

Phonetic Classifiers in the Anatolian Hieroglyphic Script

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Abstract The Anatolian hieroglyphic script has number of signs, which have not been studied in a systematic manner, the so-called 'phonetic indicators' or 'phonetic complements'. This category comprises a small group of phonetic signs, which occur in combination with semantic signs and seem to hint at part of their phonetic realisation. The following article offers a study of phonetic complements in hieroglyphic inscriptions. It shows that clear rules govern the use of these signs, and it is suggested that this group should be called 'phonetic classifiers', analogous to 'semantic classifiers'.

Keywords Phonetic classifier. Semantic classifier. Anatolian hieroglyphic. Writing system. Sign function.

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1 Introduction

It has long been known that certain phonetic signs add phonetic information to semantic signs without being part of a full or partial phonetic writing of the word in question. Well-known examples include the personal name Suppiluliuma, written PURUS.FONS.MI, or the writing OMNIS.MI for *tanimā-*. In both instances, the sign MI, transliterated in cursive capitals, is understood to hint at an /m/ of the logographically written word without representing the full syllable /mi/, as this is not present in the lexemes. Despite attempts to read such signs with alternative values – in this instance as *ma_x* –, neither the operating principles nor the range of signs used have been systematically studied so far.

The following analysis is based on data generated for the iClassifier project¹ but extends that scope in considering not just signs traditionally considered classifiers but also combinations of logogram plus phonetic indicator. In the context of "The Luwian iClassifier",² new data has emerged which leads me to propose a new scheme for classifiers in the Anatolian Hieroglyphic script.³ Limitations of space necessitate to separate the discussion of this scheme from the topic addressed here, so that the following will be dedicated to the category of what I would like to call "phonetic classifiers", formerly known

¹ This study is made possible through the application of the iClassifier digital research tool: Orly Goldwasser (Conceptualisation and classifier theory), Haleli Harel (Computational realisation and research coordination), Dmitry Nikolaev (Programming). The tool was developed in the ArchaeoMind Lab, PI Orly Goldwasser, ISF grants 735/17 and 2408/22. iClassifier enables and facilitates digital data collection, classifier annotation, detailed classifier analysis, robust computer-assisted lexical and statistical reports, and diverse network modelling.

² Payne, Olina forthcoming.

³ Payne forthcoming.



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variously as phonetic indicators or phonetic complements. In fact, two phonetic classifiers were already known and have raised no interest, as they classify phonetically written words, just like semantic classifiers, and are transliterated accordingly. These are $M\dot{A}$, classifying *mashunalli*-,⁴ and SA_4 , classifying *sanna(i)*-,⁵ *sazza*-,⁶ *liliya*-,⁷ and *kwananala*-.⁸ (SA_4)*liliya*- and (SA_4)*kwananala*- inexplicably do not contain any part of the classifier within the host word. These are either rare, single exceptions to the scheme laid out here or instances where the classifier sign, L402, should be analysed as having a semantic value. All other examples for $M\dot{A}$ and SA_4 show the classifier repeating the first syllable of its host word. Note that these classifiers are homophone signs that differ from the phonetic sign chosen for the beginning of the word.⁹ This choice may serve both to emphasise the syllable and to aid the reading as a phonetic classifier. These two phonetic classifiers follow the general pattern of semantic classifiers in that they attach to a phonetic writing, and will therefore be excluded from the discussion here. The single instance, where SA_4 classifies a semantic sign, meanwhile, will be discussed below.

Anatolian hieroglyphic signs are traditionally differentiated in a tri-partite system as either logogram, determinative or phonogram. I argue that the differentiation is rather bi-partite, i.e. between semantic or phonetic sign, of which the semantic signs can be used in two functions, either as logogram or as determinative/classifier.¹⁰ The difference between these two functions lies in whether the signs are to be realised linguistically, i.e. are they to be read out or are they silent? Adapting a scheme developed by Stéphane Polis to describe the functions of Egyptian hieroglyphic signs,¹¹ I offer the following scheme for the functions of Anatolian hieroglyphs:

Table 1 Hieroglyphic Sign Functions

	INDEPENDENT	DEPENDENT	
SEMANTIC SIGNS	Logogram	Semantic classifier	+ MEANING – SOUND
PHONETIC SIGNS	Phonogram	Phonetic classifier	– MEANING + SOUND
	LINGUISTIC REALISATION	SILENT	

Signs can be independent and have a linguistic realisation, either as logograms, encoding meaning but not sound, or as phonograms, encoding sound but not meaning. These voiced signs are complemented by two types of silent signs, which serve to aid the reading process but are not intended to be converted into language and read out. These silent signs need to combine with independent signs, and serve to aid their reading by offering additional information, either towards the meaning or sound of the signs on which they depend. The group of semantic classifiers equates to the signs traditionally called determinatives/classifiers, and I propose that the group formerly called phonetic indicators/complements should be called phonetic classifiers, as they share the characteristic of being dependent, silent signs that serve to aid the reading process. Also, like semantic classifiers, the use of phonetic classifiers is optional and alternates with writings that omit them. Note that while semantic classifiers mainly classify phonetic writing and phonetic classifiers mainly classify semantic signs, this relationship is not exclusive and there are some examples of phonetic classifiers with phonetic writing (cf. below) and of semantic classifiers with semantic signs.

⁴ ADANA 1 §§ 2; 6.

⁵ TELL AHMAR 5 § 16; BOYBEYPINARI 2 § 12; ADIYAMAN 1 § 5; ANCOZ 7 § 12; KULULU 2 § 5a; ANKARA 1 § 5; KARKAMIŠ A1a § 4; KARKAMIŠ A18e § 5; KARKAMIŠ A 29d+i l. 2; MARAŞ 14 § 12; KARKAMIŠ A11a §§ 23, 24; BABYLON 1 § 13.

⁶ TELL AHMAR 6 § 27.

⁷ TELL AHMAR 5 § 12a.

⁸ İVRİZ fr. 2. A further instance of SA_4 in a fragmentary context analysis (TELL AHMAR fr. 4) cannot contribute to the analysis.

⁹ Furthermore, the sign sa_4 is almost never used to begin a phonetically written word (the only exception is AIMEE GIRON l.1), but dominates the word-final position. In view of the arguments brought forward in this article, it would be worth considering whether this sign has a predominant function as marking word edges, and in this function, its position differentiates between use as phonogram (word-final) and phonetic classifier (word-initial). The sign *má* is altogether very rare and limited to Cilicia (KARATEPE 1 §§ 24 (Ho.); 71 (Ho.); ADANA 1 §§ 2; 6).

¹⁰ Payne forthcoming.

¹¹ Polis 2018, 301 fig. 8.

The group of phonetic classifiers studied for this paper takes into account hieroglyphic inscriptions but not seals, on the basis that this is dominantly a practice of linear writing contexts. The two most relevant parameters for the study of phonetic classifiers are: which phonetic sign is used as classifier, and what is indicated by it. The stock of signs used as phonetic classifiers is small, and shows a significant preference of the *i*-series; this stands in contrast to the more significant role played by the *a*-series for both writing superfluous vowels and as regards the general number of variants. The following signs are used as phonetic classifiers:

*HI, LA, LA/I/U, LI, MA, MÁ, MI, MÍ, NA, NI, NÍ, PA, SA₄, +RA/I, TU.*¹²

2 What Do Phonetic Classifiers Do?

Anatolian hieroglyphic phonetic classifiers can be described to mark, respectively, two word-initial and one word-final position. Two of these options are straight forward, serving to enhance (1) the first or (2) last syllable of a word stem – excluding the grammatical ending. The third is slightly more complex: in certain cases, (3) the phonetic classifier indicates the second consonant of the closed first syllable (CVC-). It is only in this position, that the phonetic classifier indicates a single consonant rather than a full, open syllable. For options (1) and (2), one uses either a phonetic sign repeating the exact syllable¹³ or one which shows the correct consonant but the wrong vowel, i.e. the vowel needs to be adjusted towards the correct reading.¹⁴ Option (3) raises the question of the scribes' awareness of closed syllables despite the fact that the script uses almost exclusively open syllable phonograms.

Analysis of the phonetic classifier signs, discussed below, shows that they serve to enhance the reading of the beginning or the end of a word stem. The fact that enhancement rather than disambiguation was the intention can be further argued by the structures revealed below, as well as the writing of L45A.NI to classify both *niwaranni*- 'child' and *nimuwizza*- 'son'.¹⁵ If disambiguation would have been intended, the identical first syllable should not have been chosen as a classifier.

A practice which emphasises or repeats word edges, while seemingly superfluous, finds an explanation from modern neuro-psychological studies. For instance, studies of modern alphabetic writing have shown that for word recognition, first and last letters are more important in the perception of a word than the letter in between.¹⁶ Moreover, the importance of word edges is not just important in writing but also for speech. A recent study has shown that already newborns are better at encoding word edges than internal components.¹⁷ In experiments, the researchers have shown that newborns are sensitive to the position of syllables at the beginning and end of a multisyllable sequence, in contrast to sequence-internal syllables. This edge bias is interpreted as an innate human ability for encoding the order of syllables in sequence, and this in turn is an essential skill for understanding language. In the context of ancient writing systems, it is quite possible that the preferential enhancing the beginning or end of a word stem were motivated by a pragmatic understanding of these locations as specifically important both in written and oral contexts. That this additionally aligns with our recent understanding of cognitive processes involved, adds a further layer to the understanding of such graphemic practices.

¹² I exclude ZÚ, as I consider its examples – with Hawkins 2024 but contra eDiAna – to be purely phonetic. There is no reason to prefer (L187.ZÚ)*mila*- with an unknown stem *mila*- over the simpler (L187)*zúmila*- (ASSUR letter a § 8, letter c § 8; KIRÇOĞLU 1.2).

¹³ Analogous to semantic classifiers that show identity with the phonetically written word, one might call these repeaters.

¹⁴ This may sound worse to users of alphabetic writing with fixed orthography. Taking into account the large number of hieroglyphic signs which are indifferent between vowels *a* and *i* – probably as a reaction to the linguistic phenomenon of *i*-mutation –, it would be surprising if the ancient reader viewed a phonetic indicator with a different vowel as strongly as the modern counterpart.

¹⁵ From the point of view of writing systems research, it is unfortunate that the sign is variously transcribed as INFANS, FILIUS and FRATER, according to the analysis of the word represented with it, as this obscures the fact that the graphic shape is identical. Furthermore, alternating transliteration between FILIA and FEMINA.MANUS.FEMINA for the female variant of the sign are inconsistent, and the latter would only make sense if the male variant was transliterated VIR₂.MANUS.VIR₂. To clearly identify the two graphic shapes, I use the transliteration L45A for INFANS/FILIUS/FRATER and L45B for FILIA/FEMINA.MANUS.FEMINA.

¹⁶ Johnson, Perea, Rayner 2007.

¹⁷ Ferry et al. 2015.

3 Structures and Enhancement Locations

The following table shows the signs used to enhance the beginning of a word, with dates referring to centuries BC; as a particularly productive period for the development of the script,¹⁸ the late tenth-early ninth century BC is listed separately (L10/E9):

Table 2 Enhancement of First Syllable

Category	Sign	For	Date
Identical syllable	LA	/la/	13, L10/E9
	TU, TÚ	/tu/	13
	NI, NÍ	/ni/	11, L10/E9
	MÍ	/mi/	11, L10/E9
	NA ¹⁹	/na/	13
Different vowel	MI	/mu/	13, 9
	HI	/ha/	13
Final consonant of initial CVC-	+RA/I	/r/	9, 8
	SA ₄	/s/	8
	MI	/m/	11, L10/E9, 8
	LA	/l/	8

As can be seen from this table, the first syllable is primarily classified with a sign repeating the exact syllable, and this practice uses signs from all three vowel series. The practice is moreover attested early, and continues into the main period of script productivity. Using a phonogram with a different vowel from the first syllable is limited to signs from the *i*-series, which can fill in for the two other vowels. This is predominantly an early, empire period practice, the only later attestation consists of a personal name. Of particular interest is the enhancement of just a consonant, closing a word-initial CVC-sequence. It is not a highly productive category: the use of +RA/I for /r/ is both the most common and easily explained classifier in this group, its addition recalling the numerous ligatures of phonograms with +ra/i, which can be realised as CVr. The use of MI for /m/ is limited to just one, albeit frequent lexeme, and the use of SA₄ for this is a rare outlier with a single example.

Table 3 Enhancement of Last Syllable

Category	Sign	For	Date
Identical syllable	LI, LA/I	/li/	9, 8
	MI	/mi/	8
Different vowel	MI, MÍ	/ma/	13, 12, L10/E9, 8
	LA	/li/	8

The fact that the enhancement of the last syllable does not contain many repeaters has an obvious explanation: how can we tell the phonetic writing of a final syllable apart from the use of a phonetic classifier? In fact, this is only possible under two circumstances: (1) when the classifier cannot be analysed as the ending of the stem because this is written as well, or (2) in the case of late inscriptions that would not plausibly write the last syllable of the stem phonetically but omit a case ending. Instances are very few. Where a phonetic sign could be analysed as either phonogram or phonetic classifier, the former has been preferred.²⁰ The use of MI to indicate /ma/ is the most wide-spread example for a phonetic classifier with a different vowel. It is interesting that while this structure occurs both marking first and last syllables, the latter outnumbers the former by far. The use of LA for /li/ is limited to a single inscription.

¹⁸ Payne 2018.

¹⁹ This rests on a single lexeme which is not undisputed, cf. discussion below.

²⁰ E.g. DOMINUS-ni-ia-za rather than DOMINUS.NI-ia-za (BOYBEYPINARI 2 § 17a), as per Hawkins 2024, 240, contra *eDiAna*.

Table 4 Problematic Cases

Classified	Sign	Problem
<i>hamsi-</i>	<i>NI</i>	word not beginning with /ni/
<i>nimuwizza-</i>	<i>WA/I</i>	penultimate syllable
<i>tuwa-</i>	<i>MI</i>	word without /mi/
<i>asa-, isnuwa-</i>	<i>MI</i>	word without /mi/
<i>zallaniya-</i>	<i>PA</i>	word without /pa/

A small group of problematic cases cannot be incorporated into the structures discussed above. Of these, the first has a possible explanation, the classification of *hamsi-* with *NI* (versus the unproblematic classification of the same word with *MI*; cf. below), written L45A.NI.NEPOS.²¹ Given the chronology of the attestations for L45A with phonetic classifier, a simple scribal error, either mishearing or misremembering *MI* for *NI* seems more likely than interference from *NI* being used with the same logogram L45A to classify *nimuwizza-* and *niwarann(i)-*.

WA/I for *nimuwizza-* could be construed as using this otherwise unattested phonetic classifier for the penultimate syllable of the stem, but in view of the very many attestations for L45A.NI/L45A.NÍ, I would prefer to analyse this single instance as a scribal mistake, writing L45A.NÍ-wa/i-za<-za>, i.e. omitting the second -za needed for the dat.pl. *nimuwizzanza*.²² A deliberately endless form would not be likely in this period.

I can offer no explanation for the use of *MI* and *PA* to classify lexemes that do not contain these syllables or even just the consonant. However, it is worth noting that PONERE.*MI* for *tuwa-*, ‘to put’,²³ and LITUUS+*PA* for *zalaniya-* ‘to turn’,²⁴ are statistically not very relevant, as they pertain to single inscriptions. More puzzling and likewise without explanation is why *MI* would classify SOLIUM in *asa-* ‘to sit’,²⁵ and *isanu-* ‘to seat’.²⁶ Note that it involves the most frequent phonetic classifier, *MI*.²⁷

²¹ GÜRÜN § 1b.

²² CEKKE § 8.

²³ MARAŞ 7 Side A.

²⁴ TELL AHMAR 1 § 17.

²⁵ KARAHÖYÜK § 4; ÇALAPVERDİ 1 § 2; ÇİFTLİK §§ 8, 9, 10; KARATEPE 1 § 24 (Ho.); KARATEPE 1 §§ 24, 36, 37, 54 (Hu.); KARKAMIŞ A2+3 § 17e.

²⁶ KARAHÖYÜK § 8; KÖRKÜN § 5; KARKAMIŞ A1a §§ 16, 17e; KÖRKÜN § 5.

²⁷ Three further instances of *MI* cannot be analysed as the underlying stems of the host word are unknown. These are: (VIR₂) URBS.*MI* (KARAHÖYÜK §§ 9, 13, 22), DEUS.CRUS.*MI* (ANCOZ 9 §2) and DEUS.DOMUS.*MI* (HAMA 4 § 10).

4 Attestations

The following section discusses the attestations studied in order of their structural analysis. Reference to the chronological spread will only be made where this is significant, the chronological development as such will be discussed amongst the results, below.

4.1 First Syllable

4.1.1 Identical Syllable

The syllabic sign *LA* is used as a phonetic classifier in combination with *L45A*, traditionally transliterated *FRATER.LA*, to write the word for ‘brother’.²⁸ Following Yakubovich that this should be read **lani-*, dissimilated from *nani-*,²⁹ the choice of the phonetic classifier is easily explained as repetition of the first syllable. Of particular interest are the attestations, where *L45A.LA* forms part of a compound personal name.³⁰ Here, it is worth noting that of the attestations where this forms the second part of the compound, the sequence is additionally introduced by the marker for the beginning of a word (*L386*). The marking of the name at the beginning with a personal name marker (*L380*) shows a similar frequency.

An awareness of the separate components of compounds can be clearly seen in the script, in particular in the use of classifier signs, and not just in the category of personal names. A striking example comes from the *ASSUR* letters, and is thus even more relevant to the discussion of linguistic awareness because of the more colloquial, every-day register of the source. It marks the first component of a compound noun with a classifier indicating that this element was visualised in its own right and not simply taken for granted within the compound: the writing (“*L481*”) *wa/i+ra/i-mu-ta-li-zi*,³¹ which *eDiAna* translates as “a type of dog”³² can be analysed as *war=mu(wa)talli-*,³³ meaning “mighty (in) water”, i.e. describing a hunting dog trained for hunting waterfowl. As not all dogs take equally to water, such a hunt requires a trained animal which performs well in water. Note that the classifier sign *L481* depicts a vessel shape, thus clearly interacting with the element ‘water’ on its own. If referring to the real-life environment such as a lake or a river as the hunting ground, one might have expected an animal sign depicting any type of waterfowl or, for instance, *FLUMEN* as a classifier. The relationship between water and pitcher thus stays on an abstract, linguistic level, excluding the concrete waters one might find as the work environment of a *warmutalli*-dog.

The same structural pattern as for *L45A.LA* can also be observed for *IUDEX.LA*, *Labarna*.³⁴ The new transliteration *LABARNA* for the compound serves to emphasise its unchangeable reading in this combination, and possibly imitates the instinctive contemporary reading. As it obscures the use of a phonetic classifier for the discussion of writing systems structures, it is not adopted in this article. Similarly, the writings *MONS.TU* and *MONS.TÚ* indicate the first syllable of the royal name *Tudhaliya*.³⁵ With inverted order, i.e. phonetic classifier first, semantic sign second, *MÍ.REGIO* repeats the first syllable of *miz-ri-*, ‘Egypt’.³⁶ Despite the few attestations, a case might be made for a deliberate choice of *MÍ* instead

²⁸ AKSARAY § 10; ALEPPO 2 §§ 3, 9; CEKKE §§ 17c, 17d, 17m; EĞRİKÖY § 3; JISR EL HADID 4 § 2; JISR EL HADID fragments 1 l.2; KARATEPE 3 § 1; KARKAMIŞ A4a § 2; KARKAMIŞ A5a § 3; KARKAMIŞ A6 § 13; KARKAMIŞ A7 § 2; KARKAMIŞ A15b § 15; KARKAMIŞ A18j; KARKAMIŞ A22c (+A20b6+B35b) l.4; KIRÇOĞLU § 4; KULULU 4 § 15; KULULU lead strip 1 §§ 3 (13), 4 (17), 7 (38; 44); MARAŞ 6 l.1; TELL AHMAR 1 § 16; TELL AHMAR 2 § 18; TÜNP 1 § 1.

²⁹ Yakubovich 2010, 387.

³⁰ AKSARAY § 10; CEKKE §§ 17c, 17d; KARATEPE 3 § 1; KARKAMIŞ A18j; KULULU lead strip 1 § 3 (13), 4 (17); TÜNP 1 § 1.

³¹ ASSUR letter b § 9.

³² <https://www.ediana.gwi.uni-muenchen.de/corpus.php>.

³³ For cun. Luw. *wār-* ‘water’: Rieken, Opfermann (2024), Cuneiform Luwian *wār-* (*eDiAna*-ID 971), in *eDiAna* (<https://www.ediana.gwi.uni-muenchen.de/dictionary.php?lemma=971>); for hgl. Luwian *muwatalli-*, ‘mighty’: Bauer, Rieken, Billing (2024), Common Luwian */muwattalla/i-/* (*eDiAna*-ID 3529), in *eDiAna* (<http://www.ediana.gwi.uni-muenchen.de/dictionary.php?lemma=3529>).

³⁴ YALBURT block 1 § 1, block 2 § 2; KARAKUYU l.1; KÖYLÜTOLU YAYLA § 2; BOĞAZKÖY 3 l.1; BOĞAZKÖY 18 l.1; DELİHASANLI l.2; SÜDBURG §§ 8, 10, 11; NİŞANTAŞ A1 § 1; BOĞAZKÖY 11 [frag.]; ANKARA 2 § 2; possibly without phonetic indicator on KARKAMIŞ fr. a/b; as a personal name, KULULU 4 § 5; also attested on Hittite royal seals, not discussed here.

³⁵ With *L88/89*, *TU*: YALBURT block 1 § 1; KARAKUYU ll.1, 2; BOĞAZKÖY 3 l.1; BOĞAZKÖY 18 ll.1, 3; BOĞAZKÖY 19; TELL AÇANA 1; NİŞANTAŞ A1 §§ 1, 2; A2 § d; EMİRGAZI 1 § 33; fragmentary ANKARA 2 § 2; DELİHASANLI l.2. Also attested on Hittite royal seals, not discussed here. With *L325*, *tú*: KARKAMIŞ fragments a/b; KELEKLİ § 2 (*MONS.TÚ-sa*).

³⁶ ALEPPO 7 § 7; KARKAMIŞ A6 § 4.

of *MI*, given that the latter is never attested as a phonetic classifier repeating the word-initial syllable.

As a repeater of the first syllable, we encounter both *NI* and *NÍ* for /ni/ in combination with the logogram L45A and two host words.³⁷ Of these, there are few attestations for *niwaranni*- ‘child’,³⁸ whereas *nimuwizza*- ‘son’,³⁹ is well attested. Of the latter, we also have the adjectival derivation *nimuwiyaya*- ‘son’s’.⁴⁰ In one inscription, the two *ni*-signs alternate without obvious difference.⁴¹ Another Karkamiš inscription, meanwhile, uses *NÍ* in the writing of *nimuwiza*-,⁴² and *NI* to write *niwaranni*-.⁴³ Whether these two instances are deliberate or accidental cannot be judged in light of the free alternations in CEKKE.

If we accept a reading *nani*-.⁴⁴ ‘lord’, for DOMINUS.NA, this would likewise repeat the first syllable of the host.⁴⁵ Note that it would then be the logogram DOMINUS, not the phonetic indicator which disambiguated this from homophone *nani*- ‘brother’, thus supporting the argument made here, that phonetic classifiers are not used to disambiguate but to enhance word edges. However, if one did not accept the reading *nani*-, ‘lord’, these cases could not be discussed as the stem of the host would be unknown.

4.2 Different Vowel

There are two phonetic classifiers that point at the host’s first syllable yet do not use the correct vowel. Noticeably, both signs used come from the *i*-series. Attestations are limited to few lexemes. The addition of *MI* to BOS to write *m+u(wa)* has its origin in the writing of the Hittite royal name Muwatalli.⁴⁶ This is a ligature sign in the making which can be observed still as two separate signs in the relief of Muwatalli II at Sirkeli, but becomes a closed ligature before the Empire period is over.⁴⁷ It also occurs without phonetic classifier for the value *mu(wa)*.⁴⁸ Such an alternation supports the analysis of *MI* as a classifier, as discussed above. In this shape, it should be understood as a simple phonogram *mu*.⁴⁹ Whether the ox head with internal *mi*-sign in the writing of names should be understood as representing the original complex ligature BOS.*MI* or a simpler phonogram *mu(wa)* is a matter of personal interpretation. Contemporary to common use of the sign as a phonogram, I would prefer the latter but one could argue for the former on the basis of conservative name writing practices.⁵⁰ I am inclined to analyse the compound L414.OVIS as *HI.OVIS*, indicating the first syllable of *hawi*-, ‘sheep’.⁵¹ It would find a parallel in the use of the *i*-series for a different vowel in the slightly earlier introduction of BOS.*MI* – likewise a classified animal sign – and for the less frequent position of a phonetic classifier before a semantic sign, it finds a parallel in *MÍ.REGIO*.

³⁷ Uncertain interpretation: KARKAMIŠ A15c § 2a; POTOROO 7b.

³⁸ KARKAMIŠ A6 § 30; TELL TAYINAT 2 frag. 2a § iii. With Hawkins 2024, 127 and contra eDiAna, the *-ni* in TELL AHMAR 6 § 14 is a phonogram. The uncertain inclusion of the sign L282 to write *niwaranni*- (TELL AHMAR 1 § 2; TELL AHMAR 6 § 2) remains puzzling and for want of an assured phonetic value for L282 cannot be further analysed. Contra Hawkins 2024, 424, the sign does not appear in TELL AHMAR 2 § 2.

³⁹ ADANA 1 § 1a; ALEPPO 6 § 7; ARSUZ 1 § 1, 18; ARSUZ 2 § 1; ŞARAGA § 2; BOR § 2; CEKKE §§ 14, 16, 17a-j, 17l-o; HAMA 1 § 1; HAMA 2 § 1; HAMA 3 § 1; HAMA 6 § 1; HAMA 7 § 1; HAMA 4 § 1; KARKAMIŠ A11b+c § 1; KARKAMIŠ A4a §§ 1, 2; KARKAMIŠ A4b §§ 1, 6; KARKAMIŠ A6 § 8; KÖRKÜN § 8; KÖTÜKALE § 1b; KARKAMIŠ A15b § 16; KARKAMIŠ A27e § 1; KIRÇOĞLU § 1; KULULU 4 § 15; TELL AHMAR 1 § 23; TELL AHMAR 2 §§ 14, 18, 23; SULTANHAN § 1.

⁴⁰ ANCOZ 7 § 13; BOYBEYPINARI 2 § 17c.

⁴¹ CEKKE.

⁴² KARKAMIŠ A6 § 8.

⁴³ KARKAMIŠ A6 § 30.

⁴⁴ Cf. Hawkins 2024, 28 with lit.

⁴⁵ ALEPPO 7 § 11; EMİRGAZİ 1 § 21; EMİRGAZİ 2 §§ 1, 3, 6, [14]; YALBURT block 10 § 4; block 4 § 3; block 8 § 2; block 11 § 1; block 12 § 4; KARKAMIŠ A30h § 2.

⁴⁶ SİRKEĻİ 1.

⁴⁷ HATİP; HANYERİ.

⁴⁸ EMİRGAZİ 1 §§ 34, 36; EMİRGAZİ 2 §§ 3, 9; also KIZILDAĞ 4 §§ 2b, 2c. YALBURT seems to prefer the *MI*-less variant but for two instances, block 11 § 2, block 13 § 1.

⁴⁹ E.g. KÖYLÜTOLU YAYLA § 2.

⁵⁰ Thus in the ninth-century personal name *Immaramuwa*- as ¹L463.BOS.*MI* (DÜLÜK BABA TEPESİ 1 § 1).

⁵¹ EMİRGAZİ 1 §§ 19, 21, 22.

4.3 Final Consonant of Initial CVC-

A third category of phonetic classifier hints at the second consonant in a word-initial CVC- sequence. The origin of what seems like an unnecessary complex writing practice might lie in the dependent sign *+ra/i*, which attaches itself to other signs in phonetic writing to form various CVC syllables, such as the first syllable of the city name Karkamiš. The same principles seems to be at play when *+RA/I* acts as a phonetic classifier, whether or not the possible alternative vowels *-a/i-* are relevant for the stem of the host word. Note that the writing SCALPRUM+RA/I.LA/I/U for *warpalli(ya)-* ‘warrior’,⁵² has not one but two phonetic classifiers; the second is discussed below (§ 2.1). The phonetic classifier *+RA/I* attaches to the semantic sign CORNU in the writing of *sur(i)-*, abundance,⁵³ related *suraTi(ya)-*, satiated.⁵⁴ Of L357+RA/I classifying *zarzami-*, ‘the desired one’, the phonetic classifier is more readily accessible to us than the semantic sign L357.⁵⁵ Two different examples can be cited for the use of *MI* to signal CVM-. The first is AUDIRE.MI in the writing of *tummanti-* ‘to hear’,⁵⁶ and related *tummantar(a)-* ‘to let hear’.⁵⁷ Note that AUDIRE.MI alternates with rare attestations of AUDIRE without phonetic classifier.⁵⁸

The sign *MI* in the writing L45A.NEPOS.MI for *hamsi-* indicates CVM-. It is interesting that a phonetic classifier of a different structure was chosen when one might have disambiguated this from other L45A writings with word-initial *HA*. The writing with the phonetic classifier is rare, attested only twice,⁵⁹ in contrast to multiple attestations without. A single example using *SA₄* to indicate initial CVs- survives in Cilicia, in the writing DEUS.SA₄-zi for *massaninzi* ‘gods’.⁶⁰ The compound SARMA+RA/I functions similarly, also taking a second phonetic classifier (SARMA+RA/I.MI) for the final syllable in one instance.⁶¹

While the final entry in this category could be interpreted differently, for structural reasons, it seems best to add the first of the two phonetic classifiers in TERRA.LA.LA for *walilid(a)-*, ‘territory’,⁶² here. But one could also interpret it as a syllable with different vowel (1.2) or even as a simple doubling of the final syllable (2.2), albeit without any parallels within the corpus.

5 Last Syllable

5.1 Identical Syllable

Emphasis of the final syllable of the host word shows fewer structural examples. A repetition of the ultimate syllable is attested with two signs expressing /li/, both with very few attestations, thus a marginal category. SCALPRUM+RA/I.LA/I/U for *warpalli(ya)-*, ‘warrior’,⁶³ has already been discussed above, its most notable feature is the occurrence of two rather than one phonetic classifier. The second example marks an otherwise semantographic writing, SERVUS.LA/I for *hudarl(i)-* ‘servant’.⁶⁴ Phonetically classified SERVUS is much rarer than the alternative without classifier. Also the frequent phonetic classifier *MI* contributes to this group, classifying ORIENS⁶⁵ and DEUS.ORIENS⁶⁶ for *kistami-* ‘east’.

⁵² MARAŞ 1 § 1d.

⁵³ CEKKE §§ 25, 26, 27; KARATEPE 1 §§ 6 (Hu.), 36 (Hu.).

⁵⁴ TELL TAYINAT 2 fr. 3 § i.

⁵⁵ Possibly a bread offering on a standard? KARKAMIŞ A7 § 14.

⁵⁶ BOHÇA § 1; BOSSERT seal; HİSARCIK 2 § 1; KARKAMIŞ A6 §§ 1, 4, 5, 6; AŞŞİN+KARKAMIŞ A31 § 17; KARKAMIŞ A27, fr. ff, ff2*⁺; MARAŞ 3 § 2; TELL AHMAR 1 § 25.

⁵⁷ ASSUR letter e § 7; KARKAMIŞ A11b+c § 32.

⁵⁸ Certain: BABYLON 2 § 3; possibly also TULEIL 1 l.2; HİSARCIK 2 § 1.

⁵⁹ DARENDE § 1. Also in the compound DOMUS-ni-NEPOS.MI-i-sá, *parni-hamsi-*, ‘domestic grandson’ (BOYBEYPINARI 1 § 11).

⁶⁰ KARATEPE 1 § 51 (Ho.).

⁶¹ KULULU 4 § 5.

⁶² KARATEPE 1 §§ 5, 12 (Ho.); ANDAVAL § 3; KARKAMIŞ A11b+c § 8; KARKAMIS A25a, §2; ÇINEKÖY § 2.

⁶³ MARAŞ 1 § 1d.

⁶⁴ KARKAMIS A21b+a §7; ÇİFTLİK §1; BEIRUT stone bowl § 1; CEKKE § 6a; ADANA 1 § 1b.

⁶⁵ BOHÇA § 1.

⁶⁶ TELL AHMAR 1 § 9.

5.2 Different Vowel

The use of *LA* for *LI* to mark the final syllable shows the same double phonetic classifier, indicating the same syllable in CVC- and stem-final position: *TERRA.LA.LA* for *walilid(a)*- ‘territory’.⁶⁷ Note that the presence of rhotacism as attested in the phonetic writing does not affect the presence of the classifier, which emphasises its classificatory function.

The most prolific phonetic classifier is *MI* for /ma/ in stem-final position. Without doubt the most well-known examples for *MI* as stem-final are *OMNIS.MI*, *tanima*- ‘all’,⁶⁸ and the verb *AEDIFICARE.MI*, *tama*- ‘to build’.⁶⁹ The former has rare alternative *OMNIS.MI*,⁷⁰ and might also form part of a compound personal name, *Tanima/i-lani*, *OMNIS.MI-L45A.LA*.⁷¹ The phonetic classifier is further attested in the name *Suppiluliuma*, written *PURUS.FONS.MI*.⁷² Similarly, *PURUS.MI* hints at *kumma(ya)*- ‘pure’.⁷³ I exclude the name *Allumali* which is more easily analysed as mixed logographic-phonetic writing, *PUGNUS-mili*.⁷⁴ *MI* likewise occurs in the different writings of divine name *Sarma*, e.g. *SARMA+RA/I.MI*⁷⁵ and *(DEUS)SARMA₂+MI*,⁷⁶ and derived personal names such as *TAL(A)-mi-SARMA₂+MI*, *Talmi-Šarruma*.⁷⁷

Further, the classifier is used in *(DEUS)LUNA.MI*, *Arma*,⁷⁸ as well as homonymous *arma*- ‘month’.⁷⁹ Interesting is the single attestation *GENUFLECTERE.MI*, in which the phonetic classifier indicates the last syllable of, unusually, a Hittite reading, *halpuma*-.⁸⁰ In this instance, the unexpected presence of *MI* – *GENUFLECTERE* is otherwise always written without – indicates a different language; although the presence of the classifier, if not understood, would not hinder the reading of the semantic sign in Luwian.

6 Results

As the discussion above has shown, we can identify a group of phonetic classifiers, used mainly to classify semantic signs – without or without additional phonetic writing –, rarely to classify purely phonetic writing. Their use is optional and may alternate with not classified variants. In contrast to semantic classifiers, phonetic classifiers do not ever serve to disambiguate writings. Instead, they emphasise word edges, i.e. they mark the beginning or end of a word-stem. There are presumably two reasons, why the emphasise lies on the stem-final and not the word-final syllable: firstly, the practice was introduced during the Empire period when the writing of grammatical endings was only slowly introduced. Secondly, grammatical endings differ and if one wanted to indicate them, the number of signs needed to mark word ends would be much higher, making them less easily accessible, and not be word-specific.

It is, furthermore, possible to have not one but two phonetic classifiers, one for each position. This occurs both with purely logographic writing and when the semantic sign itself acts as a classifier to

⁶⁷ KARATEPE 1 §§ 5, 12 (Ho.); ANDAVAL § 3; KARKAMIŠ A11b+c § 8; KARKAMIŠ A25a, §2; ÇINEKÖY § 2.

⁶⁸ ASSUR letter e § 22; ASSUR letter f+g § 19; KARATEPE 1 §§ 6, 15, 48, 50, 52, 73, 74 (Hu.); KARATEPE 1 §§ 6, 10, 15, 18, 48, 50, 73, 74 (Ho.); KARKAMIŠ A19 frag. m* 1.2; SULTANHAN § 5; TOPADA §§ 8, 26; VELİİSA § 2.

⁶⁹ AFŞİN+KARKAMIŠ A31 § 6; ÇALAPVERDİ 2 § 3; HAMA 1 § 2; HAMA 2 § 2; HAMA 3 § 2; HAMA 6 § 2; HAMA 7 § 2; HAMA 4 § 6; KARATEPE 1 §§ 23, 38, 66, 72b (Hu.); KARATEPE 1 § 72b (Ho.); KARATEPE 2 § 1; KARKAMIŠ A1a § 23; KARKAMIŠ A11a § 14; KARKAMIŠ A11b+c §§ 6, 15, 34; KARKAMIŠ A26a1a+2 § c; KARKAMIŠ A6 §§ 8, 24; KARKAMIŠ A15b § 10; KARKAMIŠ A19 fr. p* 1.2; MARAŞ 14 § 3; RESTAN § 2; QAL’AT EL MUDIQ § 2; TALL ŞTİB § 2.

⁷⁰ KAYSERİ § 21.

⁷¹ CEKKE § 17m. Or phonetic *OMNIS-mi*-?

⁷² ANCOZ 4 § 2; ANCOZ 7 §§ 6, 13; ANCOZ 13 § 3; BOYBEYPINARI 1 §§ 1, 4, 11; BOYBEYPINARI 2 §§ 1, 2, 7, 17a, 19; YALBURT block 1 § 1; NIŞANTAŞ AI § 1, AII § d, A6 § b, AVII; SÜDBURG §§ 3, 6, 9, 14. With the marker for personal names: ANCOZ 8+5 §§ 7, 8; ARSUZ 1 § 1, 18; ARSUZ 2 § 1, 18; TELL TAYINAT 4 § 4.

⁷³ ANCOZ 1 § 1; KARKAMIŠ A11a § 14; TÜNP 2 § 2.

⁷⁴ The attestation in CEKKE § 17g with additional *la/i/u* may be a separate name altogether.

⁷⁵ KULULU 4 § 5. Note that the *mi*-sign consists of only one bunch of two strokes, the antithetical second one is missing.

⁷⁶ HANYERİ.

⁷⁷ ALEPPO 1 § 1. Note that not all *SARMA*-writings are presented or discussed here, since an article on this subject is in preparation (Lovejoy forthcoming).

⁷⁸ ALEPPO 2, §§ 2, 14; BULGARMADEN § 15; CEKKE § 24; KARABURUN § 12; KARATEPE 1 § 75 (Hu.); KARKAMIŠ A4a § 13; KULULU 5 § 1; MARAŞ 11 § 7; TELL AHMAR 1 § 2; TELL AHMAR 2 § 2. Once without *DEUS*: KAYSERİ § 16.

⁷⁹ TOPADA § 22.

⁸⁰ ALEPPO 5.

phonetic writing. Thus, one may find two different levels of classification marking a single word.

Table 5 Chronological Development of Phonetic Classifiers

Sign	For	Century	Category
TU, TÚ	/tu/	13	1.1 identical syllable
NA	/na/	13	1.1 identical syllable
HI	/ha/	13	1.2 different vowel
LA	/la/	13, L10/E9	1.1 identical Syllable
MI	/mu/	13, 9	1.2 different vowel
MI, MÍ	/ma/	13, 12, L10/E9, 8	2.2 different vowel
NI, NÍ	/ni/	11, L10/E9	1.1 identical Syllable
MÍ	/mi/	11, L10/E9	1.1 identical Syllable
MI	/m/	11, L10/E9, 8	1.3 final consonant of initial CVC-
+RA/I	/r/	9, 8	1.3 final consonant of initial CVC-
LI, LA/I	/li/	9, 8	2.1 identical Syllable
SA ₄	/s/	8	1.3 final consonant of initial CVC-
LA	/l/	8	1.3 final consonant of initial CVC-
MI	/mi/	8	2.1 identical Syllable

The table above shows the chronological development of phonetic classifiers. During the Bronze Age, word-initial classification dominates, and several classifiers from this period do not continue into the Iron Age. This aligns with some other writing practices affected by the caesura that marks the change between these historical periods. Meanwhile, we also note that certain other signs and their usage have clear chronological limits. The most frequent phonetic classifier is *MI* (with variant *MÍ*) is attested for all positions and categories. The second most frequent, *LA* (with variant *LA/I*), is only attested for some word-initial and stem-final positions.

Both word edges are commonly marked with repeater classifiers, carrying the same phonetic information, yet often using a different, homophone sign variant to the one used in the accompanying phonetic writing, if present. Repeaters are the primary category for word-initial position, with signs from all three vowel series being attested. It is practiced in all periods, whereas stem-final repetition is a late phenomenon. A lesser frequency for this practice is partially down to analysis: in most cases, stem final classification with a repeater would be indistinguishable from phonetic writing, and for reasons of simplicity, this interpretation should be preferred. Thus stem-final repetition only becomes possible in special circumstances, namely if additional phonetic writing of the stem-final syllable is present, or if the ending following the stem-final syllable is missing in late inscriptions, where one would not expect such writing.

The use of syllabic signs with a different vowel to mark the frontal word edge is less frequent and predominantly an early practice. Notably, classifiers of this category are used in different positions, both preceding and following their host. Their counterpart, the use of a syllabic sign with the wrong vowel to mark the end of the word stem is the category which includes the most productive classifier, *MI* for /ma/. The balanced structures for phonetic classification, as discussed above, should put any attempts to analyse this sign as having a value /ma/ finally to rest. An important new insight is that this classifier also appears in the context of a Hittite writing, thus showing that this practice is not language bound. One might even wonder whether it could be indicative of a much wider spread of Hittite hieroglyphic writing than can be seen from the surviving corpus, even if direct evidence is missing. Marking the beginning of the word with the final consonant of a closed CVC syllable is a curious practice, probably originating from the used of the dependent sign +RA/I. Note that this sign is never used in any of the other structural categories as a classifier.

The use of classifiers in compounds shows a level of linguistic awareness that may supersede reference to real life context, thus differing from choices made regarding a sign's iconicity, which frequently serves to make reference to real life events or objects. Phonetic classification always functions with the unadulterated word stem in mind, regardless of whether the actual word form preserves all indicated syllables in this manner in the respective written forms.

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