloth trade, which would not be evident in the archaeological record.[199] In Menkheperraseneb's tomb a painted scene shows Keftiu (long identified with Crete) bringing gifts which included textiles. We also know they produced purple from early on, which was highly valued. If there is one of this words that is a good candidate for a Minoan loan it is purple, but all the other ones, could have been assimilated from elsewhere, especially when Anatolian makes for a more logical bridge with the Semitic world than Crete (unless, of course, we accept the supposition that the Minoan language was of Semitic origin) at least as far as the textile vocabulary is concerned.

We cannot disregard the evidence for Anatolian influence. Many of the women working both at Pylos and Knossos are qualified by an ethnic adjective that in Pylos often indicates probable eastern origin.[200] About seven ethnics have plausible East Aegean and Western Anatolian links. There is a discussion surrounding the status of these women, of whether they were refugees and free workers, moved for safety, or if they were slaves acquired abroad. John Chadwick says regarding this discussion: "It is probably unwise to imagine a sharp opposition between slave and free in Mycenaean times".[201] It is also unimportant for the purpose of this section to discern them, but how they came to be at Pylos is of more interest. If slaves from Anatolia were regularly acquired to work on textile production in the palaces, we should expect it to have impacted the vocabulary, but if this was an extraordinary situation, associated with

[199] Burke, 2010 24-25.
[200] Ki-ni-di-ja, ma-ra-ti-ja, ra-mi-ni-ja, a-*64-ja, ze-pu$_2$-ra$_3$, and possibly ki-si-wi-ja, are related to Knidos, Miletus, Lemnos, Lydia, Halicarnassus, and Kythera, respectively. In contrast, at Knossos all the textile workers whose 'ethnicity' can be determined are of Cretan provenance. Olsen 2014, 98.
[201] Chadwick 1988, 90.

the instability at the end of the Bronze Age, their presence would not have been as influential to the industry or the related vocabulary.

In one of the letters from the Hittite archives that refers to Ahhiyawa, broadly accepted to correspond to mainland Greece, there is a complain about a population of 7000 taken from Hittite territory.[202] We have, therefore, a document registering the migration of 7000 people from Anatolia to Greece around the mid-thirteenth century. The Hittite texts also provide evidence for commerce between Assyria and Greece from a treaty establishing a trade embargo.[203] Though this is evidence for direct contact, there is no shortage of archaeological evidence for Mycenaean presence in the East, beyond the coast of Anatolia (though curiously lacking from inland Anatolia). The language of the Hittites, with whom the Mycenaeans had a somewhat close relationship, and the other Anatolian Indo-European languages, were too influenced by the cuneiform cultures of the Near East. They take much after the literary traditions of Mesopotamia, and of, course, the script. Specifically related to textiles, already in the 19th/18th century the Assyrians traded in Asia Minor, according to the transaction records in cuneiform tablets preserved in the private archives of merchants from Kanes. They exported textile and tin to Central Anatolia in exchange for silver and gold.[204] It is argued that Anatolia, in addition to Crete, was a bridge between Greek and Semitic.

If we then postulate that these loans were not Minoan, and that, when Linear B was adapted, they were preferred over Minoan terminology, we have to assume the borrowings took place before the invention of Linear B, but they do not all need to have happened at the same time or come from the same origin. Linen stands out from the rest for it is essentially a phytonym, but unlike the other phytonyms that will be discussed on the next section, linen is very much tied to this industry because there is evidence for its use in textile production since the Neolithic. It is also not exclusively native to Greece, meaning the term could have been picked up at any point but since it does not match other Indo-European languages, it is also a good candidate for a substrate word.

On the wider picture, what this section seems to indicate is that, as a proper substratum during the LM II-III periods, the Minoan language was not as influential as when Crete was at the height of its cultural influence over the Aegean when Minoan borrowings are likely to have taken place. On the previous section we arrived at the probability that χρυσός was borrowed *via* Crete and the same could apply to khitṓn. However, before Late Helladic, Crete was not as

[202] Beckman et al. 2011, 113.
[203] Beckman et al. 2011, 63.
[204] Michel 2014, 112.

influential in this case. It is curious that there are no more Minoan loanwords, besides proper nouns, that we can identify in Linear A, even considering how limited the corpus is. *SA* and MA+RE make it clear that they did not replace terminology, even though the Mycenaean textile industry at Knossos was very much built on the Minoan industry.

3. 4 Olive oil and the Perfume Industry

3. 4. 1. Introduction

Though we find mentions of scented oil in tablets from Pylos, Knossos and Mycenae, only the Pylian documents are particularly eloquent in respect to this industry. No workshop has yet been securely identified at Pylos or any other palace,[205] but four 'perfume-boilers' appear in the records who might have been working there.[206] Though we find no recipes, the ingredients listed for distribution and the allocation of the finished product allows for a general idea of the practice surrounding what seems to be an important industry at this centre, regulated by the palace itself, much like with textiles at Knossos. The distribution to elite members, sanctuaries, and gods, indicate this was a luxury commodity, employed in religious ceremonies emulating perhaps contemporary Near Eastern practices.[207] As for Knossos most information comes from one department in the West Wing that seems concerned with the distribution of perfume ingredients among other things,[208] as well as the records of distribution of the finished product. The only other mention of perfumed oil appears in tablet Fo 101 from Mycenae,[209] but the Ge series found in the House of Sphinxes mentions spices and herbs that elsewhere appear as perfume ingredients, though here it is not clear whether this was their employment.[210]

I will be referring to this commodity as perfume or perfumed oil, as most works do, but it is worth mentioning Cuyler's caution against translating it as such. That is mainly because of the modern connotation that might be misleading as to its applications, which would have gone beyond the cosmetic sphere and be employed in religious and medicinal purposes.[211] All

[205] Marinatos (1958, 61-73) interpreted the House of the Oil Merchant at Mycenae as the "palace unguent kitchen". One of the rooms of this building, Room 1, had eleven pithoi lined against the wall, one of which had an arrangement beneath it to heat the jar, the main reason for this identification. Shelmerdine (1985, 53-55) and Forster (1974, 88-90), however, reject this assumption. Shelmerdine states that the room is too small and poorly ventilated for industrial perfume production, and both authors agree that the *pithos* is an inadequate vessel. The oil tablet found in the room, taken as a further indication, in parallel with Pylos should be more indicative of a storage room than a workshop.

[206] Kokalos, Eumedes, Philaios and Thyestes, all seemingly working for the palace. Kokalos for example receives rations of wheat and figs from the palace (Fg 374). And whenever there is no mention of the place of the workers, other tablets indicate that the palace can be assumed by default. Philaios is peculiar because he is qualified as po-ti-ni-ja-we-jo or 'Potnian' which places him under the employment of the goddess or of her sanctuary in some capacity. Shelmerdine 1985, 43-44.

[207] Hittite and Assyrian texts show a belief in the purifying qualities of oil, both physically and spiritually. Fappas 2011, 496-498.

[208] Foster 1977a.

[209] Though it is possible that the oil referred to in this tablet is not scented Foster 1974, 113.

[210] E.g., coriander in tablet MY Ge 605. Given the absence of many other ingredients and the much smaller quantities in comparison to Pylos and Knossos, it is more likely that they were used in other contexts, culinary perhaps. Foster 1974, 91-92.

[211] Cuyler 2012, 655.

the plants that figure in the tablets have medicinal uses that were known in antiquity and perhaps in Mycenaean times too and the distribution of the oils indicates its connection to religious activities.

We do not know the details of the Mycenaean perfume production, but contemporary sources from neighbouring regions and posterior Greek texts provide some idea of their methods. The ingredients known from the tablets match those known from Theophrastus' *De Odoribus* (4th/3rd century BC) and Dioscorides' *De Materia Medica* (1st century BC). The process they describe can be very simply and schematically resume as follows: first, the oil goes through a pre-treatment to make it more receptive to the aromatics. In this phase astringents like Cyperus (discussed in detail below) can be added. Next is the steeping of the aromatics which will give the oil its final fragrance. This would be repeated a couple of times and it was required for the oil to be heated and stirred for a couple of days. Despite the 4/5 centuries between the two sources, they describe similar processes and even though the Mycenaeans are a little further distant the evidence from the tablets leads to believe it was not too different.[212]

There is very little variety of scents recorded in the tablets, and only one example of mixed aromas. The three final scents are rose, sage, and cypress, possibly ertis, though it is more likely a colouring agent (see discussion below). This limited assortment could be a matter of preference, but also of availability. The Mycenaeans seem to have limited themselves to locally available aromatics, since all the three plants occur in Greece. Still, there might have been a wider array of options that we have no record of. The seasonality of the base ingredients (mostly plants) would have allowed for a varied selection throughout the year and would surely be omitted in the record because only the last season of the palace's activities is archived.[213] Curiously, none of the final scents are recorded in ingredients lists, which raises the question of whether they were also provided by the palace, that otherwise supplies the perfume-makers. Shelmerdine suggest that the workshops were be located near a source where the workers could extract directly.[214]

The vocabulary linked to perfume-making is largely non-Greek, though it should be highlighted that most of the words below fall into the phytonym category, and therefore are not strictly related to perfumery. This means that their origin is not necessarily tied to this industry, even if this were the primary use by the Mycenaeans. That is especially true for the plants that

[212] Shelmerdine 1985, 17.
[213] Shelmerdine 1985, 22.
[214] Shelmerdine 1985, 43-44.

were available locally, and it does not seem that the Mycenaeans imported material for their perfumes. Not all vocabulary related to perfumery known from the tablets is listed below, some Greek and non-Greek words are omitted, but they are briefly listed here. The Greek words are absent for obvious reasons and the non-Greek because though they are ingredients listed in the documents, perfumery was not their primary use, and they are better included elsewhere. Those are wine, used according to classical sources to soak and produce a paste of the aromatics, [215] unspecified fruits, and honey, which if it had the same function as in classical times was used to coat the perfumers' hands and the vases.[216] Wool is also listed, presumably for straining the perfume, or as a source of lanolin.[217]

3. 4. 2. Vocabulary

3. 4. 2. 1. Rose | wo-do-we[218]

This is one of the four adjectives that appear qualifying oil in the tablets. Etymologically Beekes considers ῥοδον to have been "certainly borrowed from East", possibly from Aramaic (*warda*) or Old Iranian (**wrda-*). It is cognate with Aram. *wardef* and Arab. *ward* 'id.', Arab. *warada* 'bloom', waruda 'be red'.[219] A couple of rose species are native to Greece and the Mediterranean as a whole. Cuyler points that roses grow around the palace of Pylos nowadays, and perhaps so did in Late Bronze Age.[220] In the Iliad rose infused oil is used on the body of Hector by the goddess Aphrodite to preserve it.[221] In the epic language it also had the colour meaning, describing Dawn (ῥοδοδάκτυλος)[222] but there is no indication on the tablets that it had already the same meaning in Mycenaean Greek. Classical times rose seems to have been a popular scent, and it was often tinged red with alkanet.[223]

3. 4. 2. 2. Sage | pa-ko-we[224]

Pa-ko-we, 'scented/flavoured with sage' is the adjective that most frequently describes perfumed oil. Many species of sage (genus *Salvia*) are native to the Mediterranean. They have

[215] *De Odoribus*, 25.
[216] *De Materia Medica,* 1.43.
[217] Mazow 2014.
[218] Aura Jorro 1993, 439.
[219] Beekes 2010, 1289.
[220] Cuyler 2012, 658.
[221] *Il.* 23. 185-87.
[222] *Il.* 1. 477.
[223] Dio. I. 43.
[224] Aura Jorro 1993, 2, 76.

extensive medicinal applications that were known since antiquity,[225] and possibly in Mycenaean times. Σφάκος is according to Beekes likely Pre-Greek.[226] Furneé comperes it with σφάγνος and σφάκος, the s-mobile and variation between γ and κ might indicate Pre-Greek origin.

Sage is not a scent mentioned in classical recipes, but it was used for perfumes according to Pliny[227] and it is also used in modern perfumery.[228] *PA*, often linked with the ideogram OLE 'oil' (see below), might be understood as an acrophonic abbreviation for pa-ko-we.[229]

3. 4. 2. 3. Cyperus | ku-pa-ro[230]

Also written ku-pa-ro$_2$. This commodity is identified as κύπαιρος/κύπειρος, *Cyperus rotundus* L. According to Beekes "a foreign Pre-Greek word".[231]

It appears in three lists of perfume ingredients (PY Un 249, 267 and An 616) and in one text (Fr 1203) as an adjective (ku-pa-ro-we) in combination with rose. Foster identifies it as an astringent used in the pre-treatment of the mixture rather than the final fragrance, since Mycenaean perfumes rarely combine more than one aroma.[232] It would be odd, that a secondary ingredient would be listed only once and as an adjective in all the texts that record the finished product. On the other side, it is present in three of the four tablets listing ingredients, and none of the other finals scents ever are, making it unlikely to be a fragrance adjective.

3. 4. 2. 4. Coriander | ko-ri-a$_2$-da-na/ ko-ri-ja-da-no/ ko-ri-ja-do-no[233]

Κορίαννον is according to Beekes likely a Pre-Greek word, but connection with Akkadian *huri'anu* has also been proposed.[234] This is identified as *Coriandrum sativum*, L. Coriander is native to western Asia and northern Africa, but it occurs in other areas around the

[225] Pliny *NH* 22.71.
[226] Beekes 2010, 1428.
[227] Pliny *NH* 12.108.
[228] Foster 1974, 104-5.
[229] Bennet 1958, 18. One objection to this reading is that the same scribe who write pa-ko-we with OLE+*PA*, also writes the ligature without it many times. It is possible, though, that it just reflects an inconsistent habit (Shelmerdine 1985, 36). Palmer 1963, 246) proposes that *PA* refers to φαυλία, 'coarse olive' oil.
[230] Aura Jorro 1985, 404.
[231] Beekes 2010, 804.
[232] Foster 1974, 21-22.
[233] Aura Jorro 1985, 382.
[234] Beekes 2010, 754.

Mediterranean. There is evidence from Early Bronze Age Sitagroi that coriander was already cultivated in northern Greece.[235] There is also mention of this plant in cuneiform records.[236] Apart from perfumery, its fruits are used as condiment and it has medicinal uses, working as a stimulant and carminative.

Coriander is mentioned at Pylos, Mycenae and Knossos. In the tablets it appears in relation to perfume ingredients (Un 267, 592 and An 616) but also in tablets concerned with spices (Ga and Ge series), often in association with po-ni-ki-jo (e.g., KN Ga 418). It is the most frequently mentioned condiment in the tablets.[237] In Knossos it is handled by scribes 135 and 223, who both worked in the West Wing. Foster suggests that the tablets of the KN Ga series were composed in a department concerned with the distribution of perfume ingredients.[238]

Coriander too was likely employed as an astringent (to make the oil more susceptive to scent and to thicken it), since it never appears accompanying the finished perfumes. It can also be represented by the acrophonic abbreviation KO (e.g., PY Un 592).

3. 4. 2. 5. Ertis | e-ti-we[239]

Of unknown etymological origin.[240] This word appears in three tablets describing oil, two times by itself and another one along with sage. It is also possibly occurs in PY Fr 1200, if a-e-ti-to[can be read as 'without *ertis'*.[241]

The identification of this commodity on the tablets is difficult, and even the translation of ἔρτις is uncertain. Henna has been suggested, mostly because of Hesychius. In his glossary he equates ἔρτις with κρημνός and in another entry κριμνός is describe as "λευκάς τινας βοτάνας". It is possible that the two spellings are variations of the same word. In a source from the 2nd century BC it appears with the η spelling, referring to red dyestuff for wool and in the Papyrus Holmiensis, from the 3rd-4th century AC, it appears multiple time as an ingredient for red dye also for wool, only here spelt with ι, said to produce a colour lighter than the red of

[235] Megaloudi 2006, 69.
[236] *Docs*^{2}, 129.
[237] *Docs*^{2}, 131.
[238] Foster 1977. This department also deals with po-ni-ki-jo that, if we chose to interpret it as alkanet could have been used as a dye for the oil. OIL+*PO* would then indicate dyed oil. Palmer (1963, 246), however, interprets it as palm oil but this kind of oil is not mentioned in the classical sources (Foster 1974, 112).
[239] Aura Jorro 1985, 258.
[240] Beekes 2010, 465.
[241] The tablet is, however, broken and there is a chance the text could be incomplete.

alkanet.[242] There is one text in which e-ti-we appears along with sage, indicated by pa-ko-we in Fr 1224. Once again, because normally Mycenaean perfumes have only one scent, it is more likely to refer to another type of ingredient, perhaps dyestuff. Henna was used as a colouring agent in antiquity, and it has white flowers, hence the correlation.

Cuyler, however, debunks this possibility by demonstrating that henna could not have be used to dye the oil from the tablets. The dying agent present in this plant reacts only with protein, such as in hair, skin, and wool, and even if it could dye oil, it seems unlikely that the Mycenaeans would import henna, which is not native to Greece, solely for this purpose when other options were locally available.[243] It is still plausible, however, that the flowers were used for their scent, but since all the other aromatics are obtained locally, it is unlikely. Even more so because the flower must be fresh and large quantities are required, therefore impossible to be imported by the Mycenaeans in the necessary conditions. It could be any other aromatic white flowered plant, native to Greece, either for it scent or as colouring agent, in which case a-e-ti-to could indicate 'not dyed'. In Fr 1209 it occurs with oil without any other adjectives. If this is not an aromatic plant, then this oil is unscented with some other addition.

3. 4. 2. 6. Stirrup-jars | ka-ra-re-we[244]

In Hesychius χλαρόν· ἐλαιηρὸς κώθων (vase for oil). The term has no convincing etymology.[245] Alessio suggests it to be a Mediterranean loanword.[246]

Archaeologically the origin of the stirrup-Jar (fig. 6) is well established in Crete. The first ones date from the Middle Minoan III period with examples at Ayia Irini and Kommos. Though a few shapes have been suggested as the prototype for the stirrup jar, it likely borrowed features from many vases and did not derive from a single one.[247] Early examples were coarsely made and decorated, indicating a strictly utilitarian use, but in Late Minoan IB/IIA finer types (such as the FS 169) were introduced. This type appears out of domestic contexts, sometimes in tombs. Its features suggest that it was created to store valuable liquid commodities, since its off-centre spout allows for a more controlled pouring of its contents. It was likely used for wine and oil, similarly to the amphoras, with which it is commonly found in association. Shortly

[242] P. Holm. 606.
[243] Cuyler 2012, 660.
[244] Aura Jorro 1985, 321.
[245] Beekes 2010, 1636.
[246] Alessio 1944, 132.
[247] Haskell 1985, 222. Most notably the Cycladic askos and the oval-mouthed amphora.

after its first appearance on Crete, the type was exported to the Cyclades. On the mainland, the first ones only appeared by Late Helladic IIA.

Stirrup-Jars range from large storage vessels to small hand-sized containers. The Mycenaeans seem to have used it for oil, as made clear by tablet PY Fr 1184, which refers to a transfer of oil between perfumers to be contained in thirty-eight stirrup jars. It also appears in tablet K 778 from Knossos. It is represented by the ideogram *210^{VAS} in K 700. They were extensively exported by the Mycenaeans, and as such transport stirrup-Jars[248] are found everywhere around the Eastern Mediterranean, from Sardinia to Syria. Samples from Mycenae and Thebes indicate probable Cretan manufacture of the examples tested. For Thebes Catling and Millet first conducted a chemical analysis of the clay fabric published in 1965 concluding that they had originated in East Crete, but later Catling and Jones re-examining the evidence realised that Chania was a better match for the samples.[249]

Since ka-ra-re-we has a straightforward identification and stirrup-Jars have certain origin, there is not much to speculate about the possible source of the loan, which points ultimately to Crete and the borrowing likely coincides with the date of appearance of the first jars on the mainland. With a shape so distinct and characteristic there is no space for a re-signification or use of a generic term for these vases. Its spread and adoption by the Mycenaeans, however, need not to be directly linked with the perfume industry, since it had a larger range of uses.

3. 4. 2. 7. Oil | e-ra$_3$-wo[250]

Ελαία and all its derivatives are according to Beekes "no doubt Pre-Greek."[251] Though very adaptable plants, spread across all five continents, olive trees are especially well-suited for the Mediterranean climate, where exclusively the *Olea europaea* grows.[252] There is evidence for exploitation of this species since the Early Bronze Age, but it was not perhaps until some centuries later that they integrated the Aegean diet and economy in the way we see

[248] Normally painted pre-firing with one exception, KH Z 16 which was incised, also pre-firing.
[249] Catling and Millet 1965. Catling and Jones 1977. Catling et al. 1980, 51-52.
[250] Aura Jorro 1985, 237.
[251] Beekes 2010, 401.
[252] Megaloudi 2006, 58.

in Mycenaean times.[253] Pratt suggests that this intensification happened in Neopalatial Crete, that she describes as "the tipping point in the entanglement between people and oil/wine."[254]

E-ra$_3$-wo can also be represented by the ideogram OLEUM (*130), but this may be interpreted as different kinds of oil besides olive's. Palmer, for example, interprets the signs that often appear in conjunction with the OLEUM ideogram as indicative of a different variety. The conjunction OLE+*PA* which Bennett thought to stand for pa-ko-we, Palmer suggests to mean 'from wild olives' (τῆς φαυλίας) and OLE+*A* to mean almond oil, both types known to have been later used for perfume production.[255] *PO* and *WE* too appear frequently in ligature with the oil ideogram. If we can assume that *130 and its Linear A equivalent AB 302 had the same meaning, there are many tablets from Crete recording olives and olive oil.

Besides perfumery, oil was also used for light and food, and therefore, like ka-ra-re-we, it is not exclusively linked to this industry. Without any other proposed etymologies, it is hard to challenge Beekes' assumption that it belongs to the substrate. The common ideogram with Linear A is not indicative of a common word, like the example seen in the previous chapter. A substrate inheritance and a Minoan loan word are equally likely.

3. 4. 3. Conclusions

The challenge of interpreting the evidence presented in this section is that despite being connected by the perfume industry, these lexical items are not exclusively related to it.

Two further sub-divisions can be made. The aromatic plants all form one subgroup. There is no extensive record of archaeobotanical remains for their use. At best we can identify that most of them are native to Greece, except for e-ti-we, that cannot be safely identified, but it is very likely also native (see above). This means that the assimilation of their names should not be expected to coincide with the rise of perfume production, for they would have been familiar to the population regardless of their use.

Olive oil and stirrup jars form another subdivision. They both surely belong in this section, for there is no discussing the Mycenaean perfume industry without touching on them. Oil was the base product, and analysis of the jars provides considerable insights in the trade of

[253] Renfrew (1972) correlates the rise of polyculture with the emergence of the first palaces on Crete, but Hamilakis (1996, 21) does not consider that the available evidence on the subject points to a systematic exploitation before Palatial times.
[254] Pratt 2021, 47.
[255] Bennett 1958, 15-16. Palmer 1963, 245-46.

this commodity. However, stirrup jars likely were used to store and transport any kind of oil, not only perfume, and perhaps other sorts of liquids too. Precisely because of that, it is difficult to assess if their adoption on the mainland was related to perfumery or even to oil consumption. Olive while also a phytonym, on the other hand, is in the Mediterranean of great cultural and economic significance, and its name is more likely to be related to its first systematic exploitation.

Though Crete had a perfumery tradition dating perhaps to the beginning of the second millennium, it is difficult to view the Mycenaean perfumed industries as a simple development out of the Minoan ones. If the Mycenaeans had taken their perfume industry after the Minoans, two things should be expected that do not occur: First that in Knossos there would be a more extensive record of this activity; second, that ingredients and techniques would have been borrowed from the island. The lack in the record can be due to gaps in preservation, but Knossos has the largest archive and no evidence of a perfume industry as centralized as in Pylos that, like with the textile industry, could give us any reason to believe in continuation of the Minoan practice.

Iris is a reoccurring motif in Minoan art, and it was used in perfume production according to evidence from Chamalevri where a perfume workshop has been identified dating to Middle Minoan IA. There is however no mention of iris in the Mycenaean texts. Vlazaki proposes that wi-ri-za is either iris or iris root, that was also represented by the unidentified sign *157, as she finds it "difficult to accept the absence of the iris from the list of urgent ingredients on the tablets."[256] There is no consensus on the interpretation of this term and this proposal does not explain the relation with wool.[257] Ventris and Chadwick suggest that the wool ideogram in the ingredient lists could have been a scribe's mistake, who meant to write MA, the acrophonical abbreviation for ma-ra-tu-wo (Gr. μάραθον), fennel, which appears in the Mycenae Ge series.[258] Killen, however, is sceptical of the changes of consistent repetition of this error, even if it is found on records by the same scribal hand.[259] In any case, Vlazaki's suggestion is unlikely and there is no concrete evidence for the use of iris in Mycenaean

[256] Vlazaki 2010, 36.
[257] In PY Un 267, it is listed along with other perfume ingredients provided to a perfumer for boiling. Killen thinks it means root and it had the meaning with wool of the base, the richest part in grease, standing therefore for lanolin. Beck and Beck (1978, 213-14), however, state that it is anachronistic for Mycenaean times, when there is no evidence that lanolin was extracted or used in perfumery, for which the first mention is from the first century BC. They propose (215) it was rather used to strain the perfume, suggesting a connection with ὑλίζω, 'to filter' or 'to strain'. Wi-ri-za wool would therefore mean something like 'wool for straining'.
[258] *Docs*^{2} p. This is also a non-Greek word, according to Beekes (2010, 903) of Pre-Greek origin.
[259] Killen 1962, 48.

perfumes, there is no wi-ri-za oil and a plant with such a distinct fragrance would not have been a secondary ingredient, but the final aroma, and as we have seen, the only ones listed are rose, sage and cypress (and possibly ἔρτις).

In Zakros too, a perfume workshop has been identified. 'Specialized vessels' were found, of peculiar shape, that find no parallel in the contemporary mainland or in the Mycenaean period but that are found in other Cretan sites.[260] Vlazaki also describes the equipment of Chamalevri as 'of singular shape'.[261] The evidence from these workshops do not seem to indicate that the Mycenaean industry was directly taken from the Minoans. At the same time, there is no evidence for an older mainland perfume industry in the mainland, which had certainly to have been prompted by external influence.

The Minoan industry might have been influenced by Egypt and/or Syria.[262] We have documents that show that the Egyptians imported aromatics from Crete.[263] But Egypt might be a little too far to have influenced the perfume industry of the mainland, and its influence as previously established, was in many instances filtered through Crete. Near East was much closer and it too valued perfumed oil, as exemplified in the introduction to this section. We have seen that this was a suitable gift to be exchanged between monarchs from the Amarna letters, and from the Hittite tablets we know they and the Mycenaeans had that kind of contact.[264] We also know because of the stirrup jars that oil was traded and it may have been used in exchange for luxury imports, such as gold and ivory (see Section 2).[265] However, the contemporary sources from Assyria indicate some differences between theirs and the classical Greek production, and the latter seems to better match the Mycenaean practices.[266] We have no way to know if there were other Near Eastern regions whose production resemble more the Mycenaean.

Sesame (sa-sa-ma) is found listed on the Mycenae Ge tablets, which is a word of Semitic origin. If we can take this as evidence that condiments and aromatics (that figure together in some tablets) were imported from Semitic speaking areas, then this might indicate

[260] Shelmerdine 1985, 57.
[261] Vlazaki 2010, 365.
[262] Foster 1974, 159.
[263] Vlazaki 2010, 361.
[264] A letter from a Hittite official to the king records the dispatch of two rhytons, a gold and a silver one, as gifts for the kingdom of Ahhiyawa (Beckman et al. 2011, 147).
[265] Shelmerdine 1985, 141.
[266] There is no preparation or preheating of the oil with astringents that are known from classical sources and figure in tablets (see coriander above) and the oil is heated directly on the fire, instead of in *bain-marie* (Shelmerdine 1985, 15).

an eastern influence in this industry. Shelmerdine speculates that ερτις and myrrh could have been imported.[267] However, all the final fragrances describing oil can be found locally and these Mycenaean scents seem to have been greatly appreciated around the Mediterranean as demonstrated by the distribution of jars. Given the evidence, it appears more accurately to say that the Mycenaean perfume industry was *inspired* by foreign industries rather than directly imported or influenced.

[267] Shelmerdine 1985, 45.

Chapter 4 | Conclusions

It has not been possible to provide a definitive origin for the words here presented, but on the basis of the archaeological record, we can at least argue against the unity of this vocabulary. On linguistic grounds, Beekes strongly defends that most of them belong to the same language, but I offer a critique of this position and an archaeological input based on the evidence revised in the previous chapter.

Beekes is heavily biased in favour of Pre-Greek, tending to assume a substrate origin whenever evidence is lacking. Though in his own words "not every alternation necessarily points to Pre-Greek origin"[268], he more often than not concludes that it does, going as far as to inquire on the possibility that χιτών /khitōn/ a loanword with well-established Semitic etymology could be Pre-Greek. He frequently dismisses etymologies as unconvincing with little or no explanation. According to him "it is impossible to distinguish between substrate words and loans from Asia Minor"[269], an issue he solves by regarding all of them as Pre-Greek indistinctly.

To treat these words as a block, they would all have to archaeologically fit within the same context, and that would very easily provide a time and place for the borrowings and therefore the first contact Proto-Greek had with the other languages that participated in the formation of Greek. What I found however, against my expectations, is that not even within the same groups the words seem to belong necessarily to the same place and time.

I will reiterate that only the non-Greek words attested in Linear B can be safely concluded to have been borrowed during or before the Bronze Age. While some may have already been integrated in the Greek lexicon by that time, and many of them probably were, we have no way to know if and which ones. This is a major issue concerning reconstructed languages. All reconstructions are hypothetical and cannot be representative of an actual language that was ever spoken because languages are not static, and lexicons are sure to contain diachronic elements that might have never been in use at the same period. I have tried as far as possible to include the Neolithic period and the Early and Middle Bronze Age in the work frame, on the interest of exploring every possibility both for origin and for date when it comes to the loans, but the era *preceding* Linear B is –understandably– one where less reliable linguistic inferences can be made. In any case, the origin of a loanword is not always tied to

[268] Beekes 2014, 2.
[269] Beekes 2014, 3.

the object's first appearance, but in many cases, to a moment of significant shift, like in the case of gold, which though present since the Neolithic, has a markedly different and new employment in the Early Mycenaean period.

None of the evidence is in direct contradiction with Greek having a native substrate. It contradicts that all the seemly non-Greek words belong to it, but allows for the possibility that some, or even many, do. There are quite a few non-Greek endemic phytonyms, some were presented here, but there are more attested in Linear B (e.g., mi-ta, Gr. μίνθα (mint); ku-te-so, Gr. κύτισος (pseudo-ebony), or pte-re-wa, Gr. πτελέα (elm). The need to adopt these basic floral-related names can be explained by their absence from Proto-Greek, that having come from abroad, had no words for these thus far unknown concepts. However, if we were to accept a Mediterranean or an Aegean substrate, shared, as proposed by Haley and Blegen, by mainland Greece, the Cyclades, Crete, and Anatolia, we would expect these words to reoccur in the languages of these respective areas. Such is the case with the non-Greek place-names that spread over the Aegean. We do not have enough evidence on the languages of Crete or the Cyclades to assess that, but we have from Anatolia.

We do not have many examples of Greek and Anatolian non-Indo-European cognates, and the few we have are uncertain (see mo-ri-wo-do), but this could be due to the complexity of the linguistic situation in Bronze Age Anatolia. There, many languages coexisted, Indo-European and otherwise. While the same is also possibly true for Greece, we have no written evidence to prove it. Anatolian is believed to be the earliest branch to separate from the family, and the area is by some defended to be the original home of Proto-Indo-European.[270] If we assume that mo-ri-wo-do, for example, was not in fact borrowed from Lydian, but that Lydian inherited it from a substrate language, and so did Greek, then we have evidence for a shared substratum. That solution is not at all unlikely since lead, as established in 3. 1. 2. 1., was not imported neither does its employment show particularly non-Aegean influences. This can be accepted without ruling out the possibilities of other substrate languages. Even if there was one substratum which had Anatolian affinities, there could have been others.

But substrate languages are not the only possible source of loans. Renfrew has made a case for part of the vocabulary belonging to Minoan Crete, observing that some of them would seem better placed at a society of palaces than at the Early Bronze Age (or the Neolithic) on the mainland.[271] This seems especially true for the vocabulary relating to artifacts and materials

[270] Renfrew, 1987.
[271] Renfrew 1998.

that found their way to the mainland when Crete was at the height of its influence in the Aegean, during the Neopalatial period. However, given that many of these things had first to find their way to Crete from elsewhere, it is possible that they did not originally belong to the Minoan lexicon and that Minoan influence was merely a vehicle (See 3.2). Once again, the lack of evidence in the written record offers contradiction. Even with the limited corpus of Linear A documents it is curious that we do not have more reoccurring vocabulary between the tablets of the two scripts beyond proper names or toponyms, especially considering the presence of Greek-speakers on the island.

I propose to divide the linguistic contact between Crete and the mainland into three phases. The first one corresponds to the era of the so-called 'International Spirit' of Early Bronze Age II when there was lot of contact between the southern Aegean regions, and the boundaries of the cultures defined by us are particularly blurry. At this stage it is hard to define what could have come from local substrates or was borrowed from other languages.

The second corresponds to the peak of Minoan influence on the Aegean, during the Neopalatial period and contemporary to the late Middle Helladic and Early Mycenaean periods on the mainland. In this period, Minoan would have been an *adstratum*, providing many lexical borrowings, likely because it was the source (direct or as an intermediary) of many of the luxury items *and* materials appearing for the first time in the mainland. The Minoan culture, and therefore likely the language, enjoyed a lot of prestige in the mainland that, iconography and imports show, the Mycenaeans had great desire to emulate.

The third phase is defined by the Minoan language(s) becoming a proper substratum of Greek in Crete in the Late Bronze Age II-III periods (Late Minoan II/Late Helladic IIB to Late Minoan/Helladic III). According to Thomason, a dominant language is more likely to exert influence on the other and likely to imprint more features than receive.[272] This seems to be the situation in this moment. In other historical examples languages of prestige are adopted for administration (such as Latin in much of Europe through the Middle Ages) and/or even preferred by the high class sometimes over their own (French in nineteenth century Russia comes to mind). But that was not the case with the Minoan language, indicating that it had lost to a large extent its prestige. With Greek as the language of administration, those who could not speak it (likely most of the native population) were excluded from the administrative palatial affairs.

[272] Thomason 2001, 66.

There has been a lot of discussion surrounding the identity of the ruling class of Final Palatial (Late Minoan II-IIIA) Crete. Even through material culture, it is difficult to assess a group's cultural and ethnic identity, because these are self-ascribed.[273] Were they Mycenaeans stationed on the island? Were they 'Mycenaeanized' Minoan elites? And if they were Minoan, did they adopt Mycenaean practices to maintain their position on the occasion of an invasion, or was it a process that resulted from a more gradual cultural imposition? Warrior graves from the period indicate that mainland customs were either incorporated in Cretan culture, inverting their dynamic. This might be precisely what is reflected on the languages. Before, it was Crete who exerted cultural and linguistic influence, but in this period, the Mycenaean customs are imitated, and their language is spoken on the island.

The same *adstratum* relation that the Minoan language(s) had before with Greek, could have been shared by other languages. There is evidence for extensive Mycenaean presence in the western coast of Anatolia, though not as much farther inland. The cuneiform archive of Hattusa contains several texts that mention a land called *Ahhiyawa*, which is generally accepted to correspond to mainland Greece, based on the geographical indications provided by the texts.[274] These are mostly diplomatic documents, including correspondence between the Hittite king and the king of *Ahhiyawa*.[275] These texts narrate several instances of contacts that occurred between the late fifteenth and late thirteenth century, making some of them contemporary to the Linear B tablets.

Anatolia, much like Crete, could have served as a bridge between Greece and the Semitic world.[276] It was influenced both in religion and literature by Mesopotamia and the Hittites not only adopted the cuneiform script for their own language but also produced texts in Akkadian which in the second millennium functioned as a sort of *lingua franca*. Egypt, Hattusa, Babylon and Ugarit used Akkadian not only in correspondence but also as a scholarly language. Oreshko, however, questions the real linguistic influence Anatolia exerted over Greek, believing it to have been overemphasized.[277] He recognizes that it is likely that, given the proximity, some degree of exchange is to be expected, and Greek was spoken in Anatolia, but he also remarks on the selectiveness of languages about the sources they draw vocabulary

[273] Nikoloudis 2008, 45.
[274] This correlation was originally made by Emil Forrer (1924a, 1924b) who proposed a correspondence between the names *Ahhiyawa* and Achaia. Though the linguistic relation is dubious, there is plenty of evidence in the texts to place *Ahhiyawa* across the sea from the western coast of Anatolia (Beckman et. al. 2011, 1-6).
[275] This discussion is not pertinent to this thesis but is a lot of controversy surrounding the identity of this so-called king of *Ahhiyawa*, about which of the *wanaktes* if any was understood to be the king of the land by the Hittites. For the main positions see: Kelder 2010, Elder and Jung 2013.
[276] Gasbarra and Pozza, 2012.
[277] Oreshko, 2018.

from, and proximity is not enough to establish influence. There needs to be more than intensive coexistence, there needs to be socioeconomic factors and cultural importance to prompt the wide adoption of new vocabulary.

The same can be applied to Final Palatial Crete. With a Greek administration on the island, an overwhelming amount of Minoan vocabulary should be expected if coexistence alone was enough to generate exchange. The examples of wool and flax were given in the previous chapter and here we may add one further example. The Mycenaean term for fig is su-ko /*sukon*/ a non-Greek word. The Linear B ideogram, however, for is identical to the syllabogram *NI,* likely because it served as the acrophonic abbreviation of the fruit's Minoan name in the script parent to Linear B, Linear A, which may well have been close to νικύλεον, which is also a non-Greek name.[278] What this shows is that at the period of the script's formation, the administrators were more inclined whenever possible to maintain their vocabulary. This situation may be explained in several ways: it may be that /sukon/ of non-Greek origin had been properly become an integral part of the Greek lexicon *before* acquaintance with any 'Minoan' term for the plant, and, at the period of the script's formation, the Greek-speaking administrators did not consider it necessary to replace it. Whatever their origin, the concurrent use of both *NI* and *su-ko* once more positively exemplifies the complexity and diversity of the non-Greek component of the Mycenaean Greek lexicon.

[278] Νικύλεον is known to us from Athenaeus' Deipnosophistae 3.76e (2nd/3rd cent AD) as a Cretan name for figs.

Table 1 | Attestations of the terms examined in this dissertation

Category	**Term (Linear B spelling)**	**Reference**	**Attestations**	**Chronology**	**Proposed origin**
Metals	*mo-ri-wo-do*	Aura Jorro 1985, 457.	KN Og 1527	LM IIIA-B	substrate
	ka-ko	Aura Jorro, 1985, 308.	KN Fh 386, So 894, V 958. PY An 129, 607, Jn 320, 389, 413, 415, 478, 601, 658, 706, 725, 845, Na 104, Nn 831 Sa 790, 794. MY Oe 121.	LM IIIA-B LH IIIB LH IIIB/C transition	Substrate or Anatolian
	]*ka-te-ro*	Aura Jorro 1985, 331.	KN Og 5515	LM IIIA-B	(?)
Precious materials	*ku-ru-so*	Aura Jorro 1985, 409.	KN K 87. PY Ta 707, 714, Ae 303.	LM IIIA-B LH IIIB/C transition	Semitic (via the Minoans)

	ku-wa-no	Aura Jorro 1985, 415-16.	PY Ta 642. MY Oi 701.	LH IIIB LH IIIB/C transition	Anatolian (possibly through the Minoans)
	e-re-pa	Aura Jorro 1985, 240.	KN Sd 4401, 4403, 4412, 4450, Va 482, Og 7504, V 684. PY Sa 793, Ta 642, 708.	LM IIIA-B LH IIIB/C transition	Introduced by the Minoans.
Textile industry	*ri-no*	Aura Jorro 1993, 255-56.	KN L 693, Np 743, Og 5778, X 7741. PY Nn 228.	LM IIIA-B LH IIIB/C transition	Mediterranean/ European
	a-ra-ka-te-ja	Aura Jorro 1985, 93-94.	KN Ak 5009, Lc 531, 240. PY Ad 380, 677. TH Of 34.	LM IIIA-B LH IIIB LH IIIB/C transition	Anatolian (?) or susbtrate
	po-pu-re-jo/ *po-pu-ro*$_2$	Aura Jorro 1993, 141.	KN L 474, 758, X 976.	LM IIIA-B	Minoan
	po-ni-ki-jo	Aura Jorro 1993, 139-40.	KN Bg 834, 992, 1020, 1021, 1040, 5584, 8438, 9297, 9298, Ga 417, 418, 420, 423-427, 1335,	LM IIIA-B LH IIIB/C transition	Minoan or substrate

			7425, 7426, 7429, 8439, Sd 4401, X 9735. PY Ta 714, 722.		
Olive oil and perfume oil industry	*e-ra-wo/ e-ra$_3$-wo*	Aura Jorro 1985, 237-38.	KN F 726. PY Fr 1184, 1217, 1218, 1223, 1225, 1240, 1242.	LM IIIA-B LH IIIB/C transition	Substrate or Minoan
	wo-do-we	Aura Jorro 1993, 439-40.	PY Fr 1203, 1204, 1207, 1208, 1223, 1238.	LH IIIB/C transition	Old-Iranian
	pa-ko-we	Aura Jorro 1993, 76	PY Fr 1200, 1202, 1216, 1217, 1220, 1223, 1224, 1226, 1232, 1235, 1240, 1246.	LH IIIB/C transition	Substrate
	ku-pa-ro/ ku-pa-ro$_2$	Aura Jorro 1985, 404.	KN Ga 454, 465, 517, 8005. PY An 616, Un 249, 267.	LM IIIA-B LH IIIB/C transition	Substrate

	ko-ri-a$_2$-da-na *ko-ri-ja-do-no* *ko-ri-ja-da-na*	Aura Jorro 1985, 382-83.	KN Ga series. PY An 616, Un 267. MY Ge 605.	LM IIIA-B LH IIIB LH IIIB/C transition	Substrate
	e-ti-we	Aura Jorro 1985, 258.	PY Fr 343, 1209, 1224.	LH IIIB/C transition	(?)
	ka-ra-re-we	Aura Jorro 1985, 321.	KN K 778. PY Fr 1184.	LM IIIA2-LH IIIB/C transition	Minoan

1) Attestations include derivative or compound terms (e.g., *ka-ke-u* < *ka-ko* or *e-re-pa-te-jo* < *e-re-pa*).

2) Site prefixes follow standard Linear B conventions: PY = Pylos; KN = Knossos; MY = Mycenae; TH = Thebes.

2) Chronology follows Driessen 2008. ‘LM IIIA-B’ is used to cover the range of possible dates of various deposits within the Knossos palace.

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Figures

Figure 1: Oxhide Cypriote copper ingot. Available at: https://www.britishmuseum.org/collection/object/G_1897-0401-1535

Figure 2: Gold plate representing a tripartite shire from Mycenae (Grave Circle A). Available at: https://www.odysseyadventures.ca/articles/mycenae/article_mycenae04-cultcentre.html

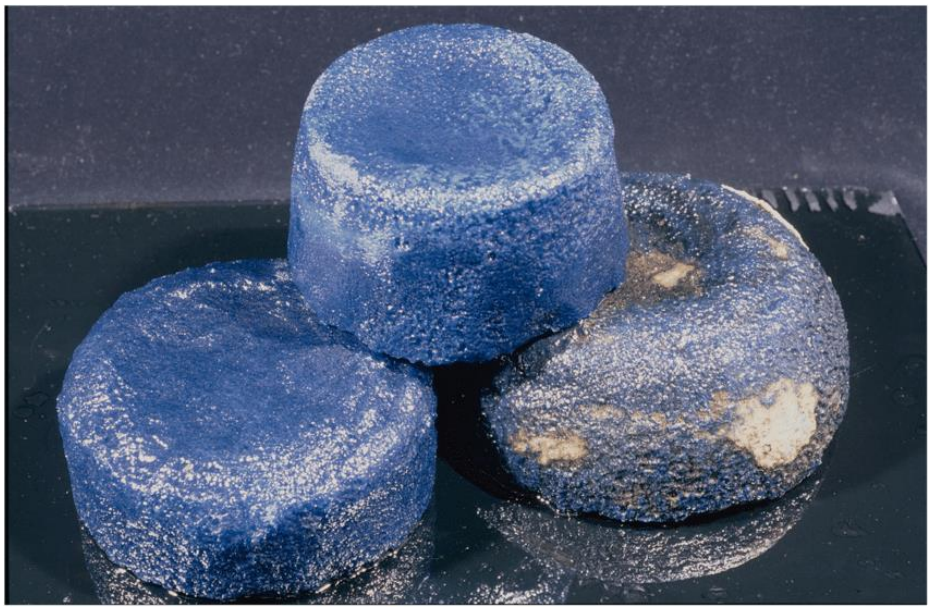

Figure 3: Cobalt glass ingots from the Ulu Burun shipwreck. Available at: https://www.researchgate.net/figure/Cobalt-glass-ingots-from-the-Ulu-Burun-shipwreck-late-14th-c-BC-C-Institute-of_fig5_357447924

Figure 2: Ivory group figurine from Mycenae acropolis. Available at: https://www.namuseum.gr/en/collection/syllogi-mykinaikon-archaiotiton/

Figure 3: Section of the 'Adorants Fresco' from Akrotiri .Available at: http://www.fhw.gr/chronos/02/islands/en/gallery/religion/ce3.html

Figure 4: Stirrup jar, Late Helladic III. Available at: https://www.metmuseum.org/art/collection/search/244751