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## A Note on the Linear A & B Ideogram AB 131/VIN(um) ‘Wine’ and Its Variants: References to Time Notation?

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## A Note on the Linear A & B Ideogram AB 131/*VIN(um)* ‘Wine’ and Its Variants: References to Time Notation?

RÉSUMÉ-. Cet article se propose d’explorer la possibilité de détecter des références à la notation temporelle exprimée de manière sémasiographique dans l’idéogramme du vin en linéaire A et en linéaire B: AB 131/*VIN(um)*. Ce signe se présente sous trois variantes, à savoir AB 131a, AB 131b et A 131c, cette dernière variante n’étant attestée qu’en linéaire A. Des éléments de preuve seront présentés pour démontrer que la modification graphique de la forme du signe principal (AB 131a) a été utilisée comme méthode pour donner naissance à des variantes du signe (AB 131b, A 131c) destinées à transmettre des informations chronologiques de manière sémasiographique, c’est-à-dire sans avoir recours à l’écriture phonétique.

MOTS-CLÉS-. écritures égéennes, idéogrammes/logogrammes linéaire A, idéogrammes/logogrammes linéaire B, sémasiographie

ABSTRACT-. This paper sets out to explore the possibility of detecting references to time notation expressed in a semasiographic fashion in the Linear A and Linear B ideogram for wine: AB 131/*VIN(um)*. This sign occurs in three variants, namely AB 131a, AB 131b and A 131c, with the latter variant being attested only in Linear A. Evidence will be put forward to argue that graphic alteration of the form of the main sign (AB 131a) was used as a method to give rise to variants of the sign (AB 131b, A 131c) meant to convey chronological information in a semasiographic way, i.e. without recourse to phonetic writing.

KEYWORDS-. Aegean scripts, Linear A ideograms/logograms, Linear B ideograms/logograms, semasiography

The Linear A and Linear B administrations seem not to have relied heavily on time-keeping practices in the redaction of their bureaucratic records, given that, apart from a few instances,<sup>1</sup> explicit time references are not straightforwardly expressed. The extant texts (mostly economic records in the form of clay tablets and sealings) are understood to have represented ephemeral documents which do not record information beyond a cyclical year.<sup>2</sup> In Linear B, this is inferable from references such as the adjectives *ne-wo* ‘new / of this year’, *za-we-te* ‘of this year’, and the syntagm *to-to we-to* ‘this year’, as opposed to the adjective *pe-ru-si-nu-wo* ‘of last year’, referred to the commodities recorded. The possibility is here entertained that, in specific contexts and for certain commodities, time references might have been expressed in a way different from phonetic writing, i.e. by means of semasiographic features. This could be the case for the Linear A and Linear

(1) By way of example, in Linear B the ideogram \*173/*LUNA*, iconically representing a half-moon, stands for ‘month’. Linear B texts also preserve the word for ‘month’ (*me-no*) and a number of month-names, almost exclusively occurring in religious contexts (see esp. HILLER 2011; JIMÉNEZ DELGADO 2013): e.g. *di-wi-jo-jo me-no* ‘month of Zeus’, *de-u-ki-jo-jo me-no* ‘month of Deukos’, *pa-ki-ja-ni-jo-jo me-no* ‘month of Sphagiānes’.

(2) For a discussion of the Linear B administrative cycle see esp. BENNET 2001.

B ideogram for wine,<sup>3</sup> one of the most important commodities in the Aegean Bronze Age (and part of the ‘Aegean triad’). To this end, this paper takes into account the three graphic variants of the *VIN(um)* ideogram, namely AB 131a (*VINa*), AB 131b (*VINb*) and A 131c (*VINc*), their distribution over the Linear A and Linear B documents, and their possible interpretations.

#### I. AB 131: THE IDEOGRAM *VIN(UM)* AND ITS VARIANTS

The Linear A and Linear B sign AB 131 is understood to represent the ideogram for wine<sup>4</sup> and comes in three graphic variants (Figure 1). In Linear A, all three variants are attested: AB 131a, AB 131b, and A 131c. In Linear B, only two variants are attested (AB 131a, AB 131b), whereas the third one (A 131c) is apparently restricted to Linear A and does not seem to have continued into Linear B. AB 131 also seems to be related to a sign attested in Cretan Hieroglyphic (occurring both on sealstones and clay documents), namely CH \*156, which shows a comparable graphic form (Figure 2).<sup>5</sup>

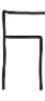
Script	AB 131a	AB 131b	A 131c
Linear A			
Linear B			

Figure 1: The ideogram *VIN(um)* in Linear A and B<sup>6</sup>



Figure 2: The ideogram *VIN(um)* in Cretan Hieroglyphic (CH \*156)<sup>7</sup>

Evans was the first to attempt an interpretation of the sign, by drawing on Near Eastern parallels. In the belief that Cretan scripts copied Near Eastern forms, he took the sign AB 131 (former *SM* No. 116) as the depiction of a ‘ship’ (viewing it upside down with respect to the above orientation).<sup>8</sup> The interpretation of the sign as ‘wine’ was put forward later on by Sundwall, who compared and equated the shape of the Linear A ideogram AB 131a (as attested on Haghia Triada tablets) with the Egyptian ideogram for wine (M 43), depicting a vine on two forked sticks (Figure 3).<sup>9</sup> The

(3) In this paper, the term ideogram is preferred over (the more traditional) logogram. This is because a logogram implies a reference to a lexeme (or morpheme) in a given language, whereas an ideogram expresses semantics without reference to a given word in a given language. Therefore, ideogram proves a more suitable terminological choice in the discussion of a sign (AB 131) which was continued from Linear A (writing Minoan) to Linear B (writing Greek). For a discussion of the use of these terms in Mycenaean studies see THOMPSON 2012.

(4) SUNDWALL 1943; SUNDWALL 1944, p.10-12; *Docs*<sup>2</sup>, p. 223; NEUMANN 1977, p. 125; CONSANI and NEGRI 1999, p. 17-18; JASINK 2006, p. 301-302.

(5) *CHIC*, p. 17. For the attestations of the sign on Cretan Hieroglyphic documents see esp. JASINK 2009, p. 93.

(6) Standardised shapes of AB 131a-b and A 131c. Drawings made by the author after GORILA V, p. xxii, for Linear A, and *Docs*<sup>3</sup> for Linear B.

(7) Standardised shape of CH \*156. Drawing made by the author after *CHIC*, p. 17.

(8) EVANS 1909, p. 225, where he specifies ‘this sign resembles the forepart of a ship with a high prow and with two or three masts’.

(9) SUNDWALL 1943; SUNDWALL 1944, p. 10-12. Sundwall dedicated his studies mostly to the examination of Haghia Triada tablets, the kind of information these contained, the possible meaning of the signs, and the vocabulary attested. Sundwall’s contributions proved essential to Pugliese Carratelli’s first comprehensive edition of all Haghia Triada tablets (PUGLIESE CARRATELLI 1945).

formal similarity between the Egyptian and Cretan sign is no doubt remarkable. Notwithstanding, as sensibly pointed out by Neumann,<sup>10</sup> we need not necessarily assume a Near Eastern or Egyptian parallel (or borrowing), inasmuch as the Cretan ideogram, in being an iconic representation of a vine on props, may have developed independently on Crete. The confirmation of the correctness of Sundwall's graphic interpretation of AB 131 as wine came from Bennett's contextual analysis of the occurrences of the sign on the Linear A documents, as he showed that the sign was always followed by liquid measures.<sup>11</sup>

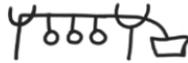


Figure 3: Egyptian Hieroglyph for 'wine' (M 43)<sup>12</sup>

Let us now turn the attention to the attestations of AB 131 and its variants in Linear A and Linear B, and their distribution over sites. In Linear A (**Tables 1-2**), AB 131a is reasonably widespread (attested at Haghia Triada, Khania, Zakros, Phaistos, Knossos, Arkhanes, Pyrgos, Kea) and it may occur either plain or in ligature with a number of simple (probably syllabic) signs. AB 131b is much less frequent (only attested at Arkhanes, Zakros and Khania) and, likewise, it may occur both plain (Arkhanes, Zakros) and in ligature (Khania). By contrast, A 131c is only attested three times at Khania (perhaps also once at Phaistos),<sup>13</sup> always occurring in its plain form and never in ligature. Hence, AB 131c stands out not only for its distribution (attested at one site only), but also for its behaviour (never in composition with other simple signs). As to document types (supports), the three variants are attested almost exclusively on clay tablets, except for the main variant AB 131a occasionally occurring on roundels (Wc), clay vessels (Zb) and a sealing (Wy).

Table 1: Attestations of *VIN(um)* in Linear A<sup>14</sup>  
(sites listed in order of decreasing number of attestations)

Site	131a	131b	131c
Haghia Triada	9a.1, 13.2, 17.1, 19.2, 23a.2, 27a.8, 27b.2.6, 28a.4, 28b.3.4.5, 30.2.5, 35.4, 44a.4, 44b.3, 60.2, 62[+]73.1, 89.5, 91.4, 98b.2, 99a.2, 100.4, 114a.3, 121.3, 123+124a.3, 130.6		
Khania	9.4, 11.2.5, 46.2, 60.2, 91.1		18.3.4, 61.2, 85.2
Zakros	4b.1, 11a.3.4, 15a.1.3, 15b.1.2, Zb 3.1	10b.2	
Phaistos	9b, 25.1, Wc 41, Wc 43 Wy 421(*)		
Knossos	Zb <27>, Zb <36>, Zb <37>, Zb <38>		
Arkhanes	3b.5	2.2, 3a.2, 5.3	
Pyrgos	1.1		

(\*) Originally PH Wc 42, reclassified as Wy by HALLAGER 1996, II, p. 7.

(10) NEUMANN 1977, p. 125.

(11) BENNETT 1950, p. 212-219.

(12) Drawing made by the author after STANLEY 1982, p. 577.

(13) This is PH 7b.3. Restoring AB 131c in line .3 is highly speculative as the tablet is too severely damaged for us to draw any positive conclusions.

(14) Based on SCHOEP 2002, p. 103, and YOUNGER (website).

Table 2: Attestations of composite signs with *VIN(um)* in Linear A<sup>15</sup>

Ligatures		Attestations					
with	composite sign	H. Triada	Zakros	Khania	Knossos	Kea	Pyrgos
131a	A 507 (ME 131a)		15a.3				
	A 522 (SA 131a)	114b.1	15a.1				
	A 588 (131a+TE)				Zb 34		
	A 589 (131a+SA)	131b.2					
	A 591 (131a WA)	27b.5					
	A 592 (131a+WA)	27b.1					
	A 593 (131a SU)		5a.1				
	A 594 (131a+RA)		6b.2, 15b.3				
	A 595 (131a+RA)					Zb 5	
	A 596 (131a+KA)		6b.2				
	A 639 (316+RO 131a)						1.2
131b	A 598 (131b+WI)			5.2			

In Linear B (Table 3), a similar distribution pattern is witnessed, with the only difference that AB 131c is not attested on the extant evidence. AB 131a shows a widespread distribution and is attested on both Crete and Mainland Greece, while AB 131b shows a more restricted usage as only occurring once at Knossos (KN Uc 160.3)<sup>16</sup> and once at Pylos (PY Un 267.8). Moreover, in Linear B, both AB 131a and AB 131b are always used in their plain form, and never occur in ligature with

(15) Based on SCHOEP 2002, p. 103, and YOUNGER (website). A 131c is never attested in combination with other signs. The composite signs listed in Table 2 are either ligatured (e.g. A 588 = 131a+TE) or juxtaposed (e.g. A 507 = ME 131a). A 590 (131a • SI •, on HT 27b.2) and A 597 (131a • GRA • SA, on HT 27b.2.6) are not included in this list as these combinations of signs stand more chance of being interpreted as the ideogram AB 131a followed by a transaction sign (enclosed within dots). For a formal classification of Linear A composite signs based on the ways in which they are combined together (as well as drawings of the signs listed in Table 2) see SALGARELLA in press.

(16) This tablet comes from the *Room of the Chariot Tablets* at Knossos, which is understood to be the earliest deposit of Linear B documents (DRIESSEN 1990; DRIESSEN 2000). It may not be accidental that the AB 131b variant, continued from Linear A, is attested in this older deposit.

other syllabic signs. As to document types (supports), most attestations of both variants come from clay tablets, and only at Pylos the main variant AB 131a is also attested on a number of nodules (Wr).

Table 3: Attestations of *VIN(um)* in Linear B<sup>17</sup>  
(sites listed in order of decreasing number of attestations)

Site	Series	131a	131b
Pylos	An series	An 35.6	
	Gn series	Gn 428+1055+1056+fr.3.4.5, Gn 720.1.2	
	Ua series	Ua 17.1	
	Un series	Un 2.6, Un 47.3, Un 138.3, Un 267.7, Un 612+1122+fr.1, Un 718.3.7.11b.12, Un 853+fr.6, Un 1321.2	Un 267.8
	Wr series	Wr 1358α, Wr 1359α, Wr 1360α, Wr 1361α	
Knossos	C- series	C- 7063.2	
	Fs series	Fs 2.B, Fs 4.A, Fs 11.A, Fs 12.A, Fs 17.B, Fs 19.2, Fs 21.2, Fs 22.B, Fs 23.1, Fs 24.B, Fs 25.A	
	Gm series	Gm 840.2.3.4.5, Gm 5788.1, Gm 9878.1.2	
	Uc series	Uc 160+8032.3.4, Uc 161.2	Uc 160.3
Thebes	Gp series	Gp 109.2, Gp 110.1, Gp 111.b, Gp 112.1, Gp 119.1, Gp 124.1, Gp 127.1.2, Gp 147.2, Gp 161.1.2, Gp 164.1, Gp 165.1, Gp 167.1, Gp 168.1, Gp 176.b, Gp 179.1, Gp 183.2, Gp 184.1, Gp 186.2, Gp 197.1, Gp 210.1, Gp 230.1, Gp 231.1, Gp 233.1	
	Uo series	Uo 121.a	
Mycenae	Ue series	Ue 611.2, Ue 652+656.1, Ue 663.2	

## II. AB 131B: MUST OR VINEGAR?

The interpretation of AB 131 as wine also for the Linear B context was accepted in *Docs*<sup>2</sup>, where it was further proposed to take the variant AB 131b as must.<sup>18</sup> This latter proposal was advanced on the grounds of the concomitant occurrence of the two variants AB 131a and AB 131b on KN Uc 160 (Figure 4), with AB 131b occurring on line .3, and AB 131a on line .4 preceded by the term *de-re-u-ko*. Chadwick argued for reading *de-re-u-ko* as γλεῦκος ‘sweet’ (variant spelling for γλυκός).<sup>19</sup> He also explained the occurrence of the sequence ‘*de-re-u-ko* AB 131a’ as due to a scribal error, with the scribe intending to write AB 131b and having to add the qualification *de-re-u-ko* to AB 131a in order to correct the mistake. According to Chadwick, this explanation would suggest that AB 131a

(17) Series listed in MELENA 2014, p. 139; exact attestations retrieved from *DAMOS*.

(18) *Docs*<sup>2</sup>, p. 223, 441.

(19) *Docs*<sup>2</sup>, p. 441. See also CHADWICK 1968 for a discussion of the spelling γλεῦκος.

qualified as *de-re-u-ko* be taken as equal to the preceding AB 131b, therefore interpretable as must in the sense of ‘sweet wine in fermentation’.



.1 *sup. mut.* [            ]*vest.*[  
 .2                    ] Z 3    [[Z ]]  
 .3                    ]V 1 Z 1    VINb S 1    V 3 Z 2  
 .4                    ] V 5 Z 3 *de-re-u-ko* VINa S 4  
 .5                    ]V 5 Z 2    CYP 1[  
 .6 *inf. mut.*

Figure 4: KN Uc 160, recto<sup>20</sup>

By following another way of thinking, Stanley gave a different interpretation to the evidence provided by KN Uc 160. He suggested that AB 131a, AB 131b and ‘*de-re-u-ko* AB 131a’ indicate different gradations of wine, with ‘*de-re-u-ko* AB 131a’ being the wine of best quality and AB 131b the one of lowest quality (hence, ‘must’ in this respect).<sup>21</sup> He supported his claim by pointing out the similarity of the Linear B wine ideogram with the Egyptian sign for wine (M 43, see **Figure 3**), and the Egyptian habit of reduplicating the term *nfr* (i.e. *nfr-nfr*) to indicate a wine of better quality. Therefore, he takes AB 131b (showing a non-reduplicated sign shape) as ‘wine of lower quality’, to be opposed to AB 131a (showing a reduplicated sign shape) as ‘wine of better quality’. This interpretation, however somewhat appealing, is problematic as it attempts to equate a linguistic feature (reduplication of *nfr*) to a graphic feature (reduplication of sign shape). Against Stanley’s graphic interpretation of AB 131a-b, Melena argues that the differentiation between AB 131b and AB 131a was made by way of dividing AB 131a in half, and not by reduplicating AB 131b (as per Stanley).<sup>22</sup> Such an explanation would support the interpretation of AB 131b as must, with the meaning of ‘not yet ready wine’ (better than ‘wine of lower quality’).

Another point in favour of taking AB 131b as must comes from its occurrences on Linear B tablets related to the perfume making context. PY Un 267 has been shown to record ingredients needed for perfume making (among which *ko-ri-a<sub>2</sub>-da-na* ‘coriander’ and *ku-pa-ro* ‘cyperus’);<sup>23</sup> KN Uc 160 is a collection or inventory tablet listing both AB 131a and AB 131b in connection with cyperus (often used for perfume making). If AB 131b is to be taken as an ingredient used in the perfume making process, this assumption allows space for an interpretation of the sign as either must or vinegar. As argued by Palmer, must would have been used for its fragrant odour, while vinegar for its acidic/alcoholic nature.<sup>24</sup> The former interpretation may have the edge over the

(20) Drawing made by the author after *CoMIK I*, p. 77; text from *KT*<sup>6</sup>. KN Uc 160 is joined to KN 8032 (*CoMIK IV*, p. 10), which is not shown here since its exact position relative to the main fragment cannot be safely established.

(21) STANLEY 1982.

(22) MELENA 2014, p. 139. This interpretation is deemed more plausible given that AB 131a is clearly the main ideogram (and not a variant of AB 131b), as widespread and attested in all three Cretan scripts (Cretan Hieroglyphic, Linear A, Linear B). Melena’s interpretation had already been hinted at by Chadwick (CHADWICK 1968, p. 192-197; *Docs*<sup>2</sup>, p. 223): ‘since it [AB 131b] is an incomplete version of the full sign’.

(23) SHELMEARDINE 1985, p. 17-19.

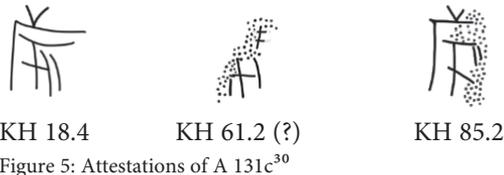
(24) PALMER 1994, p. 116: ‘as a perfume ingredient, wine is being exploited for either its alcoholic/acidic nature, or for its fragrant odour. (...) If the wine is used in the perfume making process because the alcohol and acid help stypsis, then

latter given that the practice of using wine (more likely must) for making perfume by virtue of its fragrance is hinted at in later Greek and Roman treatises on the subject.<sup>25</sup>

Turning now to Linear A, given that some ideograms for basic commodities in both Linear A and Linear B are similar enough to allow comparison,<sup>26</sup> it is commonly accepted to take AB131a and AB131b as the ideograms for wine and its related substances (must or vinegar) by analogy with the Linear B counterparts. Wine is understood to be one of the most important commodities recorded in the Linear A tablets (usually in the context of allocation of foodstuff), and the ideogram AB131a is widely attested and distributed among several Linear A tablet format types (mixed commodity tablets, miscellaneous tablets, single commodity tablets, combined tablet formats).<sup>27</sup> The variants of the main sign (AB131b, A131c), however, are not as widespread. By surveying the distribution of these two variants over the Linear A documents, Schoep came to the conclusion that ‘the Linear A occurrences of these variants are too few to determine whether they are used in the same way as in Linear B. They, however, illustrate how the Linear B administration borrowed from the Linear A administration’.<sup>28</sup> Following Palmer, Schoep leaves the possibility open for taking AB131b in Linear A as vinegar, however stressing that this interpretation is highly unlikely given the large quantities of this commodity recorded on a tablet from Zakros (ZA 10b).<sup>29</sup> Hence, this piece of evidence may go in support of AB131b representing must, not vinegar. As argued earlier, at least in Linear B AB131b is more likely to be interpreted as must, which therefore could likewise fit the Linear A context better. As to A131c, the fragmentary state of the Linear A evidence does not allow much more than speculation as to the contextual meaning of this variant. Hence, in this case, a purely contextual analysis proves unsatisfactory.

### III. A 131C: VINEGAR?

The variant A131c is only attested in Linear A from Khania (**Figure 5**, all attestations given) and graphically differs from the other two variants in showing two strokes on top of the sign.



\*131b is best interpreted as vinegar, but if the wine is present for the sake of its odour, as the later Greek and Roman treatises on perfume-making suggest, then \*131b could be must (available only at grape harvest and vintage in early autumn) or vinegar available all year around’.

(25) See e.g. Pliny, *Nat. Hist.* 13.2; Athenaeus 15.38.

(26) SCHOEP 2002, p. 100-104. Full list of Linear A-Linear B homomorphic ideograms in SCHOEP 2002, p. 94-122, 131-135.

(27) SCHOEP 2002, p. 100. For a comparison between, and assessment of, Linear A and Linear B texts recording wine see PALMER 1995b.

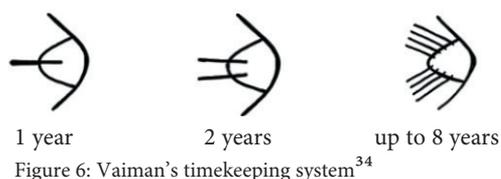
(28) SCHOEP 2002, p. 100. It has to be pointed out that Schoep (SCHOEP 2002, p. 100, 104) erroneously refers to A131c as present in Linear B and says (p. 100) that for Linear B ‘vinegar or must was suggested for AB131c’, with a reference to ‘PALMER 1994, p. 116’ (see fn. 25 above). However, Palmer clearly takes AB131b as vinegar or must to be used in the perfume making process, without mentioning A131c given its absence in Linear B. Palmer also specifies that: ‘Linear B apparently took over both AB131a and 131b from Linear A, but discarded the more complicated version of the signs [i.e. A131c]’ (PALMER 1994, p. 35).

(29) SCHOEP 2002, p. 104.

(30) Drawings made by the author after GORILA III, p. 48-49 (KH 18), p. 82-83 (KH 61), p. 98-99 (KH 85).

Although no context-based interpretation of this variant is viable due to the damaged contexts where it is preserved, as well as the very few attestations of such sign, there may still be space for putting forward a plausible interpretation of its meaning. In this respect, it is my intention to suggest taking A 131c as the ideogram for vinegar for three sets of reasons. First, if AB 131b is more likely to be taken as must in Linear B (especially in view of the graphic explanation of the origin of the sign as argued by Melena), and this interpretation could potentially fit the Linear A context better than vinegar (esp. in the light of ZA 10b mentioned earlier), this implies that, by way of exclusion, A 131c turns out to be a good candidate to represent vinegar. Second, in line with Melena's graphic interpretation of the development of AB 131b out of AB 131a by dividing the main sign in half, it may be assumed that a similar sign alteration process could also have given rise to A 131c by adding extra elements to the main sign (AB 131a).<sup>31</sup> By being extra additions, the graphic traits on top of A 131c could have indicated that the wine was somewhat 'older/aged' in contrast to 'not yet ready wine' (i.e. AB 131b). In this respect, we may want to stress that also the very interpretation of AB 131b as 'not yet ready wine' implies a time reference, although implicitly. We may see here at work a process whereby the shape of the main sign (AB 131a) gets modified through the removal (AB 131b) or addition (A 131c) of graphic traits in order to account for the different (chronological) stages undergone by the commodity each variant refers to.

Third, there might be a more compelling argument in support of the suggestion that the top strokes in A 131c could represent time notations, therefore allowing for an interpretation of the sign as vinegar in the sense of 'aged wine'. This is a possible comparative cross-cultural parallel with the administrative timekeeping practices of ancient Mesopotamia, and in particular with the way in which Proto-Cuneiform of the Uruk period expresses time notations.<sup>32</sup> The Uruk timekeeping system (Vaiman's timekeeping system, given in Figure 3) is understood to have been based on the sign U<sub>4</sub> (schematically representing the sun raising between the mountains of East Mesopotamia) which stands for a grain ration and combines both numerical and ideographic signs to emphasise special metrological connotations.<sup>33</sup> In order to convey chronological information, this sign would be modified with the addition of extra elements. In particular, in order to count years, extra strokes (ranging from one up to eight) were added to the left-hand side of the sign.



From a purely cognitive point of view, this procedure somewhat recalls the Linear A context illustrated above, with A 131c showing the addition of extra strokes to the basic shape of the main sign. By taking a comparative approach, the possibility that also in Linear A extra strokes added on top of the main sign could have been used to convey chronological information in a semasiographic

(31) Note that already Palmer pointed out: 'The variants of AB 131a are formed by altering the shape of the sign, not by adding ligatures' (PALMER 1995a, p. 142).

(32) Proto-Cuneiform (or archaic Cuneiform) designates the earliest writing system used to write the oldest Sumerian texts of the Uruk period (ca. 3200 BCE, but attested until 2800-2700 BCE as late Proto-Cuneiform). As Proto-Cuneiform was designed to record transactions, these earliest texts consist almost entirely of words and numbers. For bookkeeping practices in Proto-Cuneiform see esp. NISSEN *et al.* 1993; for an outline of Proto-Cuneiform see MICHALOWSKI 2008.

(33) ENGLUND 1998a, p. 121-122; ENGLUND 1988b, p. 136-140. For a concise outline of archaic numerical sign systems (inclusive of the timekeeping notation system) in Proto-Cuneiform see esp. NISSEN *et al.* 1993, p. 25-29.

(34) After ENGLUND 1998b, p. 121, Figure 42. Drawings made by the author.

way, therefore, appears appealing to say the least. Despite the appreciable chronological and geographical gap between Proto-Cuneiform of the Uruk period and Linear A, as well as the different cultural backdrop, the alleged similarity in terms of graphic practice is remarkable nevertheless. In the awareness that Proto-Cuneiform is unlikely to have cast any direct influence on Linear A, it needs clarifying that the above similarity ought not be taken as a borrowing from Proto-Cuneiform of the Uruk period, but rather as a graphic *comparandum*. Viewed within a comparative perspective *stricto sensu*, this instance may represent a case in which a comparable sign alteration procedure was devised to account for, and convey, a similar set of information in a semasiographic fashion, although in different cultural contexts. Finally, another argument may be added in support of taking the top strokes in A 131c as graphic devices to express time references. This is that we should exclude the possibility of taking the top strokes in A 131c as measure signs or fractional signs, given that in Linear A fractions are usually placed on the right-hand side of a sign (preferably at the bottom, but in some cases stretching all the way to the top).<sup>35</sup> Therefore, top strokes are unlikely to be taken as indications of the quantity of wine recorded by means of said ideogram. Moreover, if we reckon that numerical units in both Linear A and B are represented by means of little vertical strokes that follow an ideogram and are placed on the top right-hand side of the sign, the vertical strokes placed on top of A 131c may well be taken as representing two ‘units of time’ within the shape of the sign. This positioning, in fact, would have left no doubt that the strokes were to be interpreted as integral part of the ideogram (and the information it conveyed), and not as numerals placed afterwards and, as such, accounting for the number of items recorded.

#### CONCLUSIONS

By examining the occurrences of AB 131/*VIN(um)* and its variants in the Linear A and Linear B evidence, this paper has offered arguments in support of taking the variant AB 131b as must and the variant A 131c as vinegar. It has been argued that the distinction between these two variants, and the ensuing meanings, may have been made in a semasiographic manner (i.e. without resorting to phonetic writing), and more precisely through graphic alteration of the main sign (AB 131a) by subtracting or adding graphic traits. Subtraction of graphic traits applies to the halving of the main sign AB 131a to give rise to the variant AB 131b (as argued by MELENA 2014); addition of graphic traits is witnessed in placing strokes on top of the main sign to give rise to the variant A 131c. These three variants can therefore be put in a chronological sequence, with AB 131b representing must (as ‘not yet ready wine’), AB 131a representing wine, and A 131c representing vinegar (as ‘aged wine’). By consequence, this proposal leads us to argue for the existence of (implicit) time references expressed in a semasiographic fashion in the Linear A and Linear B scripts.

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(35) For combination patterns in the composition of Linear A complex signs (including the position of fractional signs) see SALGARELLA in press.

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