

STUDI MICENEI ED EGEO-ANATOLICI NUOVA SERIE

6, 2020

STUDI MICENEI
ED EGEO-ANATOLICI
NUOVA SERIE

è una rivista del Consiglio Nazionale delle Ricerche, Roma

ISSN 1126-6651
eISBN 978-88-5491-094-2

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Edizioni Quasar di Severino Tognon s.r.l.
Via Ajaccio 41-43 – 00198 Roma
tel. +39 0685358444, fax +39 0685833591
email: info@edizioniquasar.it
www.edizioniquasar.it

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Autorizzazione Tribunale di Roma nr. 288/2014 del 31.12.2014

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DISTRIBUTION AND FUNCTIONS OF MINOAN INSCRIBED CLAY VESSELS AND THE CONSEQUENCES FOR THE QUESTION OF LITERACY IN THE BRONZE AGE AEGEAN

Barbara Montecchi

Summary

This paper investigates the practice of writing on clay vessels in the Aegean during the Middle and early Late Bronze Age (1925/00-1470/60 BC, according to Manning 2010, 22, table 2.2), when two different scripts were used: Cretan Hieroglyphic and Linear A. Inscribed pottery shows unique characteristics which makes it a valuable means of exploring Bronze Age cultural, social and economic aspects, by focusing on its purposes and the actors involved, at different stages, in producing and consuming it. The topic will be approached in a diachronic perspective to pinpoint elements of continuity, innovation and also interruption between the First and Second Minoan Palace periods, as far as issues of agency and literacy are concerned.

INTRODUCTION

Cretan Hieroglyphic and Linear A scripts have aroused great interest since their discovery at the beginning of the 20th century, but their presence on clay vessels has not yet been studied and discussed in an organic and systematic way, despite the fact that the pottery record is the most explored evidence we have. There are probably three main reasons for this failing: 1) neither Cretan Hieroglyphic nor Linear A have been deciphered yet, 2) only a limited number of inscribed pots are entirely preserved, and 3) we do not have syllabic sequences re-occurring on pots found at different sites. In contrast, inscribed stone vessels have attracted much more attention because they show recurring syllabic groups which have been interpreted as dedicatory formulas and, as a consequence, are supposed to be somehow more informative (Brice 1983; Finkelberg 1990-1991; Davis 2014; Karnava 2016).

Nevertheless, a broadly archaeological approach to inscribed pottery that is contextual, quantitative, and comparative might also be productive. First and foremost, because we have a greater variety in shapes and functions. Examining such various types of evidence through the framework of agency, *i.e.* taking into account the dialectical relationship between objects and their social context (Lomas 2007; Cappel 2011, 96; Englehardt, Nakassis 2013), does have the potential to identify and discuss the actors in administrative, religious, ritual and ceremonial practices, as reflected by the permanent and deliberate signs they decided to leave on the pottery used in such activities. Moreover, through palaeographic analysis, inscriptions incised or painted on clay objects can give us a good insight into both the writing ability of those individuals who made them and on their communicative potential.

Here I am publishing the results of a study conducted in 2017-2018 on Minoan inscribed clay vessels, leaving aside other inscribed clay objects, such as figurines, bases, *larnakes* (*i.e.* burial receptacles), etc., in order to work with a homogeneous group. I counted a total of about 28 clay vessels featuring Cretan Hieroglyphic inscriptions or inscribed seal impressions,¹ and about 80 featuring Linear A inscriptions.² The uncertainty about the numbers is due to the existence of some doubtful instances, *i.e.* groups of signs whose identification as Cretan Hieroglyphic or Linear A is not definite, and sherds where the single signs preserved are located so close to a broken edge that it is impossible to know if they were originally part of a sequence, and so of a true inscription. I excluded sign sequences not clearly identifiable as script, but possibly imitating script, as, for example, the one incised on the bottom of the

1 To the 19 collected in *CHIC*, I have also added the sherd featuring the wine logogram from *Quartier Mu* at Malia (Poursat, Godart, Olivier 1978, 141 no. 139) and more recent findings mentioned in Del Frio 2008, 200 and Del Frio 2012, 6.

2 To the 33 inscriptions published in *GORILA* 4, we must add those published between 1985 and 2011 (Del Frio, Zurbach 2011), plus a small number published over the last five years.

Chamaizi jug from the sacred cave at Trapeza (Pendlebury, Pendlebury, Money-Coutts 1935-1936, 76-77, 81, no. 645; 102 no. 18, figs. 17 and 21.18, pls. 10 and 14), and isolated signs unless they were logograms. The two main reasons for the omission are: first, because, unless they are logograms, they are not strictly speaking writing, and second because they only occasionally match up with the Cretan Hieroglyphic and/or Linear A repertoire. Isolated single signs on pottery are conventionally referred to as 'potter's marks'. Even if their function is still a matter of dispute, as other scholars have clearly explained, they are marks of a different sort and cannot be treated as evidence for literacy (*GORILA* 1, XI-XII; Bikaki 1984; Sacconi 1987).

Thus the aims of this article are: 1) to investigate the function of the inscriptions on clay vessels and the particular effects and actions they were created for, 2) to focus on the actors involved in the making and viewing/reading such inscriptions, 3) to explore the relationships between them and the society that produced them, and the roles of inscribed pottery within these relationships. This requires answering the following questions: which types of vessel were inscribed and why? Can we detect different actors linked to different activities? Who commissioned/sponsored or made the inscriptions and who was the target audience? How widespread was the ability to read and/or write during the different phases of the Bronze Age?

In order to address such questions, I will first consider the geographical and chronological distribution of the inscribed vessels, and then the technique of the inscribing, focusing on the distinction between pre- and post-firing execution. Then, I will concentrate on the vessel shapes and functions, the visibility of the inscription on them, and their archaeological contexts, since these are fundamental building-blocks of information for the general understanding of the inscriptions, especially for those executed before firing. We will look for patterns in the relationships between the inscriptions and the function of the vessels. Special attention will be devoted to groups of signs attested on more than one vessel and/or on different kinds of vessels. Palaeographic features will give us some valuable insights into literacy and agency issues by examining the extent to which the way inscriptions are traced on pottery resembles or differs from that of administrative documents. The final goal will be to suggest possible purposes for inscribing and stamping specific kinds of pottery, and to explore the level of the social and economic role of the actors involved.

Different ways of using script in the Minoan and Mycenaean societies have been already analysed by other scholars, who stressed how writing seems more common and widespread in the former than in the latter (Małgorzata 2012 with previous references), but scarce attention has been paid thus far to indicators of different levels of literacy between Cretan Hieroglyphic and Linear A cultures and to elements of continuity and change from the Protopalatial to the Neopalatial Period. The present study aims to make a step forward in this direction.

GEOGRAPHICAL AND CHRONOLOGICAL DISTRIBUTION

Cretan Hieroglyphic inscribed pottery has been found at a few Cretan sites, almost all located in eastern Crete. Malia has yielded the vast majority of the inscribed vessels with 16 certain (*CHIC* #316-327, #329-330; Schoep 1995, 63-77 #330bis; Pomadère 2009, 636-637 MA/V Yb 04), besides many single signs. After that, we have two inscriptions from Zakros (Del Frio 2008, 200), two from Phaistos (Militello 1990), one from Prodomos Botsanou (*CHIC* #331), and one from Monastiraki Katalimata (Nowicki 2008, 48, 111, fig. 81, pl. 33A). Furthermore, we have several impressions left by Hieroglyphic seals on jar handles: three from Myrtos-Pyrgos (*CMS* II. 6, nos. 229-231; Weingarten 2015), two from Malia (*CHIC* #132³ and *CMS* II. 6, no. 189), and one from Petras (*CMS* V Suppl. 1B, no. 329; Krzyszkowska 2016, pls. 25 and 28).

Since the inscribed vases from Prodomos Botsanou and Monastiraki Katalimata are Chamaizi Pots likely produced at Malia (van Effenterre, van Effenterre 1976, 74-79, 81, pl. XI; Poursat 1996, 29, pls. 23h, 30d,e), inscribing vases in Middle Minoan (MM) II might thus be a practice limited to three Palatial sites at the most: Malia certainly, and possibly Phaistos and Zakros. As for the items from the latter, we must wait for their publication to

3 Not included in *CMS*, because it had disappeared sometime after 1970.

know which type of vessels they are on and if they were locally produced or not. As far as the instances from Phaistos are concerned, we can observe that they are two small sherds of conical cups whose fabric seems local.

About 80 certain Linear A inscribed clay vessels are known so far (see n. 2). We have no impression left by inscribed seals, but this is not surprising, since Linear A inscribed seals are very rare indeed (Olivier 2010, 292; Perna 2014, 256-257; Anastasiadou 2016, 178-182). Linear A inscribed pottery is much more widespread than Cretan

Hieroglyphic and it has been occasionally found also on the Cyclades and at Miletus. In addition to proper inscriptions, we can also mention two *graffiti*, one from Tel Haror, in Israel, and the other from Tiryns. The vast majority of the inscribed vessels come, however, from Crete, with a meaningful concentration at Knossos (with 15). So far, almost all the other sites have yielded less than five each, with only Palaikastro, Gournia and Agia Triada having yielded five or six. Moreover, both the pithos found at Tell Haror and two secure inscriptions from Miletus (MIL Zb 3 and 4) were imported (Del Frio, Niemeier, Zurbach 2015, 16).

The pithos fragment from Tel Haror (Oren, Olivier, Goren 1996, 91-118, fig. 1a, pl. XI) shows three signs which might be interpreted as a possible Linear A inscription, and therefore has been catalogued as HAR Zb 1 (Del Frio, Zurbach 2011, 86), though other scholars prefer to read them as Cretan Hieroglyphic (Karnava 2005). However, since the signs are not of the same size, nor placed on the same level, and do not have exactly the same orientation, this unique instance in the region is likely to be an imitation of writing (either Cretan Hieroglyphic or Linear A, or more generally imitation of Aegean characters), rather than a true inscription conveying a univocal message (Oren, Olivier, Goren 1996, 109). The same can be said for the pithos fragment from Tiryns bearing two possible Linear A signs carelessly scratched after firing and not aligned (Olivier 1988, 255 no. 11; 257, fig. 1.11; 262-264, fig. 4.11).

DID CRETAN HIEROGLYPHIC AND LINEAR A INSCRIPTIONS ON POTTERY EVER COEXIST?

Concerning their dating, all Hieroglyphic vessels with a secure chronology context belong to the First Palace Period, mostly to MM II, with a few in MM IB/MM IIA (*e.g.* MA/V Yb 04: Pomadère 2009, 636-637). The chronological span of the Linear A inscriptions on pottery is more extended, ranging from MM II (PH Zb 48) to Late Minoan (LM) IIIA1 (PK Zb 24 and POR Zg 1), but the bulk of the material dates to the Neopalatial Period. Unfortunately, the chronology often cannot be more closely determined beyond lying between MM III and LM I.

Three sites have yielded both Cretan Hieroglyphic and Linear A inscribed vessels: Phaistos, Malia and Zakros. Nevertheless, so far, the coexistence of Cretan Hieroglyphic and Linear A inscriptions on pottery at the same site in the same period is only attested at Phaistos. Here two Cretan Hieroglyphic sherds (Fig. 1) were found in the so called *Grande Frana*, which is a dump of MM IIA material found to the west of the West court (*Piazzale I*) of the Palace of Phaistos: this might have collapsed from some potting workshops originally located on the hill to the west of the Palace (Levi 1976, vol. I/2, 561-594), or been formed from the debris of the First Palace when the Second Palace was constructed (Militello 1990, 325).



Fig. 1. Cretan Hieroglyphic sherds from Phaistos: PH Yc 01, on the left, and PH Yb 01, on the right (photo by author; courtesy of the Herakleion Archaeological Museum).

The first sherd features two Cretan Hieroglyphic signs painted before firing (inv. no. F66/5822, PH Yc 01) and was found in the area below Hellenistic rooms k and m (Levi 1976, vol. I/2, 571, fig. 918; Militello 1990, 326). The second shows two signs incised after firing (inv. no. F66/6000, PH Yb 01) and was found above the Street to the west of the West court (Levi 1976, vol. I/2, 587, pl. I/1 227a; Militello 1990, 326).

A fragment of Linear A inscribed table ware, possibly a *stamnos*, was found in the area to the west of the Phaistos First Palace Facade and dated to MM II (PH Zb 48; Pugliese Carratelli 1957-1958, 378, nos. 42 and 43). That Linear A and Cretan Hieroglyphic were found at the same site in the same period is no surprise, because the concurrence of the two is well observed in the administrative documents during MM IIB and MM III (Petrakis 2017, 80-90). Therefore, the lack outside Phaistos of more evidence for a synchronic use of Cretan Hieroglyphic and Linear A on pottery might be merely the result of chance.

BEFORE AND AFTER FIRING INSCRIPTIONS

Some preliminary remarks are also pertinent on the importance of distinguishing between inscriptions made before or after firing. The first category includes the vast majority of the inscriptions on Aegean clay vessels and should be seen as closely connected to the process of manufacture and distribution of the vessels (Bennet 1996). The second category is instead rare in the Aegean, but common on Cyprus and is tied to trade, both in the primary and secondary usages of the vessels (Hirschfeld 2002; 2006).

Almost all Cretan Hieroglyphic inscriptions are executed before firing. Among them, two are painted (MA/M Yc 01 and PH Yc 01), all the others are incised. The only two that are certainly incised after firing are MA/M Yb 03 and PH Yb 01. Furthermore, we have two doubtful incisions on the Chamaizi pots. One is the missing PRO-DROMOS Yb 01, known only through Evans' drawing and very short description, which is defined as 'graffito' (Evans 1909, 12, fig. 6; van Effenterre, van Effenterre 1976, pl. XXVIII, D), raising the question whether this may mean that it was made by incision after firing. The second is KATALIMATA Yb 01, in whose publication it is not specified whether it was incised before or after firing (Nowicki 2008, 111, pl. 33.A). Del Frio, judging by a black and white photograph, suggests a post-firing execution for this inscription (Del Frio 2017, 6). Nevertheless, in my opinion, the most that we can say, based on the photograph, is that the incision seems rather shallow, but as neither raised nor chipped edges can be distinguished, the question remains open.

The vast majority of Linear A inscriptions are also executed before firing, with only six certain inscriptions being incised after firing on transport and storage jars (HT Zb 159 and 160, PE Zb 7, PH Zb 5, PK Zb 24, THE Zb 4). Moreover, we have an *ostrakon* from Akrotiri Thera, used to write down an accounting note (THE Zg 5: Michailidou 1992-1993), and a still unpublished sherd from Phaistos bearing two signs incised post-firing.⁴ In addition to these true post-firing inscriptions, we also have several likely pseudo-inscriptions, *i.e.* two or more signs resembling Linear A, but not plainly identifiable (Del Frio and Zurbach 2011, 91 and 93). These include PK Zb <23> (MacGillivray, Sackett, Driessen 1998, 267, fig. 21, pl. 50b), MI Zb 3 (Sherratt 2000, vol. 1, 350-351; vol. 2, fig. 261, pl. 606), THE Zb 14 (Amandry *et al.* 1972, 25-26, no. 33, figs. 4-5), THE Zb? (Michailidou 2000-2001, 12-15, fig. 3, pl. Va), and TI Zb 1 (Olivier 1988, 255 no. 11, 257, fig. 1.11, 262-264, fig. 4.11), not to mention the single signs.

SHAPES OF THE VESSELS AND ARCHAEOLOGICAL CONTEXTS

Cretan Hieroglyphic inscriptions occur on a few different vessel shapes. Most are displayed on the body of Chamaizi pots, while others are on several transport and storage vessels, three conical cups, one jug, and possibly one plate (MA/M Yb 03). In my opinion, however, the latter might be better regarded as a pseudo-inscription, since the three signs on it are widely spaced apart, and plates bearing just a single sign are also known from the same context (Malia, *Quartier Mu*).

4 I warmly thank A. Greco for the information (early 2018).

Inscribed-seal impressions only occur on amphora handles, mainly from domestic contexts, except for one piece coming from an artisan area, either the *atelier de sceaux* or the *atelier de potier* at Malia (<MA/M I (1/1) 07>).

By contrast, many different pottery shapes carry Linear A inscriptions: pithoi, two-handled jars, jugs, bowls, cups, one chalice (SKO Zc 1), two miniature vessels (IN Zb 1 and GO Zb?),⁵ and one possible zoomorphic *rhyton* (SY Zb 7). Incised inscriptions can occur on any shape, whereas painted inscriptions seem to be limited to drinking and possibly pouring vessels (KN Zc 6 and 7, PK Zc 13, SKO Zc 1, and PE Zc 4), if we exclude clay *larnakes* from vessels *stricto sensu*. Drinking and pouring vessels also include pieces from secure religious contexts, like the chalice from the Skoteino sacred Cave, about 20 km to the east of Knossos (SKO Zc 1), and the fragment of a possible zoomorphic rhyton from the Syme sanctuary on the south slope of Mount Dikte (SY Zb 7).⁶ Therefore, we can recognise some significant changes through time. Most of the Hieroglyphic inscribed pottery is characteristic of a peculiar jug type, the so-called Chamaizi juglets, which likely fulfilled a ritual function. In contrast, the vast majority of the Linear A inscribed pots are storage jars, although other shapes are also attested, especially jugs and cups from religious contexts. The shapes of the inscribed vessels are dramatically reduced in the later Mycenaean period, since the vast majority of the Linear B inscribed vessels are transport stirrup jars.

As argued in the extensive literature on the topic (Hallager 1987; De Fidio 1999; Zurbach 2006; Van Alfen 2008; Duhoux 2010; Judson 2013), both the content and archaeological contexts of Linear B-inscribed stirrup jars indicate that they were used either by Cretan officials as part of their administrative system, or by members of the mainland palatial elites who participated in a system of gift-exchange with their Cretan counterparts. These inscriptions may include the specification of the source site, the direct overseer and/or higher-level responsible party (including the *wanax*). This appears to be a requirement or function required by the administrative system. The mainland elites who received the consignments could have prized the inscriptions on the jars (as we do brand names) and used the jars for prestige-enhancing display. On the other hand, the variety of contexts in which Linear A inscribed pottery has been found, and the utterly different shape types of the Hieroglyphic vessels, all point to completely different circumstances in operation, which deserve to be scrupulously investigated.

CRETAN HIEROGLYPHIC INSCRIPTIONS ON CHAMAIZI POTS

The Chamaizi pots, named after the place of their first discovery, are miniature monochrome jugs, suitable for scented oils. They have been found in large quantities at Malia; it is now well established that they were produced at this site (van Effenterre, van Effenterre 1976, 74-79, 81, pl. XI; Poursat 1996, 29, pls. 23h, 30d-e). Their special function and meaning is shown by those discovered there in clearly ceremonial areas, possibly reserved for an elite group (Poursat, Godart, Olivier 1978, 26). Moreover, it is worth noting that they are not a miniaturised version of anything 'canonical', they are *sui generis*, existing only in the small scale, being generally about 5.5. cm tall (Knappett 2012, 96). Therefore, these miniature pots were probably part of a ceremonial equipment kit of some elite character (Poursat, Knappett 2005, 83-84, pl. 36).

The inscribed examples form but a fairly small percentage of the total of the Chamaizi pots recovered. We can address the issue of the meaning of such inscriptions (see Fig. 2 for a selection) by focusing on analogies among the different inscriptions and possible attestations of the same sign groups, both on vessels and on administrative documents. On two Chamaizi Pots from Malia (MA/M Yb 01 and MA/P Yb 03), we find two almost identical syllabic sequences. The first shows the syllabic sequence 049-041-006-025, the second 049-041-006-057.⁷ They thus share the first three signs of the four, with only the last being different. This syllabic sequence is sufficiently long to suggest that it is basically the same in both instances with just a possible morphological difference. Since Chamaizi

5 The inscription on the miniature vase from Gournia has not received a number yet (Watrous *et al.* 2015, 451-452).

6 See Lebesse 2009, 521-523 for the sanctuary, and Muhly, Olivier 2008, 210-211, fig. 9, for the inscription.

7 Cretan Hieroglyphic signs are mentioned according to their standard numeration (*CHIC*, 17).



Fig. 2. Inscribed Chamaizi pots. From the left to the right: MA/P Yb 03, MA/M Yb 01, MA/P Yb 02, MA/N Yb 02, and MA/M Yc 01 (photo by author; courtesy of the Herakleion Archaeological Museum).

jugs are ritual vessels, one might guess a personal name (like the dedicator or dedicators), or a god/goddess name, or a verb such as to ‘offer’, ‘dedicate’, ‘consecrate’ or similar.

Only a few sign groups attested on vessels can be tentatively compared with those on administrative documents and seals. One example is MA/M Yb 06, from *Quartier Mu* at Malia. This inscription is made up of two signs (J056-070), but it might be incomplete. The same sequence is also attested on an administrative document from the Palace of Malia (four-sided bar #118.a) and on two administrative documents and a seal from Knossos (#059.dB, #061.e, #298.a) with an additional final sign, which is always different. Another example is MA/N Yb 02, from *Quartier Nu* at Malia, which shows the syllabic group 057-023-070-018. The complete sequence is not otherwise attested, but the first two signs, 057-023, often occur in isolation, or at the beginning of different syllabic sequences at Malia and Knossos. However, the occurrence of this kind of alternation among signs in final positions in the entire corpus of the Cretan Hieroglyphic is not constant, statistically not reliable, and therefore difficult to evaluate (Olivier 1989, 41-43 and 52).

CRETAN HIEROGLYPHIC SEAL IMPRESSIONS ON POTTERY

To date, more than 200 Cretan Hieroglyphic inscribed seals and seal impressions are known. Seals were personal adornments, but were also used for administrative practices, probably as authentication devices, since the great majority of impressions are on clay documents (Krzyszowska 2005, 98-108). A minority of seal impressions appear instead on pottery and loom weights. Among these exempla, only six are inscribed and occur on oval-mouthed amphora handles: two from Malia (*CHIC* #132, *CMS* II. 6, no. 189 / *CHIC* #150), three from Myrtos-Pyrgos (*CMS* II. 6, no. 229 / *CHIC* #133, *CMS* II. 6, nos. 230 and 231 / *CHIC* # 175), and one from Petras (*CMS* V Suppl. 1B, no. 329).

The oval-mouthed amphora is one of the earliest vessel types in the Aegean repertoire that has most of the characteristics qualifying it as a maritime transport container (Knapp, Demesticha 2017). The most distinctive feature is its short tapering neck with flaring mouth, distorted from its original round shape by the pressure exerted in the addition of the two handles during manufacture. It is well enough suited to stoppering. Although oval-mouthed amphorae were occasionally interpreted as storage jars in the past, a systematic discussion has now shown how suitable they are for medium and long-distance transport of liquid products, such as resin, wine and oil (Knapp, Demesticha 2017, 75-79).

The fact that Cretan Hieroglyphic seal impressions only appear on these containers meant for travelling suggests that they had a practical rather than a purely decorative or symbolic function. As such, they may have served more as trademarks, like the stamps on Hellenistic amphorae (*e.g.* Samian amphorae in Grace 1971; for more in general on Hellenistic stamps, Badoud, Marangou 2019), than as potter’s marks. Nevertheless, amphora

handles impressed with inscribed and uninscribed seals turn up at the same site, as for example at Malia and Myrtos-Pyrgos (Fig. 3).⁸

Moreover, we have two handles, likely belonging to two different jars, impressed by the same seal (*CMS* II. 6, no. 246), which seems to be more in imitation of than bearing a true inscription (Ferrara, Weingarten, Cadogan 2016, 93 n. 12). We cannot rule out that this might also be the case with one of the six inscribed seal impressions on amphora handles listed above, namely the one from Petras (*CMS* V Suppl. 1B, no. 329). Its design comprises two elements, set one above the other. The lower one can be identified as an upside-down version of Cretan Hieroglyphic sign 036, while the upper element might resemble Cretan Hieroglyphic sign 092 (Krzyszkowska 2016, 125), but its identification as a true inscription is not evident.

In any case, the low degree of legibility of the inscriptions in the seal impressions suggests that it was not important that they should be able to be read. Rather, it was probably sufficient to accept or even to believe that it was made by an inscribed seal, i.e. by a prestigious artefact. We can thus argue that the seals attested through impressions on Minoan pottery were not specifically created for marking pottery, like the stamps on Hellenistic amphorae, but rather they were probably more in the nature of personal ornamentation, artefacts used to indicate identity when necessary.

To sum up, Cretan Hieroglyphic seal impressions, which so rarely appear on jar handles, do not necessarily imply any capacity for writing or reading on the part of the owners of the vase. But equally, it is unlikely that they only represented symbolic and ritualized attempts to protect containers and their contents, as could be suggested for the uninscribed (potentially apotropaic) seals stamped multiple times on the same object, as, for example, with the inscribed pithos THE Zb 13 (Karnava, Nikolakopoulou 2005, 216-219, figs. 2b and 3a, b).⁹ They might have been used by elite members as trademarks/logos, as a means to demonstrate their claims on specific resources, or even to link commodities to central cultural occurrences, including ceremonial transactions.

CRETAN HIEROGLYPHIC AND LINEAR A INSCRIPTIONS INCISED BEFORE FIRING ON TRANSPORT AND/OR STORAGE JARS

Cretan Hieroglyphic inscriptions on storage jars are very rare and apparently they were only produced in the *Quartier Mu* at Malia, where the agency of elite groups resided (Schoep 2006, 41, 50-52, 57-58; Karnava 2017, 40). The degree of visibility of these inscriptions must have been generally poor, when one considers the low lighting in the storerooms, and remembering how small and shallow the incisions on the pithos cover MA/M Yb 04 and pithos shoulder MA/M Yb 02 are, where the text is not neatly arranged either. Cretan Hieroglyphic logograms have never appeared on storage or transport jars published so far. The absence of logograms and the fact that discerning these inscriptions *in situ* must have been rather laborious make it unlikely that they gave information about the content of the jar or any other



Fig. 3. Amphora handles impressed with inscribed and not inscribed seals from Myrtos-Pyrgos: *CMS* II.6 no. 229 – CHIC #133, on the left, and *CMS* II.6 no. 225, on the right (photo by author, courtesy of the Herakleion Archaeological Museum).

⁸ Uninscribed seal impressions on pottery from Myrtos-Pyrgos include *CMS* II. 6, nos. 223-228, from Malia; II. 6, nos. 191, 205, 214, 215, 219, 220, and others.

⁹ For an overview on the rare practice of stamping pottery with a seal before firing in the Aegean and related areas, see Krzyszkowska 2016, 127-128.



Fig. 4. Pithos HM 3915 with inscription HT Zb 158b on the shoulder (photo by author; courtesy of the Herakleion Archaeological Museum).

known also in texts. The most popular is the logogram for wine, but we have those for figs and olive oil as well. They might refer to the content of the vessel and thus imply some economic and administrative function. This idea is also supported by the positive comparison between the graphic aspects of syllabograms on jars and on tablets, and by inscriptions on pithoi which overlap with inscriptions on administrative documents (HT Zb 158b, KN Zb 27, and ZA Zb 3).

On a large pithos from Agia Triada two syllabic sequences were incised before firing, possibly by two different hands (Fig. 4). The first (HT Zb 158a) features a sequence of four syllabic signs, which is not otherwise attested in the body of the Linear A inscriptions. These signs are incised carelessly and are not neatly aligned in a row. The second syllabic sequence is instead deeply, more carefully incised and clearly visible (HT Zb 158b; Fig. 5). It can be read as *SU-KI-RI-TE-JA* and overlaps with readings on administrative documents. It must be a derivative from the place name *SU-KI-RI-TA*, both attested in Linear A, on one nodule from Phaistos (PH Wa 32; Fig. 6), and in Linear B (*su-ki-ri-ta*) on the Knossos tablets (Steele, Meißner 2017, 103).¹⁰ Therefore, this inscription might indicate the provenance of the commodities stored in the pithos. The vessel could indeed have served as a container for products periodically sent from Sybrita to the Agia Triada/Phaistos region.

On pithos ZA Zb 3, from Zakros, a long inscription was incised before firing on its shoulder, in a well visible position between two handles (Fig. 7). It is arranged in two lines and starts with the record of 32 or 22 units (as the top horizontal stroke may be an accidental fracture) of wine. Then, we have six syllabic groups, two of which also occur on several tablets, *A-SE* (HT 81.1, 93a.3, and 132.1) and *TI-TI-KU* (HT 35.1). Inscription ZA Zb 3 also shows a link to the ritual formulas occasionally carved on libation tables (*i.e.* stone receptacles intended for offerings), since

aspect useful for people working in the storerooms. To the best of my knowledge, the only certain Cretan Hieroglyphic logogram appearing on a pot is the wine logogram incised before firing on the shoulder of a jug (Poursat, Godart, Olivier 1978, 141, no. 139), likely indicating that the vessel was intended for wine, functioning like an *oinochoe* (Olivier 2002, 87 and 91). For the sake of completeness, I also mention the incised jar fragment from the *Quartier Mu* at Malia, showing two unoriented double axes (CH 042) and possibly the number 1004[, besides other messy strokes. As this can hardly be regarded as a proper inscription, it has no impact on our conclusion regarding the function of Cretan Hieroglyphic inscriptions incised on jars (Olivier 1996, 179, no. 342).

From the above overview, one may draw three conclusions: 1) whatever their point was, the communication potential of the Cretan Hieroglyphic inscriptions on storage jars was applied in the phase of vessel production, 2) the management of the vessel production and commodities inside them was probably at the command of the elite groups resident outside the Palace, but the answer to the question ‘could they ever have been able to read these inscriptions?’ might be *No*, and 3) the authors of these inscriptions probably had basic writing and reading skills and might be functionaries of no particular high social status.

Whilst no overlap in content exists between the Cretan Hieroglyphic inscriptions on jars and administrative documents, several Neopalatial storage jars show Linear A logograms and/or numerals

10 Linear A syllabic signs are transcribed with capital letters according to the phonetic values they have in Linear B, while Linear B syllabic sequences are transcribed with small letters. As thoroughly discussed in Meißner, Steele 2017, and Steele, Meißner 2017, the backward projection of sound values from Linear B to Linear A is now regarded as legitimate. Doubtful readings are marked by under dots.

the syllabic sequence at the beginning of line 2 (*A-TA-I-**301-*DE-KA*) can be compared with the start of the 'primary libation formula' (Karetsou, Godart, Olivier 1985, 134): *A-TA-I-**301-*WA-E* (PK Za 11a), or *A-TA-I-**301-*WA-JA* (IO Za 2a, KO Za 1a, PK Za 12a, SY Za 1,2a, TL Za 1a). This inscription, therefore, might indicate that the pithos contained wine that was delivered from a certain place and was intended as an offering. What is particularly significant here is that the practicality of these Linear A inscriptions on pithoi might imply some ability to read on the part of the persons in charge of the storerooms.

In other cases, however, the degree of visibility of the inscriptions on pithoi remains rather poor, as, for example, in HT Zb 159 (incised after firing). Moreover, we have three puzzling inscriptions on two jars from the Palace of Knossos (KN Zb 27 and 35) and on one from Akrotiri (THE Zb 13). KN Zb 27 was incised before firing on the rim of an amphora with a capacity of about 34 litres, ideal for long- and short-distance trade of liquid commodities (Fig. 8).

This jar was discovered in one of the two cists commonly known as the Temple Repositories, since they were filled with what was left of the destroyed artefacts of one of the Palace shrines, probably towards the end of MM IIIB (Christakis 2010, 49-51). The relatively good state of preservation of the jar, however, indicates that, unlike other contents of the cists, it was not discarded as an unserviceable object following the partial destruction of the Central Palace Sanctuary Area; on the contrary, it appears to have been placed there deliberately as a container of offerings. The Repositories also contained clay documents of various forms (Evans 1921, 617).

Inscription KN Zb 27 consists of a syllabic group, *DI-NA-U*, possibly a personal name as suggested by the fact that it is also attested on three tablets from Agia Triada (HT 9a.3 b.5, a record of wine, HT 16.1-2, perhaps a record of cloth, and HT 25a.1-2, a personnel list), followed by the logogram for wine (*A* *131a), and number 107 (Del Frio 2017, 17).¹¹ The inscription thus records 107 units of wine sent to the Palace of Knossos, possibly by a person called *DI-NA-U*, but 107 units are certainly more than 34 litres, even if we cannot precisely say to what



Fig. 5. Inscription HT Zb 158b (photo by author; courtesy of the Herakleion Archaeological Museum).



Fig. 6. One-hole hanging nodule PH Wa 32 (photo by author; courtesy of the Herakleion Archaeological Museum).



Fig. 7. Inscription ZA Zb 3 on the shoulder of *pithos* HM 33317 (photo by author; courtesy of the Herakleion Archaeological Museum).

¹¹ The same number was previously read either as 17 (*GORILA* 4) or 117 (Olivier 1992, 446).



Fig. 8. Inscription KN Zb 27 on the rim of jar HM 5194 (after Christakis 2010, 53, fig. 6.4).

Christakis has suggested that these four jars had actually been imported to Knossos from the Cyclades, possibly from Naxos, on the grounds of their morphology and fabric (Christakis 2010, 52-53). Since inscription KN Zb 27 is incised before firing, it might be evidence for literacy there in MM III, but we cannot rule out the possibility that it was in fact made by travelling Knossian officials. The same calculation problem we have just seen on KN Zb 27 occurs again with the registration of 100 units of olive oil and two units of figs on the rim of a pithos, whose capacity is about 516 litres (KN Zb 35). The amount of olive oil recorded will indeed have well exceeded 2,000 l, if the Minoan measurement unit used for liquids was not dramatically different from the Mycenaean one, which is estimated in 28.8 l. On the other hand, the amount of figs might have been less than 200 l, again based on the Mycenaean unit for dry commodities of 96 l. To sum up, the amount of olive oil is too large, while the amount of figs is too small for the pithos in question. Moreover, olive oil and dry figs would not have been stored in the same container.

It must be pointed out, however, that KN Zb 35 was probably incised after firing, as one can infer from its shallow signs, low degree of visibility and poor state of preservation. If so, it could be explained as a quick note, written down by chance on that pithos, that did not directly or not only refer to it. The 120 units of wine recorded before firing on the rim of a fragmentary pithos from Akrotiri (THE Zb 13) also seems too large a quantity for what should be regarded as but a medium-sized pithos (Karnava, Nikolakopoulou 2005, 219-222, figs. 2a, 3a, 4; Notti 2018, 311-312, n. 19 for palaeographical remarks). Therefore, at least three inscriptions (KN Zb 27, 35, and THE Zb 13) seem to serve as labels of quantities of commodities stored not in single jars, but in groups of containers (Christakis 2010, 52).

To sum up, in contrast to the use of Linear B on stirrup jars, there is no standardized practice for the administrative use of Linear A on storage vases. Linear A inscriptions incised before firing on jars could fulfil different purposes and convey different kinds of messages. Some of them, such as HT Zb 158 and ZA Zb 3, could indeed be related to the content of the vessels on which they appear and imply an ability to read on the part of officials in the storerooms, whereas other inscriptions may only provide information about the original contents of the vessels. Pithoi had a very long life, but not the inscriptions on them. Whilst the possible short-term usefulness of Linear A inscriptions on storage jars fits with their low degree of visibility and the small number of the inscribed jars, these non-standardised but effective inscriptions may be a sign of wider literacy in this time than do the later Linear B's more standardized inscriptions on stirrup jars.

degree.¹² Therefore, the inscription does not simply or only refer to the contents of the jar on which it is incised, but to goods originally stored in more than one jar (Palmer 1994, 37; Christakis 2005, 59-63). In this regard, it is evocative that three further similar amphorae were found in the Temple Repositories, which might be part of the same set of containers once used for the storage and transportation of the goods to which the inscription refers.

12 Since the capacity of the pithos bearing inscription ZA Zb 3 corresponds to about 556 litres, we can deduce a Minoan largest liquid measure of about 25 litres, if we read WINE 22, or 17.4 litres if we read WINE 32 (Montecchi 2013, 18-22). The first value would be close to the hypothetical value of 27-28.8 litres traditionally assigned to the Mycenaean largest liquid measure.

LINEAR A PAINTED INSCRIPTIONS

As will be demonstrated in this section, painted inscriptions seem to be limited to pots used for religious and/or ritual purposes. The two most famous are KN Zc 6 and 7, which are painted in a spiral in the interior of two MM III cups from the Palace of Knossos (Fig. 9). They were found by Evans on a higher floor above the early Basement of the Monolithic Pillars, which was interpreted as the crypt of a sanctuary (Evans 1921, 587-588, 616).



Fig. 9. Inscribed cups from the Palace of Knossos: KN Zc 6, on the left, and Zc 7, on the right (photo by author; courtesy of the Herakleion Archaeological Museum).

Each cup shows a painted inscription in a circular register, the top of the signs is oriented toward the bottom of the cup, and the writing/reading direction is to the right, from the base of the vase to its rim. All these syllabic groups are *hapax*, but in KN Zc 7 we can read the sequence *JA-SA-RA-A-NA-NE*, where *JA-SA-RA-A-* might be a muddled *JA-SA-SA-RA-*, so that we would have a variant of the so called 'libation formula', a label under which dedicatory statements mainly attested on libation tables are grouped (*LinA_{PhT}*). This together with their findspot make a religious function with a dedicatory (Evans 1921, 613-616) or even magical nature (Banou 2001, 196) very likely.

In support of the hypothesis that they bore magical spells and incantations, comparisons have been advanced with the Aramaic incantation bowls, produced in Mesopotamia from 3rd to 7th centuries AD (Franceschetti 1990-1991). On the interior of such clay bowls, magic texts are painted in a spiral. They were designed to protect one's family, house or other property, and were often built into walls or foundations or placed in cemeteries (Levene 2003). They were normally positioned upside down, sometimes stacked one on top of another. Putting them upside down may have been a way of magically trapping the offending demons inside them so that they could not do any harm. Other authors, however, claim that the presence of a punctuation mark in KN Zc 6 would imply that these painted inscriptions were meant to be read while the cups were held in filling them or after having drunk from them (Flouda 2013, 162). This, together with the presence of a possible piece of the aforementioned 'libation formula', would support Evans' hypothesis that they bore a dedicatory inscription.

As far as the palaeography is concerned, in both KN Zc 6 and 7 the way in which the signs are traced sharply differs from that of the administrative documents, although they were likely written by two different hands, since in Zc 7 the signs are smaller and more accurately drawn. Administrative documents are usually written without any particular care. By contrast, these inscriptions are in a highly professional hand, especially considering the difficulties in painting precise sign sequences inside a small cup. We cannot exclude, but neither prove, that the inscriptions were commissioned by elite members familiar with the script and executed by illiterate painters, who copied the inscriptions accurately from a possible original on some perishable material, but without understanding them. However, the hypothesis that the two persons who painted KN Zc 6 and 7 were literate is by far the easiest and the most convincing one, when we take into account that we also have evidence that the artisans working in metals possessed some degree of literacy (Flouda 2013, 163).

Other examples of Linear A inscriptions written in a spiral are a miniature two-handle cup from the cave sanctuary at Tsoutsouros (IN Zb 1), with two Linear A signs incised in the interior (Perna 2011),¹³ and the small gold ring found in a tomb at Mavrospilio, near Knossos (KN Zf 13). In these two instances, however, the reading direction goes from the periphery to the centre, like the Phaistos disk (MM III), which is in the opposite direction to that of the inscriptions on the cups (Duhoux 1977, 19-29; Godart 1994, 47, 51, 60).

13 Nevertheless, some doubts on the interpretation of this sign sequence as a true inscription have been expressed in Del Frio, Zurbach 2011, 86.

Only another five Linear A painted inscriptions are known thus far: three on clay vessels (PK Zc 13, SKO Zc 1, and PE Zc 4), one on a *larnax* (ARKH Zc 8), and one on a clay figurine (POR Zg 1).¹⁴ PK Zc 13 is a fragmentary LM IA cup, featuring a washy-brown painted floral decoration on the outside and an inscription horizontally painted in white on the inner wall, just below the rim (Boardman 1958, 12, pl. IV:2). It comes from old British excavations at Palaikastro, but the exact findspot is unknown. Inscription SKO Zc 1 is on two fragments of a LM I chalice from the sacred cave at Skoteino (Perna, Kanta, Tyree 2005). The signs are painted in dark brown on the exterior, just below the rim. It must be noted, however, that there is no join between the two fragments, and the disposition of signs is not exactly the same, so one may wonder whether they really belong to the same vase and inscription, although they are certainly traced by the same hand. Finally, PE Zc 4 is an inscribed sherd from a closed vessel, perhaps a jug, found on the floor of Room E in House II at Petras, which dates back to LM IB (Tsipopoulou, Hallager 1996, 36-37, fig. 14a-b).

None of these inscriptions painted on clay vessels contains the complete sequences otherwise attested in the body of the Linear A. Only the two preserved signs on PE Zc 4 (JA-SI) might overlap with the second syllabic group incised before firing on pithoid jar KN Zb 4 (JU, JA-SI, SI). In all these three inscriptions, the signs are regular, fine and clearly visible.¹⁵ On SKO Zc 1 their palaeography is indeed particularly accurate, just as one can find in inscriptions carved on miniaturised stone ritual vases from central Crete, such as IO Za 2 and 6.¹⁶ A religious or ritual function is certain for the chalice found in the Skoteino cave (Tyree, Kanta 2007), and remains possible in the other two instances.

ARKH Zc 8 is painted on a MM II *larnax* fragment from Tholos tomb E at Arkhanes Phourni (Sakellarakis, Sapouna-Sakellarakis 1997, vol. 1, 332, fig. 295). It consists of three relatively large signs, but the reading of the first one is doubtful: 306-TA-JE (Sakellarakis, Sapouna-Sakellarakis 1997, vol. 1, 332; *LinA^{Ph}T*), or QI-TA-JE, or RI-TA-JE (Olivier 1999, 422). The first two would be hapax, whereas RI-TA-JE is a syllabic group also attested on tablet KH 6.4 (LM IB), where it could be either a personal or place name. In any case, due to the context, a funerary meaning, possibly the name of the deceased or a kind of farewell, is likely. No great care is evinced in the writing.

Finally, POR Zg 1 (RI-QE-TI-A-SA-SA-RA-*325) is painted on a clay figurine dated to the LM IIIA period from Poros Herakliou (Olivier, Rethemiotakis, and Dimopoulou 1993). Both the object and the word A-SA-SA-RA-, known as part of the 'libation formula' (IO Zb 10, PK Za 4, PK Za 11, and PR Za 1c), make us think of a dedicatory formula. The palaeography of this inscription is very peculiar as it is characterised by a high level of cursivisation of the signs, with normally straight lines being executed like curves.

CONCLUDING REMARKS ON LITERACY IN PROTO-AND NEOPALATIAL CRETE

On the whole, it is safe to say that writing on pottery is not a common practice in the Bronze Age Aegean. It can thus hardly be seen as an instrument or expression of the state, and it seems more linked to individual, possibly elite initiatives. Moreover, the non-utilitarian functions of writing and pseudo-writing in Crete during the Minoan Palatial period have been explored by some scholars who have argued that writing was used as a marker of status and prestige and that it was also used for communication with the divine (Whittaker 2003). Accordingly, writing has been recently treated as a part of the prestige and power-enhancing strategies of the Minoan elites (Schoep 2006, 54; 2007, 56-58). A similar conclusion has been reached also for literacy in Bronze Age Cyprus by scholars who see it as a tool employed by the local elites to mark their prized possessions and show off their status (Ferrara

14 A painted inscription on a now missing fragment of *larnax* from Trypiti is mentioned in Brice 1961, 22, pl. XXIX V.1a, but this inscription is only known through a drawing published by Evans, and he stated it was incised (1928, 83-84, fig. 40).

15 Some difficulties in reading PK Zc 13 may arise today due to the deterioration of the white wash paint.

16 In general, inscriptions on stone vessels from central Crete are very carefully and deeply executed with elaborate versions of the signs, whereas those from east Crete are less well executed with shallow incisions and simpler paleography (Schoep 2007, 57).

2017, 26). Nevertheless, scarce attention has been paid to the fact that in the Proto- and Neopalatial Aegean we can clearly distinguish professional literates, especially among those who carved or prepared the template for carving inscriptions on stone and ivory objects and jewellery, and non-professional ones, especially among those who wrote on clay for accounting purposes, posing the question to what extent the label 'elite' may correctly be applied to literacy in Bronze Age Crete.

The most significant contribution of this systematic review of the evidence for inscribed clay vessels in Cretan Hieroglyphic and Linear A is indeed this: that it helps us to distinguish different patterns of employment by time. In MM II, the practice of inscribing pottery was extremely restricted, and basically characterises the site of Malia, both the Palace and the elite residences in the town. The most evident function of the pottery bearing Cretan Hieroglyphic inscriptions is in the religious and ritual sphere. Due to the small number of examples, the practice of inscribing pottery could be seen as a part of the elite ideologies, whose existence has been theorized by other scholars in what appear to be elite groups resident outside the First Minoan Palaces, as for example in *Quartier Mu* at Malia, underlying the innovations and changes in society (Schoep 2006).

It has also been pointed out that the presence of writing served to increase the value of an object in relation to its non-inscribed counterparts (Schoep 2007, 57). The idea that inscriptions on pottery may have served as a tool for the elites to show off their status is supported by the inscribed ritual pots (the Chamaizi juglets) and the Cretan Hieroglyphic seal impressions on amphorae, but this cannot be regarded as evidence for competition in the practice of inscribing pottery. Instead, it is further evidence for the strong connection between power, religion and script, which, in the Protopalatial Period, is even evident at an administrative level (for the relation between administrative documents and the sacred domain in this period, see Karnava 2017, 35-36 and 40-41).

Vessels featuring Linear A inscriptions still represent a negligible percentage of the total amount of the pottery recovered (of the millions of clay vases, only *ca.* 110 are inscribed), but, in MM III and LM I, writing on pottery proves to be a fairly widespread practice, as far as both the geographical distribution and the archaeological contexts are concerned. Some scholars argue that the geographical proliferation of Linear A writing need not necessarily imply that literacy became socially more widespread in the Neopalatial Period because literacy may have been confined to restricted groups who were nonetheless present all over the Aegean world (Schoep 2007, 58).

The collected evidence may suggest that most of the Linear A inscriptions on clay vessels had economic and administrative purposes, sometimes linked to goods intended for ceremonial activities, and that inscriptions on jars were written and read by the same persons who also wrote and read tablets. The paltry number of inscribed clay vases does not necessarily imply an equally scant number of persons with writing and reading skills, at least at the basic level, but it may express a choice. Unlike the tablets and the sealings, inscribed vessels were never meant to serve as archival documents. In a certain sense, they are of the moment and dispensable.

We do not know whether the person who manufactured the object was also the person who incised or painted the inscription, either by copying from templates on demand or because he was a professional. According to some authors, the consumption of inscribed objects does not necessarily imply that the consumers were able to read them, since inscribed objects might have been aimed at giving an impression of literacy for prestige purposes, rather than at conveying a true message (Schoep 2007, 57-59). Nevertheless, we have no evidence to consider such a 'double-negative' hypothesis (inscriptions copied from templates and not intended to be read) as more probable than its positive alternative, *i.e.* that inscriptions on pottery were written and read by literate people. Therefore, a widespread consumption of inscriptions may indeed reflect widespread literacy. Moreover, since the use of Linear A in administration clearly implies literacy, I do not see good reasons for failing to draw *a priori* the same conclusion when dealing with inscribed pottery. On the contrary, I am inclined to think that since pottery was something very common and handled by many more people than were administrative documents, this practice must be regarded as even more telling and reliable evidence for literacy.

Acknowledgements

This paper stems from the research I was enabled to carry out in Greece thanks to a generous A. Onassis Fellowship from October 2017 to March 2018. I would like to express my special thanks of gratitude to Professors E. Voutiras and S. Triantaphyllou who supported and welcomed me at the Department of History and Archaeology of the Aristotle University of Thessaloniki. I would also like to thank the director of the Herakleion Archaeological Museum, Dr. S. Mandalaki, for the permission to study and reproduce here the inscribed pots housed in the Museum. Finally, I am grateful to Dr. D. Evelyn for revising my English.

Abbreviations

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