Multiple Sequence Alignment of Libation Formulae suggest Linear A is Mycenean Greek

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Abstract

Here, we align multiple texts of various Libation formulae in Linear A. The alignment delineates words, and highlights synonymous syllables, of the Libation formulae. Remarkably, two vessels and their contents are specified and verify the proto-Greek origin of Linear A. The two vessels are: (1) “receptacle of grain” SU-TE-DA-KE (σιτοδόκος) followed by its content “grains” SE-TO-I-JA (σιτος, οο) and (2) “receptacle of oil” I-RAI-DE-KA (ἐλαιοδόκος) followed by its content “olive oil” A-RE-PI (ἄλειφαρ, oil) RE-NA (ἔλαιον, olive). We hypothesize that *301 is pronounced RAI, and translate I-RAI-WA-E (ἐλαιόω) into “olive-oil”, and I-RAI-TI (ἀλείατα) into “wheat-meal”, both common in libation.

Furthermore, the multiple sequence alignment juxtaposes the Goddess, I-DA-MI (θεά) and I-DA-DA (δαίμον) with JA-SA-SA-RA-ME, the Ashera poles (אשרים) and with JA-SA-RA-A-NA-NE, a luxuriant tree (רענן). Potentially, the alignment enables the decipherment of logogram *321, shaped like a labrys, with the phonogram JA-SA-SA-RA-ME. In turn, the labrys inscription I-DA-MA-TE could refer to the God mother (θεά μήτηρ), Demeter (Δημήτηρ).

Finally, we hypothesize that KA-NA-SI is derived from the noun “empty” (κενός), and the verb “to pour” (Εγκανασσειν). Interestingly, KA-NA-SI is aligned with the proto-Semitic synonymous translation “I emptied” RU-KA-NA-TI (רוקנתי) and RU-KA-JA-SI (ריקיתי).

As such, we conclude Minoan is mainly a proto-Greek language, yet permeated with proto-Semitic influence.

Introduction

Linear A was used to write the Minoan language spoken in Crete from approximately 1800 to 1450 BCE. Linear A has never been fully deciphered, except for numerals, and ideograms (see appendix). Despite several attempts to decipher Linear A, the Minoan language remains undeciphered to this date.

Linear B however, was deciphered by Michael Ventris and John Chadwick. Linear B is a syllabic script and was used to write Mycenaean Greek, an early form of Greek. Presumably, Linear B evolved from Linear A, and they are likely to share related syllabaries.

Several decipherments of Linear A have been attempted. Notably, the blogger Brian Colless has developed the notion of proto-Semitic origin, based on scholars such as Cyrus Gordon. These attempts, however lack validation beyond any reasonable doubt, and do not rely on substantiating evidence like the “Rosetta” stone famously used by Champollion to decipher the Egyptian hieroglyphs. In addition, earlier attempts have not been founded on side-by-side

2 http://cryptcracker.blogspot.com/2016/09/semitic-crete.html
juxtaposition of ideograms and phonograms - “square” and “PI-RI-PO” (τρίπος) for tripod – notably used by Ventris and Chadwick to decipher Linear B.

In this study, we apply multiple sequence alignment, a tool often used in bioinformatics, to align the known libation formulae in Linear A. The alignment highlights synonymous inscriptions, and delineates individual words. Remarkably, Linear A and B share identical spelling of some words, such as “oil” A-RE-PI (αλειφάρ), and “olive” RE-NA (ἐλαιον). In addition, Linear A and B use different spellings for other words, such as “olive-oil” (ἐλαιό), spelled I-RAI-WA and E-RA-WA respectively. Finally, the proximity of receptacles and their content also attest to our decipherment. For example, the “receptive of oil” I-RAI-DE-KA (ἐλαιοδόκος), precedes the content “olive oil” A-RE-PI RE-NA (αλειφάρ ἐλαιον). Likewise, the “receptive of grain” SU-TE-DA-KE (σιτοδόκος) precedes the content “of grains” SE-TO-I-JA (σιτος-οο +JA plural suffix). As such, Minoan is mostly a proto-Greek language with some proto-Semitic influence.

Methodology

Sources. All Linear A texts described in this article were downloaded from the website of John Younger (http://www.people.ku.edu/~jyoung/LinearA/). The transcribed texts are based on the texts presented in Recueil des inscriptions en Linéaire A (GORILA) by Jean-Pierre Olivier and Louis Godart. The Linear A text version used herein were downloaded throughout the Covid-19 pandemic, and correspond to the texts available between March 2020 and April 2021.

Multiple sequence alignment. To align multiple Libation formulae, the following transcriptions were used: IO Za 2, TL Za 1, IO Za 6, IO Za 8, PK Za 12, PK Za 11, KO Za 1, PK Za 8, SY Za 1, PK Za 18, PL Zf 1, PR Za 1, KN Za 10, SY Za 3, IO Za 9, PS Za 2.2, IO Za 7, AP Za 1, KN Zc 7, PK Za 15, AP Za 2, VRY Za 1, SY Za 4, SY Za 2, and ZA Zb 3. The alignment was performed manually based on The multiplicity of text is expected to facilitate sequence alignment. In turn, multiple sequence alignment delineates words and highlights synonyms.

Results

The Libation Formulae appear on various inscribed objects, many dedicated at sanctuaries. The formulae follow a fairly strict sequence with some changes. Shown in Table 1, is the multiple sequence alignment of the Libation formulae (and their translation).

Table 1. Multiple sequence alignment of Linear A libation formulae.

| IO Za 2 | TL Za 1 | IO Za 6 | IO Za 8 | PK Za 12 | PK Za 11 | KO Za 1 | PK Za 8 | SY Za 1 | PK Za 18 | PL Zf 1 | PR Za 1 | KN Za 10 | SY Za 3 | IO Za 9 | PS Za 2.2 | IO Za 7 | AP Za 1 | KN Zc 7 | PK Za 15 | AP Za 2 | VRY Za 1 | SY Za 4 | SY Za 2 | ZA Zb 3 |
|---------|---------|---------|---------|-----------|-----------|---------|---------|---------|-----------|---------|---------|----------|---------|---------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
*LT libation table*

The libation formula starts with either the indefinite article “a” TA-NA (τινά), or the definite article “the” A-TA (τα) in the plural neuter nominative declination. The alternate spelling, JA-TA (αὕτη) could correspond to the demonstrative article “this”, in the nominative declination, either single (ὁὗτος ἡ, αὕτη ἡ) or plural (ὁὗτοι ἡ, αὕτει ἡ).

Then, follows the content of the libation poured, namely “olive-oil” I-RAI-WA-JA (ἔλαιον+JA or ἔλαίον), or “grain” SE-TO-I-JA (σιτος+JA or σῖτον)(PR Za 1). The JA suffix is the plural nominative form of the nouns. Spelling of the content varies, and olive-oil is also written as I-RAI-WA-E (PK Za 11) and I-RAI-U-JA (AP Za 1). Notably, the word for olive oil in Linear A E-RAI-WA, resembles that of Linear B, E-RA-WA. In one instance, “sage-scented olive oil” PA-E (PK Za 8) is named, where PA is a shorthand form of PA-KO-WE used in Linear B. Decryption of the logogram *301 as RAI, elegantly sheds light on two key ingredients in libations, namely olive-oil and wheat meal, which are associated with the Libration formula as attested by the Logogram OLE in SY Za 2. This decryption is further attested by the juxtaposition of E-RAI-WA-JA with A-RE-PI-RE-NA another form of writing “olive oil”, namely “oil” A-RE-PI (ἀλεϊφαρ) “olive” RE-NA (ἔλαιον) (ZA Zb 3). Both of these nouns are identical with Linear B spellings. Another libation includes “wheat meal” I-RAI-TI (ἄλειατα) (PS Za 2). Spelling of “wheat meal” varies greatly, and includes I-RAI-U-TI (IO Za 6) and RA-TE-U-TI (IO Za 2). Both of these libations, with olive oil and grains, were known to the ancient Greeks, and this formula could be the oldest known evidence for such practices. Also here, decryption of the logogram *301 as RAI is attested by the superposition of the middle word “wheat meal” (ἄλειατα) of the formula TA-NA-RA-TE-U-TI-NU (IO Za 2) with TA-NA-I-RAI-U-TI-NU (IO Za 6) corresponding to “a wheat meal which” (τινά ἄλειατα ον). TA-NA-RA-TE-U-TI-NU, is a repetition, and consists of two words. Finally, the libration types WI-TE-JA-MU (PL Zf 1.1) and MU-TI (PL Zf 1.1) were not deciphered.

Then comes the libration vessel, which is very often derived from the word for “receptacle” DI-KI (δοχή or δεχά). Notably, specific vessels are named, such as the “receptacle of grain” SU-TE-DA-KE (σιτοδόκος)(PR Za 1) and the “receptacle of oil” I-RAI-DE-KA (ἔλαιοδόκος)(ZA Zb 3). These vessel names are formed by combining grain (σῖτο) and receptacle (δοχή) into “receptive of grain” (σιτοδόκος), and olive-oil (ἔλαιον) and receptacle (δοχή) into “receptive of oil” (ἔλαιοδόκος). The decipherment of these specific vessels relies on juxtaposition with their contents, and provide credibility beyond any reasonable doubt. Remarkably, the “receptive of grain” SU-TE-DA-KE (σιτοδόκος) precedes the content “of grains” SE-TO-I-JA (σιτος-οο +JA plural suffix). Likewise, the “receptive of oil” I-RAI-DE-KA (ἔλαιοδόκος), precedes the content “olive oil” A-RE-PI RE-NA (ἄλειφαρ ἔλαιον).

3 Alternatively, the indefinite article, “a” could correspond to the single accusative declination, male TA-NU (τινά), female TA-NA (τινά), or neuter A-TA (τα) respectively. Possibly, the definite article “the” corresponds to the single accusative declination male TA-NU (τινά), female TA-NA (τινά), or neuter A-TA (τα) respectively.

4 Wrongly, TA-NA-RA-TE-U-TI-NU translates into “give (us)” TA-NA (τινά), “our bread” RA-TE-U-TI-NU (μοῖτος with the Semitic suffix -Αوس)

5 An uneducated guess is MU-TI translates into μοῖτος-ό, Sicilian for χάρις, thanks, favour, (μοῖτον ὄντι μοῖτον like-for-like)

6 An uneducated guess is WI-TE-JA-MU could be derived from blood (αἷμα) and could correspond to “containing blood” (υφαιμόνον)
Most often, the libation vessel is not specified, and a general noun is provided for a hollow “receptacle” DI-KI (δοχή or δεχάς). The spelling variations of this vessel are numerous, and at least 3 different variants are found: JA-DI-KI-TU (IO Za 2), A-DI-KI-TE-TE (PK Za 11), JADI-KI-TE-TE (PK Za 15). We suggest, the variants could correspond to the same vessel with different demonstrative articles. The single TU syllable, in the vessel name, corresponds to the feminine single nominative demonstrative article, “this” (αὕτη). The double TE syllable, in the vessel name, TE-TE corresponds to the neuter single nominative demonstrative article, “this” (τοῦτο). Thus, the receptacle DI-KI may be neuter and feminine, in Linear A, perhaps giving rise to multiple spelling of the receptacle δοχή and δεχάς.

As such, the vessel nouns, A-DI-KI-TE could therefore correspond to a “small hand-held vessel about the size of a disk”. This suggestion is attested by the finding that only handheld libation tables are inscribed with this vessel noun DI-KI (IO Za 2, PK Za 11, PK Za 12, PK Za 8, PK Za 15, possibly on PK Za 18), but never mentioned on other vessels such as stone pedestals (SY Za 1), bases (KO Za 1), pins (PL Zf 1), cups (IO Za 6), jars (AP Za 2), pithos (SY Za 2), and ladles (TL Za 1).

Notably, the vessel name DI-KI corresponds to the receptacle noun forming the “grain receptacle” SU-TE-DA-KE (σιτοδόκος)(PR Za 1) and the oil receptacle I-RAI-DE-KA (ελαιοδόκος)(ZA Zb 3). DI-KI is also found in page tablets as DI-KI-SE (δεχάς) (HT 87 and HT 117), perhaps the libation table (phiale) itself.

Temptingly, yet unconvincingly, A-DI-KI-TE-TE could also simply mean “pure” (ἀθυκτός, ἀθύσιον), for “intact” or “contained” olive-oil. Likewise, A-DI-KI-TE-TE could correspond to “receive”, an imperative conjugation of the verb δέχομαι, (i.e. δέχεται “of things as the object, take, accept, receive, etc). The latter translations are unlikely, for several reasons. First, the libation formula do no seem to contain any verbs in their first half. Second, A-DI-KI-TE seems to correlate with the vessel type. Finally, if A-DI-KI-TE is a verb it disconnects the libation contents.

Another libation formula mentions the disk-shaped tray, and I-NA-TA-I-ZU-DI-SI-KA (IO Za 6), which translates into “inside this tray” (ἐντος ὁ δίσκος). Notably, this disk-shaped vessel, δίσκος, refers directly to the round alabaster cup, that is the Libation table itself (IO Za 6).

The “libation vessel”, KI-TE (κῦτος, plural κῦτοι) is also named U-QE-TI (PL Zf 1.1). This vessel could correspond to a bowl for pouring liquids in Hebrew, Kiton (קיתון).

Another vessel name mentioned in the libation formula is O-SU-QA-RE and likely refers to “the shovel” (ἦ σκολίς), or ladle on which the Libation formula is inscribed. This vessel name is also referred to as SU-KI-RI-TA (PH Wa 32) and A-SI-KI-RA (KH 20) in page tablets. The name O-SU-QA-RE is reminiscent of the Eskar (אסקאר) libation presented by the kings of the sea-isles, and named in Psalms 72, 108. Another libation vessel variant is TI-TI-KU (ZA Zb 3), and corresponds to the inscription found on a pithos fragment JA-TI-TU-KU / JA-TI-TU-KU (LA Zb 1 bis), and could be a bowl measure for wine. No Greek namesake was identified for these vessels, however if the prefixes TI (τη), and JA-TI (αὔτη) are just articles, then TI-KU stems from “case” (θηκη).

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7 Leviticus 24, 24
8 Psalms 72, 10
Lastly, an additional libation vessel name is TU-RU-SA (KO Za 1). This vessel is also referred to as A-TU-RI-SI-TI (KN Zb 5) which corresponds to a “tall handle-less vase”. The noun TU-RU-SA is likely the unaltered form, while A-TU-RI-SI-TI contains the demonstrative form with prefix A-, and the suffix -TI (אֹתְרָם). It has been speculated that TU-RI-SI is the triple measure of one KI-RA9. Tentatively, TU-RU-SA could simply correspond to “crop” (θερός, -το). Less possibly, if TU-RU-SA is a “bunch of grapes”, from Greek βοτρυς or “wine” from Hebrew tiros (תירס), then TU-RU-SA may become “grapes (wine)”.

Sometimes, the libration formula includes additional crops, such as “wheat” PU-RE (πυρος)10 and “barley” RA-RE (דולרָם) or “wheat meal” RA-RE (עֲלָכְרֹפָא) (KN Zc 7, HT Zb 160, PK Za 15, KO Za 1, and PK Za 8). As indicated in the formula, the wheat and barley are preceded by DU which corresponds to “this” (וֹדֶה), the demonstrative article in singular masculine declination. Notably, in one case, the wheat offering is shredded, and “wheat meal” is given, as indicated by the adjective “shredded” TU-ME-I (τομαίος)(PK Za 8). In another case, the libation includes “wine” A-ZU-RA (עֵצְוֹרֹפָא)(KN Zc 7), JA-I-NWA-ZA (οἶνος)(Sy Za 4).

Then, the divinity is invoked, namely the “Ashera pole” JA-SA-SA-RA-MA (IO Za 2, TL Za 1, IO Za 6, PL Zf 1, KN Za 10, IO Za 9, PS Za 2.2) which is composed of two words JA-SA, and SA-RA-MA. The word JA-SA is simply “unto” (εἰς)11. The word SA-RA-MA corresponds to the “divinity” name, and refers to the Ashera or Asherim poles which is feminine in singular Ashera (בּרֶשַׁם), and masculine in plural (בּרֶשַׁים). This deciphering is further corroborated by the fact that JA-SA-SA-RAMA is aligned with the synonymous deity JA-SA-RA-NA-NE (KN Zc 7) transliterated into “unto” (εἰς) a “luxuriant tree” (ἄλευρον), that is an Ashera Pole. The name Ra’anane (_REGISTER) appears in the bible, and is associated with a stone libation altar (תוּשֶׁב) under a tree, in the Biblical verse: “And they set up for themselves stone altars and Asherah poles, on every high hill and under every luxuriant tree”12. In this context, the divinity name JA-SA-RA-NA-NE is synonymous to JA-SA-SA-RA-MA, the Ashera tree pole (pl. Asherim tree poles). Following this logic, JA-SA-SA-RA-NA-NE is a synonymous invocation of the divinity JA-SA-SA-RA-MA, which are both derived from Semitic tree pole deities, namely הֵרֶשׁ and הֶרֶשׁ.

This finding is potentially corroborated by the alignment of SA-RA-MA with ideogram *321 that is shaped like the labrys, the double edged ax (IO Za 7). If so, then ideogram *321 differs from logogram *321. As depicted on the Aghia Triada sarcophagus fresco, the labrys caps the Ashera poles, and *321 could be an ideogram of SA-RA-MA.

Other times, the divinity is not named, and a “Goddess” I-DA-A is invoked, such as in I-DA-A (θεά) (KO Za 1), I-DA (θεά, or δεά in Tyrrehn.) (PK Za 18), and in the alternate form I-DA-MI (דִּיאֵם) (SY Za 1). Alternatively, the libration formula I-DA-A invokes a “heavenly god” (ὕπνος), or the “sitting-place of Gods” (ὕπνος), and possibly the labrys itself which carries a similarly sounding inscription I-DA-MA-TE (AR Zf 1). I-DA-MA-TE has been proposed earlier to correspond with an epithet of Demeter (Δημήτηρ), the God mother (θεο μητηρ).

9 http://www.people.ku.edu/~jyoungerg/LinearA/
10 Temptingly, DU-PU-RE could describe the material of which the phiale is composed of. In line with this thought, DA-PI-TE-RI (DA+πυρος)(PK Za 11), DU-PU-RE (DA+πυρος), and DU-PU2-RE (DA+πυρος), record that the libation vessels are made “of stone”. In the former case, DA-PI-TE-RI A-KO-A-NE (PK Za 11) translates into “that” A-KO-A-NE (ακάινοια) “stone” DA-PI-TE-RI (DA+πυρος).
11 An uneducated guess proposes JA-SA is a tree (וֹדֶה)
12 Kings II, 17, 10̣
Then, follows the action “which I emptied” with several spelling variations U-NA-KA-NA-SI (IO Za 2, TL Za 1, KO Za 1, PK Za 8), U-NA-RU-KA-NA-TI (PK Za 11), U-NA-RU-KA-JA-SI (PK Za 12) or TA-NU-NI-KI-NA (PL Zf 1). The action is composed of two words. The first word, U-NA “which” (ον), combines with the next word, KA-NA-SI “I emptied” (κενός or ἐκκενοῦν), conjugated in the first person, to form the action “which I emptied”. In the multiple sequence alignment, KA-NA-SI is synonymous with RU-KA-NA-TI derived from the Hebrew verb ‘to empty’ Roken (רָכון), also declined in the first person of the singlular, meaning and RU-KA-NA-TI which literally also means, “I emptied” Rukanati (רַקְנָת). Thus, the two aligned variants are synonymous, although one is proto-Greek, and the other is proto-Semitic. Other variants include “which” U-NA (ον) “I empty” RU-KA-JA-SI (רַקְנָת), and “the” TA-N (τόν) “which” U-NI (ον) “empty” KI-NA (κενός). Such double vernaculars are found in many languages inheriting foreign loanword for synonymous vocabulary. For example, in Spanish, the word ‘scorpion’ has two synonymous names, namely alacran (Arabic العقرب) from Arabic, and escorpion (Latin Scorpiones) from Latin. Here too, KA-NA-SI is proto-Greek, and RU-KA-NA-TI is proto-Semitic. Alternatively, KA-NA-SI could correspond to the to the proto-Greek form of “I inaugurate” (ἐγκανασσεῖν).

Then comes I-PI-NA-MA (IO Za 2, TL Za 1, KO Za 1, PK Za 8, AP Za 2, VRY Za 1) which is “I distribute” (ἐπίστευμε) or the synonymous variant A-PA-DU-PA (PK Za 12) which stands for “from here before” (ἀπὸ δό διωκ) [alt. “in front of” (ἀπέναντι απὸ)]. Finally, the synonymous variant I-PI-NA-MI-NA () is also of Semitic origin for “in front of him/her” (אִשָּׁה אֲשֶׁר אֲשֶׁר). Often, the words ‘empty’ and ‘face’ appear hand-in-hand in the Bible, as seen in the verse “They shall not see my face empty handed”\textsuperscript{13}, related to seeing the Lord’s face. Likewise, the words U-NA-KA-NA-SI for “I emptied” and I-PI-NA-MA for “before the face”

[I tilt (ἐπίστευμο) the preserved corner is "perforated" (PM II 440), this implies that the hole is drilled all the way through (but see IO Za 2). If all corners were perforated, perhaps the table was suspended, and could be tilted.]

Then comes, SI-RU-TE, (σιρότον), a silo for holding wine or vinegar, into which the libation is poured, similar to the silo depicted on the Hagia Triada sarcophagus\textsuperscript{14}.

The formula ending in I-NA-JA PA-QA is currently unsolved.

In the following paragraphs are tentative translations of all Libation Formulae, and a linear translation is provided for each linear A formula.

\textit{IO Za 2 (HM 3557) (GORILA V: 18-19), square Libation Table.}


\begin{align*}
\text{τα} \, \text{ἔλαιου} & \quad \text{δοχή} \, \text{ἀγάθη} \, \text{εἰς} \, \text{ἄλεια} \, \text{οὐ} \, \text{κενός} \, \text{ἐπινάω} \\
\text{The olive oils of this vessel unto Ashera pole which I empty upon}
\end{align*}

2.: SI-RU-TE • TA-NA-RA-TE-U-TI-NU • I-••\[ 
\text{σιρότον} \, \text{τινὰ} \, \text{ἄλεια} \, \text{οὐ} \text{the silo The wheat-meal which}
\]

\textit{TL Za 1 (HM 1545) (GORILA IV: 58-59), marble ladle.}

\textsuperscript{13} Exodus 23, 15 שִׁירֵתָה שִׁיר, which means "I served" SHIRET (שִׁירֵתָה), or a servitude SHIRUTE (שִׁירֵתָה), or songs SHAROT (שַׁיְרֵתָה).

\textsuperscript{14} சிரூதன், which means “I sang” SILUTI சிரூதன் (சிரூதன்) or a prayer SILUTA (சிரூதன், திரு), or songs SHIRUT (சிரூதன்).
The olive oils shovel(ladle)

unto Ashera pole which I empty

upon the silo
PK Za 8 (HM 618) (GORILA IV: 24-27), stone libation table
a: [:NU • PA3-E • JA-DI-KI-TE-TE- DU-PU2-RE • TU-ME-I
   τινά PA δοχή ταύτα ὃδε πυρός
A sage-scented-oils of this vessel this wheat
b: JA-SA-[ ] U-NA-KA-NA-SI [ ]
   εἰς οὖν κενός
unto Ashera pole which I empty

c: I-PI-
   ἐπι
upon

PL Zf 1 (HM 498) (GORILA IV: 161, 162), silver pin
 [:TA-WI-TE-JA-MU• U-QE-TI• JA-SA-SA-RA-ME• TA-NU-NI-KI-NA•I-[PI-NA-MA]
   τα υφαίμων κυτος εἰς οὖν κενός ἐπινάω
The blood-containing receptacle unto Ashera pole (a?) which I empty upon

PR Za 1 (HM 2444) (GORILA IV: 46-49) Poros limestone box
a: TA-NA-SU-TE-DA-KE
   τινά σιτοδόκος
   A grain-receptacle
b: SE-TO-I-JA
   σιτοο
grains

c: A-SA-SA-RA-ME
   εἰς οὖν
unto Ashera pole

KN Za 10 (HM 2100) (GORILA IV: 8-9), square Libation Table, limestone
a: [:TA-NU-MU-TI • JA-SA-SA-RA-MA-
   τινά μοῖτος εἰς οὖν
   A favour unto Ashera pole
b: -NA • DA-WA-[ ] DU-WA-TO • I-JA[
   οὖν
which I give?

AP Za 2 (HM 2479+2480) (GORILA IV: 4-5), cylindrical jar, serpentine
1: ]NA-SI • I-PI-NA-MA [ • • • • • I-KU-PA3-NA-TU-NA-TE [
   κενός ἐπινάω
   empty upon
2: ]PI-MI-NA-TE • I-NA-JA-RE-TA[ • • • ]-QA •

PK Za 15 (Ayios Nikolaos Mus. 2469) (GORILA IV: 41), circular Libation Table, serpentine
[:JA-DI-KI-TE-TE-DU-PU2-RE[ 
   δοχή ταύτα ὃδε πυρός
of this vessel this wheat

VRY Za 1 (Rethymnon Mus. 685) (GORILA IV: 61), square serpentine Libation Table.
a: ]I-PI-NA-MA
   ἐπινάω
upon
b: SI-RU-TE [ 
   σιρωτόν
the silo

SY Za 3 (HM 3757) (GORILA V: 66-67; ArchEph 2008, 198-9, 205-7), circular Libation Table, serpentine
A-TA-I-RAI-WA-[JA -- -- ca. 8 -- --]•••SE-KA-NA-SI[•]TE[-- -- ca. 10 -- --]SI-RU-TE
τα ἐλαιον κενος σιρωτον
The olive oils I empty the silo

IO Za 9 (HM 3898) (GORILA V: 32-33), square Libation Table, marble.
.a (retrograde): JA-SA-SA[•][RA-ME
εις ζην ἄρσεν unto Ashera pole
.b: • U-NA-KA[-NA-SI
ον κενος which I empty

SY Za 1 (HM 3459) (GORILA V: 62-63; ArchEph 2008, 197-8, 201-3), circular, pedestalled Libation Table
]A-TA-I-RAI-WA-JA • I-DA-MI • JA-•[
τα ἐλαιον δαμιον
The olive oils Goddess

PK Za 18 (Ayios Nikolaos Mus. 7233) (GORILA IV: 44), Libation Table, serpentine
]-TE • I-DA • JA-JA-
θεα Goddess

PK Za 17 (Ayios Nikolaos Mus. 7232) (GORILA IV: 43), square Libation Table, serpentine
]I-DA • [•][
θεα Goddess

PS Za 2, serpentine offering table or kernos with 3 cup sinking
1 24?? ]-RE-I-KΕ
ريك empty
2 TA-NA-I-RAI-TI • [6?] JA-TI • JA-SA-SA-RA-ME •
tινα ολειστα εις ζην A wheat meals unto Ashera pole

IO Za 7 (HM 3784) (GORILA V: 28-29), square Libation Table, serpentine
A-TA-I-RAI-WA-JA • JA-TI*321 [
τα ἐλαιον αυτη LAB?
The olive oils this Ashera pole (Labrys)

KN Zc 7 (HM 2629) (GORILA IV: 122-125), cup
A-KA-NU-ZA-TI • DU-RA-RE • A-ZU-RA • JA-SA-RA-A-NA-NE • WI-PI[•]
κενος δης ολευρα άξωρος εις ζην I empty this wheat-meal unto luxuriant tree
**HT Zb 160**

PA-TA-DA  DU-PU2-RE[  
PA?  ταιτα  ὅδε  πυρος

Sage-scented-oil? this wheat

The vessel, PA-TA-DA could refer to a drinking like cup, such as PATAXNON (παταξονον).

**SY Za 2 (HM 3429) (GORILA V: 64-65; ArchEph 2008, 197-198, 203-5), square Libation Table**

a: A-TA-I-RAI-WA-JA • JA-SU-MA-TU OLIV •  
τα  ἐλαιού  εἰς  πῦρ  OLIV

The olive oils unto pole olive tree

b: U-NA-KA-NA-SI OLE

οὖ  κενὸς  OLE

which I empty oil

c: vacat

d: A-JA

**ZA Zb 3 (HM --) (GORILA IV: 112-113), pithos, inscription below rim**

1: VINa 32 DI-DI-KA-SE • A-SA-MU-NE • A-SE  
VIN 32  εἰς  wine 32 I empty? Eshmun god? unto

.2: A-TA-I-RAI-DE-KA • A-RE-PI-RE-NA • TI-TI-KU  
τα  ἐλαιοδόκος  ἄλειφαρ  ἐλαιον  αὕτη  θηκη

The receptive of oil oil olive this case

The majority of Libation formulae address the offering type given to the Goddess, and follow a similar sequence. Perhaps, this sequence was recited during libations, and perhaps it was a substitute for the recitation.

**Measures.** Remarkably, the pim\(^{15}\) weight described in the Bible, is reminiscent of the Linear A inscription found on two clay spindle-whorls\(^{16}\), PI-MI-TA-TI-RA2 (TRO Zg 1), and [DU/PI]-MI-TA-TI-RA2 (TRO Zg 2). The weight of one pim unit is translated as ⅔ of a shekel, corresponding to approximately 7.5 grams. The weight of the clay spindle-whorls has not been published. Here we suggest that, PI-MI-TA-TI-RA2 is “pim of Troy” (πιμ-TA Troia). This suggestion may easily be corroborated, if the spindle-whorls weight equals a pim, corresponding to ⅔ shekels (7.5 grams), or any multiple of a pim (say “three” τρια).

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\(^{15}\) Samuel I, 13, 21. The charge was one pim for plows, mattocks, three pronged forks, and axes, or for setting the goads.

Figure. Pim weight and spindle-whorls. Shown on the left, is a Pim weight with Phoenician inscription for PIM (𐤊𐤃𐤉) of unknown provenance. Shown on the right, are two “spindle-whorls” with Linear A inscriptions PI-MI-TA-TI-RA2 unearthed in Troy. The spindle-whorls could indeed not be spindle-whorls be weight measures, similar to the PIM.

Discussion.
Our decipherment of the libation formula suggest that Linear A scripture was a language mixture of Mycenaean Greek, with proto-Semitic influences. We propose that the syllable *301 corresponds to RAI (or LAI).
Remarkably, the decipherment is attested by several indicators. First, the libation vessels SU-TE-DA-KE (σιτοδόκος)(PR Za 1) and I-LAI-DE-KA (ελαιοδόκος)(ZA Zb 3), are followed by their contents, “grains” SE-TO-I-JA (σιτος,oo gen.)(PR Za 1), and “olive oil” A-RE-PI (ἄλειφαρ, oil), and RE-NA (ελαιον/έλαιος olive)(ZA Zb 3) respectively. Also, SE-TO-I-JA (σιτος,oo) refers to grains, and describes the type of offering. Interestingly, SE-TO (Σιτσο)17 is the Greek epithet of Demeter. I-DA-MA-TE later invoked as JA-A-SA-SA-RA-ME. As depicted on the Aghia Triada sarcophagus fresco, the I-DA-MA-TE labrys caps the Ashera poles, and *321 could well be an ideogram of SA-RA-MA.

The libation formula contains several parallels to the pouring of oil unto a stone altar described in the Bible18: “And Jacob awoke in the morning, and took the stone he put under his head, and placed it as an altar, and poured oil on it”. The story continues with Jacob promising to tithe all of his belonging, in exchange for Gods protection: “And this stone I have set up as a pillar will be God’s house, and of all that You give me I will surely give You a tenth”. The stone is said to be a “house of God”19 (I-DA-A ἔδος), and remarkably the verse records the Hebrew formula “Aser Aasarenu”, distantly reminiscent of JA-SA-SA-RA.

The Ashera pole and it’s sacred stones are also known from the Bible. Exodus 34:13 states: “Break down their altars, smash their sacred stones and cut down their Asherim [Asherah poles].” The Israelites were commanded to get rid of the idolatry, which included libations on to sacred stones, placed between Ashera poles. Here, we showed that the Ashera poles are mentioned in the formula inscribed on these libation stone. In addition, the Ashera poles, and libation stones are depicted on the Haghia Triada sarcophagus. In the Haghia Triada sarcophagus, the Ashera poles are topped by labrys, double bitted axes.

The labrys (πέλεκυς), could corresponding to the double edged sword (ดาש המתחפסה), that guard the entrance of the garden of Eden 20. Alongside the labrys, cherubs are mentioned, just as depicted on the Aghia Triada sarcophagus fresco. The labrys placed on top of a pole could have served as an early lightning rod, as attested by the modern Greek word for lightning

18 Genesis 28, 18. נושב יישם בכרק יthane ואל לארשי ושע מרראשויי ושש אחר מה שנהנה של עלי השעם לארשי
19 Genesis 28, 20. אמסקה והנה אלהים כן שמעה השעם מה הנה על עלי מה על אלייית על עלייית עלייית
20 Genesis, 3, 24. נרשי, א-סה, לא-סן, והנה מהם לַיָה, אחד לאתי, (ו)ות הנות כהן מכונה, לאתי, סה-דה, תנונימ
(ἀστροπελέκι), associated with rain, and symbolizing fertility and being favored by the God. The labrys could imitate a tree, and be positioned on a hill-top that was naturally more likely to be hit by lightning.

Due to the unique geographical location of Crete, we hypothesize that the Minoan civilization was a melting pot, which was influenced, by proto-Greek (i.e. early Myceneans), and by proto-Semitic (i.e. early west Semites and Phoenicians) populations. Specifically, we assume Minoan was a language mixture based mainly on Greek grammar and vocabulary with some proto-Semitic verbs and deities. In addition, we hypothesize that the syllabary used for Linear A and B is identical.

Other divinities include the Phoenician god “Eshmun” A-SA-MU-NE (𐤊𐤂𐤌𐤁𐤃) (ZA Zb 3), Ashera's consort associated with the Asclepius staff. Notably, in this context the name Eshmun is associated with olive oil (שמן).

We hypothesize that the liquid consonants, L and R are interchangeable. This hypothesis is supported by the peculiar lack of any letter for the sound L, and by earlier suggestions that “total” KU-RO (no Greek likeness) should be read as KU-LO (כולו). The interchangeable nature of the L and R sounds is attested in several Hebrew synonyms, for example “chain” sharsheret (שערת), “fell” nashal (נשלם) and nashar (נשאר), “stone-pit” garin (גרין) and galin (גלין), “tree(-grove)” ashera (אשה) and eshel (אשל), whisper lachash (לחש) and rachash (ראחש).

Unlike ancient Greek, the sentences do not seem to follow the subject verb object (SVO) structure, and the spelling of Linear A varies somehow over time, and location.

The Minoan culture was named by Evans after king Minos, who in Greek mythology inhabited Crete. However, Minoan also sounds quite like Manoah (מנוח)21, the father of the biblical judge Samson, who both interacted much with the philistines, who were related to the Cretans. Manoah could be the Hebrew cognate name of Minos, which was adapted into Greek language using the consonant suffix “s”, common to male names. The suffix consonant is common in transliteration of Hebrew names into Greek, such as Isaia -> Isaias, Mose -> Moses, and Jeremia-> Jeremias. Possibly, spoken Minoan was somewhat different from its written form, and over the centuries, as the language evolved, so did the written version, until Linear B was adopted. This evolution could help explain the variations of the libation formula.

The Cherethites and Pelethites (כרתי ופלתי in Hebrew) were people living in the land of the Philistines according to the Bible22. The Pelethites (פלתי) are likely identical to the ancient Philistines (פלשתי), the former name being a linguistic corruption of the latter23. While the Pelethites (i.e. Philistines) were an oversea people that came from the island of Caphtor (כפרת)24,

21 Judges, Chapter 13-14
23 The Jewish Encyclopedia. New York. Funk & Wagnalls
24 Amos 9:7. “Are not you Israelites, the same to me as the Cushites declares the Lord. Did I not bring Israel up from Egypt, the Philistines from Caphtor and the Arameans from Kir” The exact identity of Caphtor island is debated, and based on the name alone seems to correspond to Cyprus (קפרת) when read as Caphroth
the Cherethites (כֵּרֶת) would have come from the island of Crete\textsuperscript{25}. Another link between the Cherethites and Minoan Crete is attested by city names, such as Ekron and Heraklion; Askalon and Skalani, Gaza and Gazi, Ziklag and Tsikalaria, and so on. Also the fact that Linear A artifacts were found in Tel Haror, Israel attests to the link between Cherethites and Crete.

The Cherethites and Pelethites language has not been identified, yet it was spoken among king David’s elite guards seemingly without communication barriers\textsuperscript{26}. Thus, their language could have been mutually intelligible with ancient Hebrew, giving rise to the hypothesis that the Cherethite and Minoan languages contained a Semitic substratum.

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{25} The Cherethites sound like Crete in Hebrew.
\item \textsuperscript{26} 2 Samuel 8:18
\end{enumerate}
\end{footnotesize}