International Journal of Multidisciplinary Research and Development
www.allsubjectjournal.com
ISSN Online: 2349-4182
Received: 03-05-2026, Accepted: 03-06-2026, Published: 18-06-2026
Volume 13, Issue 2, 2026, Page No. 556-564

The significance of onomastics in the decipherment of the Aegean scripts

Evangelos Papakitsos
University of the Witwatersrand, School of Physics, Johannesburg, South Africa
DOI: https://doi.org/10.66856/ijmrd.2026.13.2.13311

Abstract
Among the five Aegean scripts of the Bronze and Early Iron Ages, *Linear A* remains conventionally undeciphered, despite some comprehensive historical linguistics theories on the rendered phonetic values of the signs and the underlying language, which are practically neglected by mainstream archaeologists. The present study examines the significance of proper names (*onomastics*) in the successful decipherment of *Linear B*, the sibling script of *Linear A* that renders an archaic pre-Homeric form of Greek. It also reviews the decipherment attempts of *Linear A*, both in historical linguistics and computerized systems. Finally, it comments on the features of the various aspects of this topic and points to the most promising directions of the relevant research.

Keywords: Aegean scripts, Linear A, Linear B, Cretan Protolinear script, decipherment, Hattic, Kartvelian, Hurrian

Introduction

During the Bronze and Early Iron Ages a distinct and closely related family of writing systems appeared in Crete, Mainland Greece, and Cyprus [1]. These are collectively known as the Aegean scripts [2]. They can be classified in two branches of five distinct pre-alphabetic writing systems in total, the Cretan and the Cypriot one [3], which are syllabaries (i.e., of predominantly syllabic nature), meaning that each standard sign (character) represents a consonant-vowel sequence (e.g., co, ti, ru) rather than an individual phoneme/sound [4]. The Cretan branch consists of three scripts:

- Cretan Hieroglyphics, attested between c. 2100–1700 BCE and conventionally regarded undeciphered;
- Linear A, attested between c. 2500–1450 BCE, with the underlying language remaining entirely unknown;
- Linear B, attested between c. 1450–1200 BCE, which renders the most ancient form of Greek;

While the Cypriot branch consists of two scripts:

- Cypro-Minoan, attested between c. 1550–1050 BCE and conventionally regarded undeciphered;
- The Cypriot Syllabary, attested between c. 1100–300 BCE, which mainly renders the Arcado-Cypriot dialect of Greek.

There is also the famous Phaistos Disk (c. 1850–1600 BCE), often associated with this family, which is separate though from the standard Aegean lineage by mainstream archeologists.

The present study enquires the role of onomastics in facilitating the decipherment of the Aegean scripts, and especially their potential contribution in the computerized attempts to decipher Linear A. The predominant linguistic theory on the methodology followed herein is that of the Cretan Protolinear Script [5].

Historical Context

When Michael Ventris began his work, he faced a massive roadblock: he had no bilingual text (like the Rosetta stone) to compare, and he was working under the false assumption that the language of the tablets was Minoan or Etruscan, not Greek [6]. Pure structural cryptography could only tell him how signs related to one another; it could not give those signs an actual voice. Proper names changed everything because they provided a vital anchor between abstract code and real-world sounds [7]. Thereby, the study of proper names (i.e., onomastics) was the ultimate "skeleton key" that unlocked Linear B.

Before proper names could be utilized, the American classicist Alice Kober made a critical discovery. She noticed that certain words on the tablets shared identical beginnings but had varying endings, being a clear evidence of grammatical inflection [8]. By analyzing these changing suffixes, Kober proved that Linear B was a syllabic script where signs shared either a consonant or a vowel. Michael Ventris expanded this into a mathematical grid. The grid mapped out which signs shared the same unknown consonant (columns) or the same unknown vowel (rows), creating a highly organized matrix of relationships [7], [8]. The matrix was internally consistent, but completely silent. To crack the code, Ventris needed to plug in actual phonetic values that would make the entire grid click into place. This is where onomastics saved the decipherment [6].

Ventris realized that while everyday vocabulary shifts dramatically when a new language or culture takes over an area, the names of geographical places (toponyms) usually stay the same [6]. He hypothesized that tablets found at the palace of Knossos on Crete would naturally mention nearby towns. He targeted a few specific, recurring sign groups that appeared on Knossos tablets but were noticeably absent on tablets from the Greek mainland at Pylos [7]. By guessing that these sign groups represented famous Cretan towns (Knossos, Amnisos, the harbor town of Knossos, Tylissos), Ventris tentatively assigned phonetic values to the characters based on his grid relationships. Because the signs were bound to his strict algebraic grid, plugging in a value for a sign in Ko-no-so instantly forced that same value onto all other words containing that sign across thousands of tablets [8]. Amazingly, the grid didn't break under this pressure. Instead, it thrived, causing other words to suddenly yield highly logical, recognizable phonetics.

Once the toponyms provided the initial phonetic breakthrough, Ventris began reading the personal names

(anthroponyms) listed on the tablets. Linear B tablets are, fundamentally, mundane palace accountings—inventories of sheep, grain deliveries, and personnel assignments [9]. This meant they were packed with the names of ordinary shepherds, smiths, and local officials. As Ventris read these names, he encountered an astonishing shock. The names weren't Minoan; they were unmistakably Greek, matching names preserved centuries later in Homer's Iliad and Odyssey [7, 9]. The presence of these distinct names (Achilles, Hector, Orestes, and Deucalion) confirmed two groundbreaking realities simultaneously [6, 9]:

- The language of Linear B was an ancient dialect of Greek (conventionally Mycenaean Greek).
- The heroic names immortalized in Greek epic poetry were not late Iron Age inventions; they were authentic, historical names used by the Bronze Age people who lived through the Mycenaean era.

Onomastics also extends to the names of Gods (theonyms). Skeptics originally argued that Ventris had simply used a flexible syllabary to "force-read" Greek out of a random language. However, the final proof came when scholars began isolating lists of religious offerings [7]. The tablets recorded olive oil, honey, and wool distributed to various shrines. When the phonetic values were applied to these lists, they yielded the names of classical Greek deities (Zeus, Poseidon, Artemis), often paired with their distinct archaic titles. The systematic appearance of an entire, interlocking pantheon of Greek gods proved beyond a shadow of a doubt that the decipherment was correct [6]. Onomastics converted Linear B from an opaque pile of palace ledger marks into an intimately familiar window into early European history.

Modern Aegean epigraphy focuses heavily on the material context and digital analysis of the texts. Scholars view writing not simply as a mirror for spoken language, but as a dynamic cultural phenomenon deeply rooted in trade, elite control, and identity [10]. Furthermore, researchers are actively using constraint programming and unsupervised machine learning models to map phonetic structures and finally crack the numerical fraction systems of Linear A [11].

Attempts to Decipher Linear A

The history of trying to crack Linear A is completely intertwined with the successful decipherment of Linear B, where, technically, many Linear A words are pronounced by backward-projecting the phonetic values known from Linear B [12]. In this respect, the Cretan Protolinear Script theory is the only complete linguistic theory on the sounds of Linear A/B signs [13] that assign phonetic values to every syllabogram. However, Linear A remains undeciphered because the underlying language—conventionally called Minoan—is considered completely unique. It is not believed to belong to the Indo-European or Semitic language families, leaving scholars with no known vocabulary or grammar to check their translations against [14]. There are both linguistic and computerized attempts to decipher Linear A.

Historical Linguistics Attempts

The earliest scholarly attempts to crack Linear A generally fell into two categories: structural breakthroughs and linguistic matching.

1. Early Structural & Mathematical Approaches

Long before anyone tried to assign a language to the script, early scholars focused heavily on understanding what the tablets were actually tracking. In Scripta Minoa I, Evans noted that Linear A was structurally an administrative tool [15]. He made the first crucial systemic breakthrough by identifying the "transaction sign" (a small dot or dash) used to separate words and numbers, and he correctly isolated the logogram for "totaling" inventory lists [14]. Then, before turning her attention to Linear B (1940s), Alice Kober published foundational papers analyzing the complex mathematical fractional notation of Linear A. She realized that the Minoan scribes were using a highly sophisticated, base-10 numerical system paired with fractional characters to audit quantities of grain, wine, and livestock [8].

2. Post-1952 Backward Projection (The Phonetic Bridge)

When Michael Ventris deciphered Linear B as Greek in 1952, a massive wave of optimism swept through linguistics. Scholars assumed Linear A would fall immediately using the same phonetic grid. Linguists took Linear A words and read them aloud using the values discovered from Linear B [14]. For example, when they applied the Linear A word ku-ro/CuLo to the bottom of accounting lists, it perfectly matched the context of Evans's old "total" sign [12]. In later classical languages of the region, ku-ro/CuLo did not mean total—but the phonetic link proved that the signary values themselves were highly accurate. Unfortunately, beyond a few basic structural words like "total" (ku-ro/CuLo) and "balance" (ki-ro), the rest of the vocabulary yielded absolute gibberish when read aloud [14].

3. Early Linguistic Matching Hypotheses

Frustrated by the unique nature of the Minoan tongue, early investigators tried to forcefully map the phonetically "readable" Linear A texts onto known ancient languages. Cyrus Gordon, an American scholar of Near Eastern languages, noticed that several phonetic readings of Linear A inventory items looked vaguely similar to East Semitic words [16]. He pointed out that the Linear A vessel word ka-po-ti sounded like the Semitic word for a cup or bowl. Jan Best later expanded on this, arguing that Minoan was a North-West Semitic language closely linked to Ugaritic [17]. Mainstream linguistics quickly dismantled this theory. While a few trade items shared similar names (which is common across maritime trading hubs), the underlying grammatical structures, suffixes, and prefixes of Linear A did not match Semitic verbal systems at all [14]. The renowned philologist Leonard Palmer suggested that the Minoan language was part of the Anatolian branch of Indo-European languages, specifically Luwian (closely related to Hittite). He focused heavily on the Linear A "Libation Formula"—a repeating sequence of religious signs found on stone offering tables across Crete. He claimed the suffixes matched Luwian plurals and dative case endings [18]. Like the Semitic hypothesis, Palmer's work relied on highly selective data slicing. When his Luwian rules were applied to the standard administrative clay tablets of Hagia Triada, the translations completely collapsed [14].

Computerized Decipherment Attempts

Just like the CHIC catalog saved Cretan Hieroglyphics, the true foundation for modern computer-assisted attempts to

crack Linear A was the publication of the Recueil des inscriptions en linéaire A (GORILA) by Louis Godart and Jean-Pierre Olivier [19]. Spread across five volumes, GORILA standardized the entire corpus. Modern research teams now treat Minoan as an un-classified, isolated indigenous language. Instead of trying to force it into a known language tree, they use digital clustering algorithms to isolate internal syntax patterns, waiting for a bilingual artifact to finally act as a translation key [12].

Computerized and algorithmic approaches to Linear A began as early as the 1960s, keeping pace with the development of mainframes and early statistical linguistics. Computer scientists have rarely focused on reading the characters themselves. Instead, they have historically targeted the underlying Minoan language, using computational power to analyze syntax patterns, classify fractions, and search for cognates (related words) in known linguistic families. Surveys on the relevant computational attempts are available [11, 20]. Some historically prominent examples are given next.

1. The Early Soviet Mainframe Studies (1960s)

The absolute earliest computerized attempts to analyze the Aegean scripts were launched in the Soviet Union by the Institute of History of the Academy of Sciences of the USSR under the leadership of Yuri Knorozov—the legendary linguist who famously used mathematical statistics to crack the Mayan hieroglyphic system [21]. In the mid-1960s, Knorozov's team punched the entire known text of the GORILA-era Linear A corpus onto mainframe computer punch cards. They programmed early algorithms to run frequency counts, positional distributions (how often a sign appears at the beginning, middle, or end of a word), and structural combinations. The computer demonstrated mathematically that the distribution of root-words and inflectional suffixes in Linear A did not match Indo-European patterns, thereby computationally dealing a severe blow to early hypotheses that tried to force-read Linear A as an archaic branch of Greek or Luwian [22].

2. Packard's Morphological Search & Phonotactics (1974)

The first definitive, book-length academic study dedicated to the computer-assisted analysis of Linear A was published in 1974 by David W. Packard, titled Minoan Linear A. Packard leveraged early computer algorithms to perform structural analysis on the words of Linear A without explicitly assigning a spoken language to them. He input the texts using phonetic values borrowed from Linear B as a working baseline to evaluate the internal behavior of the language. Packard programmed the computer to execute a thorough phonotactic analysis—mapping which vowels and consonants were allowed to cluster next to one another. He also used string-matching sequences to group words by identical roots to isolate grammatical prefixes and suffixes [23]. Packard's work provided a stark, objective reality check for linguistics. The computer proved that while several personal name strings matched across Linear A and B, the core vocabulary and grammar rules behaved in a fundamentally non-Greek manner, firmly establishing Minoan as an unclassified independent language isolated from its Mycenaean neighbor.

3. MIT's Neural Decipherment Model (2019–2020)

In recent years, the approach has evolved from basic statistical counting to advance deep learning. The most prominent modern computerized attempt came from a joint project between the MIT Computer Science and Artificial Intelligence Laboratory (CSAIL) and the Aria Text-Mining Team at the University of Bologna. Led by Jiaming Luo and Professor Regina Barzilay, the team developed a generative neural network designed to decipher lost languages by exploiting systemic patterns of linguistic evolution [24]. The algorithm assumes that languages naturally change over time along predictable, mathematical trajectories (e.g., sound shifts where a /p/ sound transforms into a /b/ or /f/ sound). The system employs an unsupervised machine learning framework that does not require an anchor language or a bilingual dictionary. Instead, it embeds the characters of an unknown script into a multi-dimensional geometric vector space, mapping out how words structurally relate to one another [25]. To test the architecture, the researchers trained the system on the relationship between Linear A and Linear B. The neural network successfully mapped the structural alignments between the two scripts, accurately predicting which Linear A signs corresponded to known Linear B phonetic units [26]. When the model analyzed the underlying vocabulary, it mathematically verified the mainstream scholarly consensus: the algorithm failed to find any meaningful genetic or structural overlap between the Minoan language of Linear A and the early Greek language of Linear B, further cementing the mainstream conclusion that Minoan remains a language isolate.

Onomastics in Linear A

Onomastics—the study of proper names—plays a deeply complex role in the analysis of the undeciphered Linear A script. Because the underlying Minoan language remains unknown, tracking toponyms (place names), anthroponyms (personal names) and occasionally theonyms (theophoric names of divinities) provides a vital linguistic battleground.

Mapping the Minoan Landscape

The most secure area of Linear A onomastics involves toponyms. Because town names often survive transitions between cultures and languages, scholars have successfully isolated Bronze Age Cretan towns by matching recurring sign groups on Linear A tablets with known classical and Linear B toponyms [27]. When applying Linear B phonetic values backward into Linear A, several prominent Cretan locations emerge seamlessly: Phaistos, Sybrita, Dikte, and likely Sitia. Interestingly, some key cities show different early names. For example, the name for Knossos appears on Linear A tablets as Ka-nu-ti (closely matching the ancient Egyptian record Kanyuša), whereas the later Mycenaean Greeks changed the town's phonetic handling to Ko-no-so in Linear B [28].

The Shared Names Paradox

Isolating individual human names on Linear A tablets is a structural process. Scribes typically wrote a personal name at the beginning of a line, followed by a transaction sign, an ideogram (like a sheep or wheat icon), and a number [19]. When these names are isolated and read aloud, a surprising phenomenon occurs: roughly 20–30% of Linear A anthroponyms match Linear B names exactly, while the remaining 70% have absolutely no Greek equivalence [29]. This overlapping onomastic data has triggered a major divide in historical linguistics regarding who these people actually were.

According to the Borrowing/Acculturation Theory (mainstream consensus), scholars like Ilse Schoep and Thomas Palaima argue that when the Mycenaean Greeks took over Crete, they absorbed the indigenous Minoan population. According to the mainstream view, Mycenaean scribes literally adopted native Minoan families, writing their traditional names down in the new Linear B bureaucratic accounts. Therefore, names like Qa-qa-ru are authentically Minoan words borrowed into Greek context [14]. Yet, it can be sufficiently deduced that the scribal guild consisted of Eteocretans, not Achaeans (Mycenaean Greeks), who simply adapted the Cretan Protolinear script to render the Greek language for strictly administrative usage [30].

According to the Indo-European Substratum Theory (minority view), a smaller contingent of philologists argues that since so many masculine personal names in Linear A end in syllables like -u or -e and match Linear B names ending in the Greek -os, Linear A might contain an early Indo-European dialect (like Luwian or an unknown pre-Greek branch) that naturally shared phonetic naming conventions with early Greek [27]. Interestingly, northern Greek rural dialects commonly change final -o to -u.

Unlike Linear B, which picked up human ideograms to explicitly categorize personnel lists into VIR (man) and MUL (woman), Linear A possesses no verified gender-markers for humans. Linear A tablets feature animal ideograms that clearly distinguish male and female livestock (using distinct crossbars and skirt-like glyphs), but they completely omit this distinction for human registries. Consequently, computer algorithms and linguists looking at Linear A name registries face a massive roadblock: without external contextual clues, it is currently impossible to definitively classify which Minoan anthroponyms belonged to men or women based on spelling alone [31].

Theophoric Names

Regarding theonyms in Linear A, two characteristic examples will be commented herein: Ja/A-sasarame and Atanoroθuja.

In the study of Linear A, Jasasarame (or Asasarame) is one of the most famous, heavily discussed, and recurring word sequences [32]. The name and its historical context are broken down as follows. Based on its context in the archaeological record [19], scholars generally agree that Jasasarame (or its root variant Asasara / Jasasara) is a religious title or the name of a Minoan goddess. Unlike Linear B, which was used purely for administrative bookkeeping, Linear A was also used for religious and votive purposes. Jasasarame frequently appears on non-administrative, ritual artifacts—specifically stone offering tables, altars, and libation vessels found in Minoan sanctuaries and villas (such as Knossos, Archanes, and Haghia Triada). It forms a core component of what archeologists call the "Minoan Libation Formula". The word is highly significant to historical linguists attempting to decipher the Minoan language. It appears in the basic forms Jasasara (or Jasasala in Cretan Protolinear reading), where linguists identify -me as an enclitic possessive pronoun suffix meaning "my". In 1965, the prominent philologist L.R. Palmer demonstrated that Jasasarame structurally and phonetically mirrors the Hittite/Luvian word Ishassaras-mis, which translates literally to "My Lady" [33]. This parallel serves as a primary piece of evidence for scholars who hypothesize that the underlying language of Linear A belongs to the Anatolian branch of Indo-European languages. It suggests that Jasasara translates to "The Lady" (or Goddess) and Jasasarame means "My Lady".

Nearly all Linear A inscriptions found on stone libation tables (such as SY Za 2 and PK Za 11) feature the term atanoroθuja, beginning with the prefix atano-. A notable exception is found on the stone table IO Za 8, which utilizes the word wanatiroθuja. Given the religious nature of these artifacts, researchers suggest that atano- represents a theonym that was occasionally replaced by an alternative one, wanati. Consequently, atano can be considered to be the Minoan deity later adopted by the Greeks as Athānā (later Athēnā), a name translating to "queen of heaven" [34].

Discussion

While onomastics was the solution that proved Linear B was Greek, in Linear A, anthroponyms present a confusing paradox: many of the names can be read using Linear B sound values, yet their linguistic roots remain stubbornly non-Greek [14, 28]. Furthermore, toponyms (and theonyms discussed earlier) present their own peculiarities, as it will be exhibited next.

Toponyms

One of the most extraordinary aspects of the Greek language and geography is its deep toponymic continuity. Several Modern Greek cities sit in the exact same physical location and bear the exact same names as they did during the Late Bronze Age (c. 1600–1100 BCE). This is known definitively because these cities appear in Linear B tablets—written in Mycenaean Greek on clay administrative records over 3,200 years ago. When Michael Ventris deciphered Linear B in 1952, he proved that these modern cities have held onto their linguistic identities across millennia, surviving the Bronze Age Collapse, classical antiquity, Roman rule, and Ottoman occupation. The most prominent Greek cities with uninterrupted geographic and nominal continuity indicatively include:

- **Athens (Athēnai):** In the Mycenaean period, Athens was a fortified palace citadel. While the city would later become the cradle of democracy, the Knossos tablets record the name A-ta-na, which scholars associate with either the goddess Athena, her sacred precinct, or the settlement itself. The city has remained continuously inhabited at the foot of the Acropolis ever since.

- **Thebes (Thēbai):** Thebes was one of the most powerful Mycenaean palatial centers on the Greek mainland. Excavations right in the middle of the modern city have yielded extensive archives of Linear B tablets recording Te-qa-ya (Theban women) and palace inventories. Modern Thebes is built directly on top of this ancient Bronze Age footprint.

- **Pylos:** In Linear B texts, Pu-ro was the bustling administrative seat of King Nestor's kingdom. While the specific archaeological palace (the "Palace of Nestor") sits slightly north at Ano Englianos, the regional coastal city has preserved the geographic crown of Pylos continuously into the modern day.

- In Crete, such cases are the city of Sitia, on the north-eastern coast, and the village of Syia (Sougia), on the south-western coast of the island.

These cities stand as living linguistic monuments—places where a modern resident can look at a 3,300-year-old clay accounting ledger and read the exact name of the town they live in today. Nevertheless, even is these cases, the etymology of their names is not necessarily Greek, not even Indo-European (e.g., see [34]).

Toponyms ending in -sos (often written as -ssos or -ssa depending on the regional Greek dialect) constitute one of the most significant pieces of linguistic and historical evidence from the Bronze Age Aegean. Along with the suffix -nthos (e.g., Kórinthos), places ending in -sos represent a geographic and phonetic blueprint of the Pre-Greek substrate—the language(s) spoken by Neolithic populations before proto-Greek speakers arrived in the region after 3000 BCE. The most striking feature of -sos toponyms is their sheer density and wide geographic distribution across both sides of the Aegean Sea. They tie mainland Greece, the islands, and western Asia Minor into a single, uniform Bronze Age cultural sphere. Famous historical examples include: Knossos, Amnisos, Tylissos (in Crete), Mount Parnassos (Central Greece), Ilissos, Kifissos (rivers in Athens), Halicarnassos (Asia Minor Aegean coast), Thasos (Aegean island), Parnassa, Pedasos (Anatolia). We do not have to guess if these names existed in the Bronze Age; they are explicitly preserved on 14th- and 13th-century BCE Linear B clay tablets recovered from the burnt archives of Mycenaean palaces. Because the Linear B syllabary could not easily record a final -s or geminated (doubled) consonants in its spelling rules, the -sos ending was written simply as -so. The presence of these names in the administrative records of the Mycenaeans proves that when Greek-speaking warlords took over Minoan sites, they did not rename the towns—they adopted the existing, indigenous non-Greek place names into their own language [35].

Historical linguists analyze the -sos suffix to trace the roots of Aegean prehistory. Because these words cannot be derived from Proto-Indo-European (PIE) roots using standard Greek sound laws, they are classified as substrate loans. In comparative linguistics, -ssos/-ssa is widely recognized as a possessive or relational suffix (meaning "the place belonging to {X}"). Scholars like Paul Kretschmer and later Martin L. West noted a direct parallel between the Aegean -ssos and the cuneiform Luwian possessive suffix -assa- found in Bronze Age Hittite texts. For example, Mount Parnassos in Greece shares an identical linguistic structure with the Hittite/Luwian word parna- ("house") combined with the possessive -assa-, translating effectively to "The Place of the House/Temple". This suggests that the Pre-Greek substrate language of the Aegean was either an offshoot of the Indo-European Anatolian family or deeply influenced by it, according to the advocates of the Anatolian etymology [27, 36, 37]. Considering though the persistence of toponyms in time, these can be equally possible place names of a Neolithic pre-Indo-European language that were also retained by the Indo-European Anatolians (Hittites, Luwians, etc.).

Anthroponyms

Almost none of the anthroponyms in Linear A can be found as single words in contemporary languages (and this is true for toponyms and theonyms, as well). Aspiring decipherers should consider that proper names are predominantly compound. The Christian Greek anthroponym Theo-dor-e (-os) literally means "a gift (doron) from God (Theos)", following a classical Greek naming tradition, as in Apollodorus ("a gift from Apollo") or Diodorus ("a gift from Zeus/Dias"). Thereby, a computerized word-for-word dictionary look up, even with sophisticated letter-stripping/grouping methods [38] will not yield much, without word-parsing. Furthermore, the etymology of a name doesn't necessarily reveal the nationality or the mother-tongue of the bearer; many Christian anthroponyms have Greek or Hebrew etymology (as Islamic anthroponyms have Arabic one), regardless of the nationality or mother-tongue of the named person. This phenomenon is true for antiquity, as well, when the religion of Sumerians (although not necessarily Sumerian) dominated Central Eurasia [39], or the widespread Mithraic religion in the Roman Empire.

Linguistic Affinity

The various anthropological and genomic studies of the Minoan population [40] reveal two human-types: the Neolithic Mediterranean (85%) and the Iranian/Armenian (15%) ones. They were conducted on some tens of skeletons discovered in a few ancient cemeteries. In addition, Homer and Strabo mention many nations inhabiting Minoan Crete, speaking many languages [34]. Regarding Linear A's artifacts (about 1500), approx. 90% are administrative clay documents and the rest include formulaic religious inscriptions on various materials. While Linear A fragments have occasionally been found outside Crete, almost 90% of the discovered tablets come from a single site: the settlement of Agia Triada, located in southern Crete. Given the previous context of Minoan Crete, as mentioned by the ancient scholars, the people in Agia Triada could perhaps spoke a different language than the people in other cities/places (Phaistos, Khania, Zakros, Knossos, Malia, etc.). Furthermore, considering the administrative and trading nature of the vast majority of inscriptions, people from other nations (and anthropological types) outside Minoan Crete could had been present there, in trading posts and delegations that did not leave genetic traces due to the temporary nature of their presence. Even in the same place, as in Hagia Triada, more than one languages may be conveyed in the tablets, if this was a gathering center of administrative reports/records. After all, in the tablets of the later Linear B both Greek and non-Greek anthroponyms are recorded. Therefore, since Linear A was a predominantly administrative tool, it may well render more than one language across Crete [41]. In this respect, the administrative tablets may not necessarily reflect a language but a record-keeping code. Better chances of finding a "proper" language are with the formulaic inscriptions of more than one word, which are though extremely few on 17 complete and 30 fragmented artifacts [42].

Accordingly, and despite the above skepticism, four recent notable linguistic attempts to discover a general linguistic affinity of the so-called Minoan language will be briefly presented. The criteria of these attempts are two: the perception of Linear A/B tablets as the Rosetta stone of decipherment, and these deduced by and comply with the anthropological composition of the Minoans and the non-Indo-European features of the Minoan language as resulted by the computerized research mentioned earlier. Thus, the latter enquire the non-Indo-European languages of Neolithic and Bronze Age Anatolia: Hattic, Proto-Kartvelian and Hurrian.

1. The Linear A/B "Rosetta Stone"

The "Linear A/B Rosetta Stone" refers to a methodological approach [43] that uses the term metaphorically to describe using Linear B as the foundational "key" to unpack the elusive and still-undeciphered Linear A. This theory center on a few core ideas. Because Linear A and Linear B share a large portion of the same syllabic signs, it uses a methodology called Cross-Correlative Retrogressive Extrapolation (CCRE). Essentially, this means taking the known phonetic values of Linear B and applying them backward to Linear A, operating under the assumption that the signs sounded highly similar, if not identical, across both scripts. A major pillar of this work is the division of the language behind Linear A into two layers:

- The indigenous, non-Indo-European substrate language, which remains completely undeciphered, called Old Minoan (OM).
- A later "superstrate" where Mycenaean Greek vocabulary began bleeding heavily into the Minoan administrative and religious script, called New Minoan (NM).

This theory specifically points to certain tablets, like HT 31 and HT 13 from Haghia Triada, as versions of the "Rosetta Stone". For instance, on HT 31, there are drawings of various types of pottery and tripod vessels paired with Linear A text. By applying Linear B values to the text next to these pictures, direct vocabulary matches for Mycenaean Greek words for vessels claimed to have been found, suggesting that a significant portion of late Linear A tablets can be read as a heavily Mycenaean-influenced Greek dialect. In research focusing on Minoan libation formulas (the PK Za series of inscriptions found on ritual stone vessels), the researchers argue that the religious language of Linear A is actually an Anatolian proto-Greek (basilect). They argue that this language absorbed loanwords from neighboring synchronous cultures, specifically cuneiform Hittite and Luwian. Most mainstream philologists though view this attempt to read Linear A as a form of Greek or Anatolian hybrid to be highly speculative and unproven, warning that forcing Greek values onto Linear A can lead to confirmation bias. Regardless of the above, the problem of deciphering OM still remains.

2. The Hattic Hypothesis

Hattic is an ancient prefixing language spoken in central Anatolia before the arrival of the Indo-European Hittites. Its vocabulary relies heavily on structural prefixing chains (e.g., le-, as-, fa-) [44], [45]. Interpreting Linear A through the lens of Hattic is one of the more unconventional hypotheses within historical linguistics. While the dominant theories for the Minoan language tend to favor a Pre-Greek/Aegean isolate or an Indo-European Anatolian language (like Luwian), a small subset of researchers has attempted to establish structural, phonetic, and morphosyntactic parallels between Minoan and Hattic [46], [47]. Scholars who advocate for a Hattic-Minoan connection point to structural mechanics rather than simple vocabulary matching, given that Hattic is an agglutinative language heavily reliant on prefixes. Unlike Indo-European languages (which use suffixes for grammar), Hattic relies on a complex web of prefixes to denote plurality, possession, and case. Some proponents of the Hattic theory argue that Linear A exhibits a similar reliance on word-initial changes, particularly when looking at repetitive formatting in accounting documents and ritual formulas. Historically, there is broad archaeological evidence of cultural and technological shifts moving from western Anatolia into the Aegean during the Early Bronze Age. Proponents suggest that a linguistic family related to Hattic could have migrated westward, eventually crossing over to Crete to form the basis of the Minoan language. Certain researchers have tried to map words from the famous Linear A "Libation Formula" directly onto known Hattic religious terminology. For example, attempts have been made to align specific syllables in strings like ja-sa-sa-ra-me or transactional sequences on Malia tablets to Hattic words for libations, gods, or plural markers.

Within mainstream Mycenaean and Minoan philology, the Hattic hypothesis is generally met with severe skepticism [48]. The phonetic dilemma is that Linear A is written in an open-syllable script (Consonant-Vowel). Hattic, conversely, featured complex consonant clusters that are incredibly difficult to replicate or represent in a simple syllabary without massive, systematic spelling distortions; yet, this is easily explained due to the different linguistic origin of the script itself [49]. Hattic itself is poorly understood and incomplete. It is preserved mostly in fragmentary bilingual Hittite-Hattic religious texts found at Hattusa. Trying to use one highly fragmented, partially understood language (Hattic) to decipher a completely unknown script (Linear A) creates a circular methodology that most historical linguists reject. The hypothesis occasionally suffers from association with highly speculative "macro-family" theories—such as attempting to group Minoan, Hattic, and Uralic/Hungarian languages together using automated algorithmic grids, which mainstream consensus dismisses as statistically arbitrary.

3. The Proto-Kartvelian Hypothesis

Interpreting Linear A as a Proto-Kartvelian (South Caucasian) language—the family that includes modern Georgian, Megrelian (Mingrelian), Laz, and Svan—is a highly specialized, modern unconventional hypothesis. While the mainstream linguistic community largely views the Minoan language as an unclassified language isolate or searches for regional connections in nearby Anatolia, a localized school of research has attempted to demonstrate that Minoan accounting terms and phonetics match Common Kartvelian reconstructions [50]. The primary architecture of this theory relies on finding linguistic cognates within the administrative data of the Linear A clay tablets. Proponents look specifically at transaction headers and words related to accounting. In Linear A, two words are functionally understood because they appear at the bottom of commodity tallies. Scribes used ku-ro to denote "total/addition" and ki-ro to denote "deficit/missing/subtraction". Proponents of the Kartvelian theory match ku-ro to the Proto-Kartvelian root *kur- (meaning to bind, gather, or collect); they match ki-ro to the Proto-Kartvelian root *kir-/*kil- (meaning fault, defect, or to subtract/lessen) [51]. Proponents utilize the phonological rules of Common Kartvelian reconstruction established by legendary Georgian linguists Thomas Gamkrelidze and Givi Machavariani [52]. They argue that the structural behavior of roots and suffixes in specific Linear A strings aligns perfectly with Kartvelian morphophonemic rules (such as syncope—the loss of a vowel sound from the interior of a word). The hypothesis ties into older Soviet-era theories regarding the "Aegean-Caucasian" cultural substratum [53].

Researchers argue that ancient toponyms and anthroponyms recorded in Crete mirror early Colchian (West Caucasian) structures. For example, trying to link the script sequence ku-ku-da-ra to historical Colchian personal profiles or identifying the famous legendary island Aea (from the Argonaut myth, located in Colchis) with early Cretan text sequences.

The Kartvelian decipherment theory is treated with a high degree of skepticism by mainstream Indo-Europeanists and Aegean philologists, for several structural reasons. Namely, the Kartvelian language family is historically and archaeologically native to the Caucasus region. There is no tangible archaeological or genetic evidence indicating a massive migration of South Caucasian populations to Bronze Age Crete capable of establishing a dominant palatial administration. Additionally, mainstream historical linguists note that because the phonetic values of Linear A are limited to simple Consonant-Vowel pairs inherited from Linear B readings, it is relatively easy to scan dictionary roots of any highly inflected or agglutinative language (whether Kartvelian, Hurrian, or Etruscan) and find random phonetic lookalikes for short words like ku-ro. Without an extensive bilingual text (like a Rosetta stone), these matches are viewed as statistically coincidental. Finally, a thesis based on two words (ku-ro, ki-ro) is weak, since they could have been loanwords from other southern neighboring civilizations and languages (Akkadian, Hittite, Hurrian) with a very long tradition and practices in trading transactions and record-keeping.

4. The Hurrian Hypothesis

Hurrian belongs to the Hurro-Urartian (Vannic) language family, spoken across ancient northern Mesopotamia, Syria, and southeastern Anatolia. Hurrian phonology is highly specific and thoroughly mapped out by modern linguists [54]. Interpreting Linear A as a variant or dialect of Hurrian—the ancient, agglutinative, non-Indo-European language of the Near East and the Mitanni Kingdom—is an active and highly detailed decipherment hypothesis. Unlike broad "macro-family" comparisons, the Hurrian hypothesis focuses on exact morphological structures and onomastics, matching the clay tablets of Minoan Crete to cuneiform records found across ancient Syria and Anatolia. Proponents of the Hurrian hypothesis argue that Linear A shares distinct grammatical and phonological traits with Hurrian, which became much easier to analyze after the discovery of the Hurrian-Hittite bilingual texts (KBo 32) at Boğazkale in 1983 [55].

Hurrian builds words by stacking suffixes onto a root rather than altering the root itself, and it employs an ergative-absolutive case alignment system. Scholars who read Linear A as Hurrian claim that transaction records, heading formulas, and lists on Hagia Triada tablets display identical suffix-stacking behaviors. In the Hurrian language, the distinction between voiced and voiceless stops (e.g., the difference between /t/ and /d/, or /p/ and /b/) was entirely non-phonemic. This mirrors a notorious quirk in Linear A (and subsequently Linear B), where a single sign represents both sounds (e.g., the sign group for /p/ stands for both /p/ and /b/). Proponents suggest the Minoan script was designed this way precisely because the native language did not distinguish between them. Much like the Aegean scripts where a single series of signs represents both /l/ and /r/, Hurrian phonology possessed a highly unique rhotic/lateral sound structure that scribes outside the culture struggled to isolate, explaining why Linear A groups them together. The strongest evidence put forward by the hypothesis lies in matching anthroponyms and toponyms between Minoan Crete and known Hurrian hubs like Nuzi and Alalakh [56]. Proponents translate the famous Minoan palace of Phaistos (pa-i-to) as a genuine Hurrian toponym derived from Old Hurrian pa-ašt-o-m (found in the Tiš-atal inscription of Urkesh), meaning "He (the God/King) has built (the palace)". Administrative Linear A lists are interpreted as containing characteristic Hurrian compound names, such as matching Linear A i-mi-sa-ra to the common Nuzi Hurrian name Erwi-šarra ("The Lord is King") [57]. On the gold signet ring from Mavro Spilio (KN Zf 13), the sequence te-l/ra-me precedes a-ja-ku. Proponents point out that telame means "great" in Hurrian and A-ya-ku-un is a known Hurrian divine name—suggesting these are the literal, Bronze Age prototypes for the mythological Greek names Telamon and Aeacus.

While heavily developed, the Hurrian interpretation remains a minority viewpoint within mainstream Aegean philology. Critics note that while specific personal names at trading centers like Alalakh and Hagia Triada might match due to active Bronze Age maritime trade and migration, treating the entirety of the Minoan language as a Hurrian dialect requires a leap in geographical and political scope that the archaeological record does not fully support. Nevertheless, the anthropological/genetic studies do record the presence of "Armenian/Iranian"-type persons (15%) in Minoan Crete [40].

Conclusion

While most scholars agree that Linear A and Linear B share phonetic values, standard academic consensus is that the underlying language of Linear A is entirely distinct from Greek (and likely non-Indo-European). Most mainstream consensus still treats Linear A as an unclassified language isolate or searches for closer geographical connections within the neighboring Anatolian branch (like Luwian). Because Linear A—the primary writing system of the Bronze Age Minoans—remains undeciphered, every single discovery is highly scrutinized. Unlike the thousands of Mycenaean Linear B tablets, the corpus of Linear A is relatively small, making each artifact incredibly valuable. Nevertheless, nowadays there are comprehensive and concise linguistic theories both on the phonetic values of Linear A signs, i.e., the Cretan Protolinear script that firmly associates each image with its sound as it should generally be without arbitrary guesses, and on the underlying languages, like Hurrian that may comply with the available linguistic, cultural and anthropological evidence.

Acknowledgements

The author expresses his thankfulness to Professors Elias Sideras-Haddad and Bruce Mellado, of the University of the Witwatersrand, Johannesburg, South Africa, for facilitating the research herein.

References

1. Davis B. Introduction to the Aegean Pre-Alphabetic Scripts. Kubaba,2010:1:38-61.
2. Steele P. Other pre-alphabetic scripts of Crete and Cyprus. In Galanakis Y, Christophilopoulou A, Grime J

(eds.), Codebreakers and Groundbreakers, Cambridge, 2017, 43-51.
3. Papakitsos E. Notes on two of the conventionally undeciphered Aegean scripts. International Journal of Social Science and Humanities,2026:8(2):186-192.
4. Papakitsos EC. The Linear-A Syllabary in the Context of Cretan Protolinear Theory. Bulletin of the Georgian National Academy of Sciences,2021:15(2):154-162.
5. Papakitsos E. Designing the automation of data retrieval for processing the corpora of the Cretan Protolinear scripts. International Journal of Computational Engineering Research,2026:16(5):29-34.
6. Chadwick J. The Decipherment of Linear B. Cambridge University Press, 2014.
7. Palaima TG. Scribes, scribal hands and palaeography. In Duhoux Y, Morpurgo Davies A (Eds.), A Companion to Linear B: Mycenaean Greek Texts and their World. Louvain-la-Neuve: Peeters,2011:2:33-136.
8. Fox M. The Riddle of the Labyrinth. Profile Books, 2014.
9. Hooker JT. Linear B: An Introduction. Bristol Classical Press, 1991.
10. Bennet J. Understanding Relations Between Scripts: The Aegean writing systems, edited by PM Steele. Oxford: Oxbow Books, 2017. Cambridge Archaeological Journal,2018:28(3):528-530.
11. Corazza M. Computational methods applied to undeciphered scripts from the Aegean and Cyprus: Linear A and Cypro-Minoan. Doctoral thesis, University of Bologna, 2023.
12. Montecchi B. Design and Origins of Linear A Picture-Based Signs. In Ferrara S, Montecchi B, Valerio M (eds.), Writing from Invention to Decipherment. Oxford: Oxford Academic, 2024.
13. Papakitsos EC. Standardizing the Cretan Protolinear Syllabary. Migration & Diffusion, 2019, 1-11.
14. Schoep I. The Administration of Neopalatial Crete: A Critical Assessment of the Linear A Tablets and their Role in the Administrative Process. Salamanca: Ediciones Universidad de Salamanca, 2002.
15. Evans AJ. Scripta Minoa: The Written Documents of Minoan Crete (Vol. I). Clarendon Press, 1909.
16. Gordon CH. Notes on Minoan Linear A. Antiquity,1957:31(123):124-130.
17. Best J, Woudhuizen F. Ancient Scripts from Crete and Cyprus. EJ Brill, 1988.
18. Palmer LR. Luvian and Linear A. Transactions of the Philological Society,1958:57(1):75-100.
19. Godart L, Olivier JP. GORILA: Recueil des inscriptions en linéaire A. École française d'Athènes, 1976–1985, 1-5
20. Braović M, Krstinić D, Štula M, Ivanda A. A Systematic Review of Computational Approaches to Deciphering Bronze Age Aegean and Cypriot Scripts. Computational Linguistics,2024:50(2):725-779.
21. Tokovinine A. Yuri Valentinovich Knorozov Papers, 1945-1998. Dumbarton Oaks Research Library and Collection, 2008.
22. Volkov KY. Application of Electronic Computers to the Study of Linear A Inscriptions. Soviet Archaeology,1965:4:211-219.
23. Packard DW. Minoan Linear A. University of California Press, 1974.
24. Luo J, Hartmann F, Santus E, Cao Y, Barzilay R. Deciphering Undersegmented Ancient Scripts Using Phonetic Prior. TACL, 2020.
25. Conner-Simons A. Translating lost languages using machine learning. MIT News Office, 2020.
26. Luo J, Cao Y, Barzilay R. Neural Decipherment via Minimum-Cost Flow: From Ugaritic to Linear A. Transactions of the Association for Computational Linguistics, 2020.
27. Finkelberg M. Anatolian Languages and Indo-European Migrations to Greece. The Classical World,1997:91(1):3-20.
28. Younger JG. The Linear A Texts: Toponyms and Anthroponyms in Context. University of Kansas Press, 2020.
29. Meißner T. Greek or Minoan? Names and Naming Habits in the Aegean Bronze Age. In Changing Names, 2019, 21-46. DOI: 10.5871/bacad/9780197266540.003.0002
30. Kenanidis IK, Papakitsos EC. A Comparative Linguistic Study about the Sumerian Influence on the Creation of the Aegean Scripts. Scholars Journal of Arts, Humanities and Social Sciences,2015:3(1):332-346.
31. Issendai L. Gendering Minoan Names: The Structure of Personal Names in Linear A Archives. Digital Palace Projects, 2024.
32. Salgarella E, Petrakis V (Eds.). ASASA (RAME), Vol. 1. The Wor(l)ds of Linear A: Interdisciplinary Approaches to Documents and Inscriptions of a Cretan Bronze Age Script. Athens University Review of Archaeology, Supplement Vol. 15, University of Athens Press, 2026.
33. Palmer LR. Mycenaeans and Minoans: Aegean Prehistory in the Light of the Linear B Tablets. New York, NY: Knopf, 1965.
34. Kenanidis IK, Papakitsos EC. The Eteocretan Substratum in Late Ancient Greek Nomenclature. Global Academic Journal of Humanities and Social Sciences,2020:2(3):44-55.
35. Chadwick J, Ventris M. Documents in Mycenaean Greek (2nd ed.). Cambridge University Press, 1973.
36. Beekes RSP. Pre-Greek: Phonology, Morphology, Lexicon. Brill, 2014.
37. Haley JB. The Coming of the Greeks: I. The Geographical Distribution of Pre-Greek Place-Names. American Journal of Archaeology,1928:32(2):141-154.
38. Mavridaki A, Zacharis N, Papakitsos EC. Enhancing a Software Platform for the Decipherment of Linear-A Inscriptions. WSEAS Transactions on Information Science and Applications,2025:22:516-524.
39. Papakitsos EC. Inquiring into the Origin of the Minoan Civilization via Information Systems Modelling in Humanities. GPH - International Journal of Social Science & Humanities Research,2020:3(5):40-58.
40. Papakitsos EC. An Application of Systems Science in Humanities: Investigating the Origins of the Minoan Civilization. Sumerianz Journal of Social Science,2019:2(4):33-44.
41. Mavridaki A, Galiotou E, Papakitsos EC. Designing a Software Application for the Multilingual Processing of the Linear A Script. In Proceedings of the 24th Pan-Hellenic Conference on Informatics (PCI 2020), Athens, Greece, 2020. ACM International Conference Proceedings Series.

42. Mavridaki A, Zacharis N, Giachos I, Papakitsos E. A Machine-Readable Dictionary for the Corpus of Linear-A Script. International Journal of Computers,2025:10:235-243.
43. Vallance Janke R. The Mycenaean Linear B “Rosetta Stone” to Minoan Linear A Tablet HT 31 (Haghia Triada) Vessels and Pottery. Archaeology and Science,2016:12:75-98.
44. Soysal O. Hattischer Wortschatz in hethitischer Textüberlieferung. Brill, 2004.
45. Taracha P. Religions of Second Millennium Anatolia. Wiesbaden: Harrassowitz Verlag, 2009.
46. Akulov A. The deciphering of the Linear A tablet Malia 10. Cultural Anthropology and Ethnosemiotics,2021:7(3):8-18.
47. Schrijver P. Talking Neolithic. In Proceedings of the workshop on Indo-European origins held at the Max Planck Institute for Evolutionary Anthropology, Leipzig, 2013.
48. Salgarella E. Aegean Linear Script(s). Cambridge University Press, 2020.
49. Kenanidis IK, Papakitsos EC. Seven Linear B Syllabograms of Conventionally Unknown Phonetic Value. International Linguistics Research,2018:1(2):22-30.
50. Kvashilava G. On Decipherment of the Inscriptions of Linear A in the Common Kartvelian Language: ku-ro and ki-ro. In Proceedings of the Athens Institute for Education and Research, LNG2018-0153, 2019.
51. Kvashilava G. On The Decipherment of Linear A Words Ku-Ro and Ki-Ro in the Common Kartvelian Language. In Proceedings of The 2nd International Conference on Social Sciences in the 21st Century, Oxford, UK, 2020.
52. Gamkrelidze TV, Machavariani GI. The System of Sonants and Ablaut in Kartvelian Languages: A Typology of Common Kartvelian Structure. Tbilisi: Izdatel'stvo ‘Metsniyereba’, 1965.
53. Gamkrelidze TV, Ivanov VV. Indo-European and the Indo-Europeans: A Reconstruction and Historical Analysis of a Proto-Language and a Proto-Culture. Mouton de Gruyter, 1995.
54. Laroche E. Glossaire de la langue hourrite. Paris: Éditions Klincksieck, 1980.
55. Van Soesbergen PG. The Decipherment of Minoan Linear A - Volume I: Hurrians and Hurrian in Minoan Crete (Parts I–VI). IngramSpark, 2022.
56. Van Soesbergen PG. The onomastics of the “Minoan Linear A” and “Linear B” documents and their historical significance. PhD Thesis, Department of Classical Studies, University of Sheffield, 1987.
57. Gelb IJ, Purves PM, MacRae AA. Nuzi Personal Names. Oriental Institute Publications, Vol. 57. University of Chicago Press, 1943.