AN INVESTIGATION OF THE HIEROGLYPHIC LUWIAN SIGN <SA$_5$>

Patrick Skipworth
Leiden University
2016

Patrick Skipworth

Abstract

The Hieroglyphic Luwian script has a number of apparent homophonic symbols (homographs), primarily within the <ta> and <sa> series and "presumably to be explained in terms of original distinctions either lost or not yet established by us".[1] The purpose of this paper will be to determine whether an underlying phonetic (or possibly phonological) quality distinct from the other <sa> signs can be identified for the sign <sa_5>.

An accurate picture of the Hieroglyphic Luwian syllabary is key to understanding the language hidden beneath the script. In studying the nature of this sign, the scholar of Luwian will be better able to understand the phonetic and phonological system of Hieroglyphic Luwian, and to connect it to that of Proto-Anatolian and Proto-Indo-European.

The paper will begin with an extended introduction detailing the historical position and linguistic features of the Luwian languages, as well as a brief discussion of the Anatolian Hieroglyphic script. Following this, data reflecting the distribution of the <sa_5> sign in the corpus will be presented alongside a discussion of the sign's linguistic environments. The next section will suggest possible interpretations of this data, utilising primarily comparative and etymological arguments. The paper will conclude with a suggested interpretation of the sign.

[1] Hawkins 2000: 5.

Contents

List of maps and tables

1 Introduction to the Luwian languages

The first section of this paper will present a description of the Luwian languages, their scripts and the people and places by and in which they were spoken. This description will naturally not be exhaustive. Some of the information presented will be essential to the following discussion of the sign <sa_5>, while the rest will hopefully help to establish to the reader the significance of the Luwian languages to the study of Indo-European languages in general, and the current status of scholarly opinion and understanding on some notable aspects of the language.

The Luwian languages are members of the Anatolian language family[2] of Indo-European languages. This means they share many features with their Anatolian siblings, and together these languages form a group distinct from the other members of the Indo-European family. Some of the features of the Anatolian family[3] have been identified as reflecting the Proto-Indo-European mother-language more closely than those features visible in the other Indo-European (but non-Anatolian) languages. This had led some to posit an 'Indo-Hittite[4] hypothesis', which takes into account the earliest stage of Proto-Indo-European following which the Pre-Anatolian language speakers left the *Urheimat*. The remaining Proto-Indo-European speakers continued to innovate together[5] for a period, before splitting into their respective branches.

An accurate picture of Proto-Anatolian for comparison with the other Indo-European branches is essential for determining the validity of the Indo-Hittite hypothesis. While a great deal of Anatolian evidence comes from our understanding of Hittite, it is a serious error to reconstruct the Proto-Anatolian language without repeated reference to the other Anatolian languages, including Luwian. Comparison with multiple languages allows us to distinguish innovations which have taken place within, for example, Hittite from archaic features in fact continued from Proto-Anatolian, and possibly from Proto-Indo-European or Proto-Indo-Hittite. For this reason, the Luwian languages may have a significant role to play in comparison with Hittite for developing a better understanding of the nature of Proto-Anatolian and the strength of the Indo-Hittite hypothesis, primarily due to the Luwian languages' relatively wide-attestation in both the quantity of available

[2] This designation is linguistic and does not, of course, include any and all languages which have a clear connection with Anatolia (such as Phrygian, which is Indo-European but not a member of the Anatolian family, although it was spoken in Anatolia).
[3] The most striking of these may be the absence of a feminine grammatical gender which may be considered an archaism, reflecting the inherited 'Indo-Hittite' system. – Melchert (Forthc.): 21.
[4] Originally suggested by Sturtevant (1926). 'Indo-Anatolian' would be a more suitable term.
[5] As 'Proto-Nuclear-Indo-European' (PNIE).

material and the geographic area and chronological span over and during which they are attested.

Historically, Luwian was spoken throughout parts of Anatolia and modern-day north-western Syria during the Bronze and early-Iron Ages. For the greater part of the second millennium BCE, the Hittite Empire dominated Anatolia politically.[6] Three significant Indo-European groups co-existed in the region, identified by the Hittites in their written record by their languages: the *palaumnili* (speakers of Palaic, the language of Palā in northern Anatolia), the *luwili* (speakers of Luwian) and the *nešili* (the Hittite speakers themselves, who named their language for their previous centre at Kaneš).[7] At the foundation of the Hittite kingdom (c.1650 BCE), Hattušili I began the programme of writing on clay tablets in Hittite, Luwian, Palaic and some non-Anatolian languages, perhaps taking the Cuneiform script and the scribes themselves from the north Syrian regions which were a focal point of his wars.[8] However, while amongst its siblings Hittite retained an important position as the primary language of royalty and the administration "this need not indicate continuing political supremacy by a particular ethnic group. Rather it reflects the retention of an important dynastic tradition".[9] The ethnic or linguistic make-up within the Hittite Empire may in fact have been significantly Luwian and indeed, following its fall (alongside the Mycenaean) at the end of the 2nd millennium during the 'Bronze Age Collapse', Luwian-dominated societies and civilisations emerged in the previously Hittite lands, primarily in southern Anatolia.[10]

The two extant Luwian 'languages' are known as Cuneiform Luwian (henceforth CLuw.) and Hieroglyphic Luwian (henceforth HLuw.). These designations refer to the scripts in which both these languages are written. The Cuneiform script is utilised for CLuw. in essentially the same manner as it is for Hittite.[11]

Conversely, the functionality and origins of the Anatolian Hieroglyphic script[12] are less clear. On the basis of the acrophonic quality of some symbols (discussed in section 1.3) and the development of the script within Anatolia there may appear on the surface little reason to assume the Luwian Hieroglyphs were not developed "von den Luwiern, für das Luwische, in luwischen Landen".[13] However, the earliest signs available to us which resemble the Luwian Hieroglyphs, appearing on official seals from the Hittite Empire, contain only names or logographic titles which

---

[6] Bryce 2005: 19.
[7] Bryce 2003: 27. All these languages are members of the Anatolian family.
[8] Hawkins 2003: 129.
[9] Bryce 2005: 18.
[10] Bryce 2003: 27.
[11] The same is the case for Palaic. – Melchert 1994: 12.
[12] Often referred to as 'Hieroglyphic Hittite', particularly in the older literature.
[13] Güterbock 1956: 518.

cannot be positively identified as written in the Luwian language.[14] Usually, they are enclosed by a Cuneiform inscription consisting also of personal names and titles. For these early inscriptions, "even though the names and titles on seals are attributable *to* a language, these texts are not *in* a language. There is no *linguistic* way to show that their language is either Hittite or Luvian".[15] By the early 13th century, Hittite rulers were indeed creating Hieroglyphic inscriptions which can be confidently identified as containing Luwian words, but these earlier seals raise the possibility that the Hittites developed the script themselves for use with their own language. The development of this new script may have had a "nationalistic"[16] function for the Hittites, distinguishing native language writings from those Cuneiform texts written also in, for example, Akkadian, particularly among the illiterate for whom the "pictographic shapes would be easily recognizable".[17]

However, the development of the Anatolian Hieroglyphic script may have taken place even earlier than these seals suggest. References within Hittite texts to both the ^{LÚ}DUB.SAR ('scribe') and the ^{LÚ}DUB.SAR.GIŠ ('scribe-on-wood') suggest a division of scribal practices, and Waal (2011) has argued that this widespread tradition within the Empire of writing on wooden boards refers to the practice of writing documents in Anatolian Hieroglyphs, and further suggests that the significantly-developed nature of the script in the 13th century seals implies their use must have in fact preceded this date.[18] Waal argues that the Hieroglyphic script would have been used for texts of a more everyday character than those written in Cuneiform, this Hieroglyphic scribal tradition responsible for "daily economic texts, provincial records and the records of the common people".[19] However, with such uncertainty surrounding the linguistic content of the early Hieroglyphic seals and since any Hittite wooden writing-boards have apparently perished in the Anatolian climate, the question of the origin of the Anatolian Hieroglyphic script still remains open.

As a linguistic classification the distinction between HLuw. and CLuw. on the basis of script is far from comfortable,[20] and the exact status of the two Luwian languages has been debated at length with the possibility of clear dialectal divisions (isoglosses) within CLuw. (e.g. Hattuša,

[14] Hawkins 2003: 167.
[15] Yakubovich 2010: 296-7.
[16] Yakubovich 2010: 295.
[17] Yakubovich 2010: 296.
[18] Waal 2011: 32.
[19] Waal 2011: 31.
[20] A single language may be written in multiple scripts, there is no reason to assume an underlying linguistic distinction: consider e.g. the glagolitic and cyrillic alphabets of Old Church Slavonic, or the kanji, kana and rōmaji scripts of modern Japanese.

Ištanuwa Luwian) being proposed.[21]

However, between HLuw. and CLuw. some non-trivial distinctions in grammar and lexicon can be observed.[22] Furthermore, innovations within CLuw.[23] preclude any theory that HLuw. is only a later descendant of CLuw. It is harder to establish significant differences in phonology and phonetics (if there are any) given that the phonemic system of each language has to some extent been established based upon the assumption of equality with the other language.

Throughout this paper, CLuw. will be referred to repeatedly for comparative evidence.

1.1 The Luwian corpus and Luwian history

It seems worthwhile at this point to present a discussion of the corpus within which the Luwian language or languages are attested, focusing primarily on the HLuw. corpus, and a brief history of the Luwian speaking peoples. The linguistic content of these texts will provide the primary basis of evidence for the investigation of <sa_5>.

The CLuw. corpus consists almost exclusively of religious practices and rituals, although some fragmentary texts may in fact be letters.[24] There are multiple theories as to Hittites' purpose in writing down such information, but it is clear that the texts demonstrate a unique Luwian religious system of magic and festival rituals, although "from an early date Hattian and Hurrian elements can also be detected penetrating into Luwian religion".[25] On the basis of these texts and comparison with Hittite material, it has been theorised by some[26] that the Luwian speaking region of Anatolia in this period probably stretched from near the Aegean to present day south-eastern Turkey and north-western Syria, making them by far the most widespread Indo-European people in Anatolia. Others argue for a more restricted area.[27] No CLuw. texts, however, can be linked to the farthest-west region, and identification of rituals as originating in the central-Anatolian historical Hittite 'Lower

---

[21] E.g. Yakubovich (2010) argues that certain features of CLuw. forms from Hattuša display HLuw. elements such as the imperfective suffix *-zza* (p.55) which distinguish them from the rest of CLuw. and lend them to closer association with HLuw.
[22] E.g. cf. HLuw. acc.pl.c. *-nzi* but CLuw. acc.pl.c. *-nz*.
[23] E.g. the absence of a genitive case in CLuw., which must be due to loss of the PIE case, but which is preserved in HLuw. – Melchert 2003: 171.
[24] Hawkins 2003: 139.
[25] Hutter 2003: 215.
[26] E.g. Bryce (2003).
[27] E.g. Yakubovich (2010) argues that the western-most regions of Anatolia within the core of the Arzawan kingdom were never Luwian speaking but rather Proto-Carian, aside from Luwian-speaking Hittite officials brought in following the conquest of that kingdom by the Hittite Empire.

Land' is also far from simple. It seems clear that many Luwian speakers were also present in Hattuša (where these texts were stored in the archives): on the basis of the increasing number of Luwian words (marked and unmarked as such) in Hittite texts and the creation of grand Hieroglyphic Luwian inscriptions towards the end of the Empire, a gradual language shift seems to have been taking place throughout Hittite society whereby "the Hittite politically and militarily dominated an increasing Luwian-speaking or increasingly Luwian-speaking population".[28] The growing presence of Luwian can be observed as "structural interference features imposed by contact with Luvian came to be generalized in New Hittite".[29]

Turning to the HLuw. corpus, we are presented with a far wider variety of content. Religious rituals exist alongside myths and stories, but we also find histories, letters, seals and even ledgers recording traded goods. This variety is matched also by the physical nature of the texts which may be anything from monumental, ornate reliefs in stone depicting exquisitely detailed images of animals, people and objects, to documents scratched onto lead or clay in a cursive hand which renders the same symbols barely recognisable by comparison alone.

This variety is again matched by the long chronological span during which these inscriptions were created, the earliest originating during the period of the Hittite Empire around the turn of the 15th century BCE on seals and a century and a half later on large monuments, the latest appearing at the end of the 8th century or beginning of the 7th century BCE,[30] a total period of well-over half a millennium. This long chronological span makes Luwian the only Anatolian language to continue to be recorded in writing from the Bronze Age to the Iron Age, all other 2nd millennium BCE Anatolian languages being unattested following the collapse of the Hittite Empire. The Luwians themselves continued to form a major cultural, political and linguistic group within Anatolia and the Near-East, as demonstrated by bilingual inscriptions in Phoenician and Luwian.

Texts originating from the Empire are few and are mainly restricted to western and central-western Anatolia, and Hatti. Conversely, those of the Iron Age period are limited to south-central and south-east Anatolia: the so-called Neo-Hittite states, many of which did in fact continue the regal and political traditions of the Hittite Empire, although not its language. Karkemiš, for example, itself a major centre in the Hittite period, remained an important city-state thriving off trade due to its location on the Euphrates and continued to create artistic and epigraphic monuments in an

[28] Van den Hout 2006: 234.
[29] Yakubovich 2010: 308.
[30] Hawkins 2000: 2.

archaic style.[31] Perhaps because of this, it was referred to as Hatti by the Assyrians, and the Luwian-speaking kings of Karkemiš held the same aspirations themselves, claiming the ancient title of 'Great King'.[32]

[31] Hawkins 2000: 74, 81.
[32] Hawkins 2000: 73.

1.2 The decipherment of the Anatolian Hieroglyphs

The first publication of drawings and descriptions of a Hieroglyphic Luwian inscription were presented in Charles Texier's *Description de l'Asie Mineure* published between 1839 and 1848, detailing the monumental Empire-period YAZILIKAYA inscriptions carved into the rock walls of a sanctuary close to Hattusă which he had visited a few years earlier in 1834. Similar texts had, however, been observed (but not published) on occasion by scholars earlier in the century.[33] During this period, multiple HLuw. inscriptions were recorded by scholars across Anatolia and beyond, including on numerous seals from the archaeological site at Nineveh. Scholars soon began to describe these inscriptions as 'Hittite',[34] although the Hittite capital and texts themselves had not yet been discovered, nor its language deciphered.

Larger excavations began to take place towards the end of the century, particularly at Karkamiš where an excavation was conducted by the British Museum between 1871-1881. Scholars continued to publish texts they came across as they travelled throughout the Near-East, and the corpus has expanded rapidly from this period of initial discovery to the present day. Many texts are no doubt waiting to be found.

Decipherment of the script occurred in multiple stages. Initially, only some logograms were recognised, but by the 1930s some understanding of the syllabary had developed. A 'Luwian' language was also quickly recognised within the Cuneiform tablets discovered at Hattuša, which were unearthed from 1906 onwards. Once the Hittite language of these tablets was successfully deciphered in 1915 by Bedřich Hrozný, the presence of other languages (notably Luwian and Palaic) was soon observed. Comparison with these texts, and the discovery of the bilingual KARATEPE inscription in the late 1920s aided in the decipherment of the Hieroglyphic script. Multiple publications were released, and in 1960 Emil Laroche published *Les hiéroglyphes hittites*, an interpretation of all HLuw. signs. Since then several major revisions have followed, and some signs have been shown to be quite different from Laroche's original analysis.[35] Following Laroche's publication, Piero Meriggi's *Hieroglyphisch-hethitisches Glossar* was released, an index of all (then-)known HLuw. forms. These two publications formed the basis of Hieroglyphic Luwian

[33] Hawkins 2000: 6.
[34] As suggested by A. H. Sayce in an 1876 lecture on 'The Hamathite Inscriptions' addressed to the Society for Biblical Archaeology. Based upon Old Testament and Egyptian records, the country of 'Hatti' was known to have existed at the period in the Syria region where many such inscriptions could theoretically have been produced.
[35] The 'new readings' of Hawkins, Morpurgo Davies and Neumann (1973) correctly identified a number of misunderstood signs (*i* and *ī* were re-interpreted as *zi* and *za*, while *a* and *ā* became *i* and *ia*) and radically changed the interpretation of the some aspects of the language and texts.

scholarship.

Our understanding of the <sa> signs in particular has been improved through a revision suggested by Rieken (2010a). Rieken presents a distribution of the sign <sà>, revealing that in the majority of cases it occurs directly after /i/ and arguing that, due to contact with the /i/, the sign should be interpreted as representing a palatalised variant of /s/, namely [ʃ]. Further cases of <sà> can be identified as following /u/ or preceding /k/ or historic */w/. Again, due to contact with these sounds, the [s] has been assimilated to the palate, yielding [ʃ]. Rieken argues that this new sound must have had at least "einen marginalen Phonemcharakter",[36] since it was preserved in positions before */w/ following the loss of that phoneme in Luwian and, therefore, the conditioning factor. Furthermore, Rieken argues that any opposition between /s/ and /ʃ/ appears to have been lost in auslaut and that /s/ does not undergo the development to /ʃ/ when it arises by secondary processes (e.g. < */ts/).[37]

This development is somewhat reminicent of the 'RUKI-rule' which took place within the Indo-Iranian languages whereby /s/ became /ṣ/ after /r/, the velars /k/ and /g/ and semi-vowels /i/ and /u/ (both the vocalic and consonantal allophones: [i]/[y] and [u]/[w]).[38] The reading [ʃ] for <sà> will be used and repeatedly referred to in this paper.

Rieken demonstrates that we should not assume homophony among HLuw. signs unless we can present positive evidence for it and, on this basis, this paper will aim to identify a correct phonetic and phonemic reading for <sa_5>, utilising a similar methodology to Rieken's. First, a distribution of the <sa_5> sign will be developed. Following this, possible phonetic interpretations which might address all cases of <sa_5> presented in this distribution will be discussed.

With such revisions our understanding of the Luwian languages has greatly increased. The aim of this paper will be to support a revised understanding of another Luwian sign, and further the ongoing and still-incomplete decipherment of the language and script.

---

[36] Rieken 2010a: 655.
[37] E.g. in <("LIGNUM")*ta-ru-sa*> < */tarut-sa/. – Rieken 2010a: 656.
[38] Rieken 2010a: 655.

1.3 Reading Hieroglyphic Luwian

The Luwian Hieroglyphic script, consisting of hundreds of distinct signs, primarily functions as both a syllabary and a logography, much as Hittite or Luwian Cuneiform does. This means many signs have a dual role, reflecting both sounds (syllabograms) and entire words (logograms). Some signs may have only a phonetic or only a logographic reading, while others may have both. For example, the sign  may reflect the syllable /ti/ (transcribed as <ti>) or it may reflect an entire form of the verb 'to come', /awi/ in HLuw.[39] This logographic form is by convention transcribed as <PES>, all logographic signs being assigned a Latin transliteration in capitals.

Any syllabic sign in HLuw. in principle reflects a single vowel which is optionally preceded by a consonant, giving the structure /(C)V/. For example, the syllabogram <a> (= /a/) reflects a vowel only, while the symbol <sá> (= /sa/) reflects a consonant and a vowel of the structure /CV/. However, in the second instance, the vowel need not be 'real' and the symbol may in many cases reflect only the consonant. For example, consider the nom.-acc.sg.n. form of *tipas* 'heaven': <("CAELUM")*ti-pa-sá*> = /tipas/ < PIE ***néb^h-os***.[40] The final <sá> sign can denote only /s/ (< ***-s***) and not /sa/.

A logographic sign may represent an entire word (e.g. <SIGILLUM> 'seal' = /sasan/[41]). Furthermore, such logographic signs often have a 'phonetic complement' which reflects partially the underlying phonetic form (e.g. "CAELUM"-*sa* 'heaven', expressing the final *-s* of *tipas*). One final use of the signs is as 'determinatives' (e.g. ("CAELUM")*ti-pa-sá* 'heaven', with the underlying word expressed with syllabic signs in entirety).

Some signs appear to be acrophonic, their appearance reflecting a word beginning with the sound they represent. For example, the sign <ta> () appears to depict a mule or donkey, and is usually read phonemically as /t(a)/. The HLuw. word for 'mule' is *tarkasni*, and so the symbol can be said to be acrophonic, its appearance reflecting the initial underlying sound /t(a)/ of the word for 'mule'.[42]

A general chronological development trend away from logograms towards the more widespread use of syllabograms can be observed in the texts, with the development of 'logogram

---

[39] The phonetic reading of logograms may often be deduced from cases of the same word being spelled with syllabic signs.
[40] Cf. CLuw. *tappaš* 'heaven', Hitt. *nēpiš* 'idem', Skt. *nábhas-* 'cloud', Gr. νέφος 'idem'.
[41] Starke 1990: 238.
[42] Some Bronze Age-attested signs could be derived acrophonically from either Hittite or Luwian (e.g. cf. Hitt. *lala* and Luw. *lala/i-* both 'tongue', and the HLuw. sign <la> = /la/ which depicts a tongue). – Yakubovich 2008: 292-3.

markers' (𒀸 𒀹 – transcribed <“ ”>) appearing late in the corpus.[43]

Some signs are very poorly attested, and may even occur only once (as far as is known). The correct interpretation of many signs is still a matter of debate. Particular signs may be restricted to a specific geographic or political region (e.g. <sa$_6$> and <sa$_7$> occur only in the TOPADA and SUVASA inscriptions, both from the TABAL region[44]), or period (e.g. the usage of <tal> does not continue into the late period[45]).

The Anatolian Hieroglyphic script can be considered somewhat defective in its usage for HLuw., given that it is ineffective for expressing certain features of the language.[46] This defectivity arises primarily due to the almost-total absence of signs reflecting syllables with consonants in coda position (i.e. (*C*)*VC*). Such signs are represented in the rare symbols for /us/ and /ur/ found only within personal or deity names, and the symbols *kar*, *hur* and *tal*, appearing also in personal names. Almost all signs primarily reflect syllables of the structure *V*, *CV* and even *VCV* or *CVCV*, ending with a vowel.

This system is problematic because it restricts the writing of consonant clusters (e.g. /C_1C_2/). In Hittite Cuneiform, for example, which has *V*, *VC*, *CV* and *CVC* signs, such clusters can be written -*VC$_1$-C$_2$V*-. No such spelling is possible in Hieroglyphic Luwian. Instead, all clusters must be spelled -*C$_1$V-C$_2$V*-, where the intermediate vowel is not, in fact, 'real'. The vowel used in such situations is always orthographically *a*. For example, the cluster /ks/ must be spelled <ka-sV>.[47] The same system is utilised for word final consonants, where -*CV* in fact reflects /-C/.[48] Sometimes it is not clear whether the vowel is 'real' or not. Etymological analyses or comparison with CLuw. may aid in understanding the nature of the vowel.

Furthermore, in clusters of /nC/ the initial nasal is never expressed in HLuw. Comparison with CLuw. reveals in many cases that we should hypothesise that a nasal was present (e.g. cf. HLuw. *á-sa-tu*, CLuw. *a-ša-an-du* 'be', both 3pl.impv. < PIE **h$_1$s-éntu*). A reading of this cluster as representing a single phonemic nasalised stop, as has been argued to exist in Lycian and Carian,[49] is also possible.

---

[43] Some texts, however, (e.g. late Karkamiš inscriptions) appear to display conscious archaism in their orthographic approach. – Hawkins 2000: 5.
[44] Hawkins 2000: 33.
[45] Hawkins 2000: 33-34.
[46] This perhaps complicates the issue of the possible Luwian origin of the script, given its inutility for expressing that language.
[47] But not e.g. <ku-sV>.
[48] E.g. cf. acc.sg.c. forms in <na> = /-n/ < PIE **-m* without any vowel.
[49] As argued in Kloekhorst (2008b).

However, one symbol – the 'enclitic' symbol <+ra/i> – seems to function somewhat differently. This symbol, a single straight line (𔕰), is attached directly to the preceding one, forming a ligature (similar to e.g. Devanagari प + र > प्र). Therefore, it is often referred to as the 'thorn' in the literature. This sign will be referred to repeatedly in this paper due to its numerous appearances attached to the <sa$_5$> sign. When attached to a syllabogram it should be read *CV-ra/i*.

There is evidence that ligatures composed with this <+ra/i> sign may in some cases reflect clusters (i.e. /Cr/). For example, the unique sign <tara/i> clearly consists of three lines with the addition of the 'thorn' (𔖵𔕰). Although the sign is not attested without the 'thorn' element, its three lines do seem to point to a connection with the word for three.[50] Such a word is not attested in Luwian, but we might expect it to have the structure /tr/ common to many Anatolian and non-Anatolian IE languages (cf. Lyc. *tri-*, Mil. *tri-*, Skt. *tráyas*, Gr. τρεῖς, Eng. *three* < PIE **tréi̯es* all 'three'[51]) without any vowel between the /t/ and the /r/. If, therefore, the sign <tara/i> should be read acrophonically it may reflect /tr(a/i)/ not /tar(a/i)/.[52]

More convincing evidence for the use of <+ra/i> in /Cr/ clusters can be perhaps obtained from the Empire period use of the sign <hara/i> (𔓰𔕰), which appears to have a 'thorn' element and can be used to write clusters of /hli/.[53] Another sign, <pari> (𔐦), for which the 'thorn' element is less clear, appears to write /bri/ in the Empire period.[54]

The peculiarity of the <+ra/i> sign is also evident when attached to <i> (𔖙). Instead of spelling /ira/i/, the combination <i+ra/i> (𔖙) can be read 'backwards' word-internally and word-finally (i.e. <ri+i>) and reflects instead /ri/. The form <a+ra/i> (𔖚) functions in a similar manner, spelling /ra/ word-internally or word-finally.

The phonetic and phonemic opposition between fortis and lenis consonants observable within many of the Anatolian languages should here be noted, since this opposition will be key to the following analysis and discussion. The opposition was first observed in Hittite by Sturtevant (1932) who noted that consonants spelled geminate (i.e. *VC$_1$-C$_1$V*) corresponded to the PIE voiceless series (e.g. */t/), while those spelled single (i.e. *V-CV* or *VC-V*) corresponded to the PIE voiced and voiced

[50] Similarly, the symbol <nú> clearly consists of nine lines. It is likely that it can be connected with the Luwian word for 'nine' (< PIE **neun*), but this form is unattested.
[51] Beekes 2011: 237.
[52] However, a variant form of 'three' with the structure /tVr/ is demonstrated by both CLuw. *tarri-* 'three' and Hitt. *teri-* 'idem' < **téri*. – Kloekhorst 2014: 64-5. We might also like to reconstruct the same form for HLuw. given its close relationship with CLuw. This reconstruction would not support a hypothesis that <tara/i> = /tr(a/i)/.
[53] In the name *Ehli-Kuša*. – Laroche 1981: 13.
[54] E.g. in the CLuw. name *Ibri-Šarruma*, spelled in HLuw. as <i-pari-ŠARRUMA>. – Hawkins, Morpurgo Davies and Neumann 1974: 13.

aspirate series (e.g. */d/ and */d^h/).[55] Additional processes of 'fortition' and 'lenition' have also taken place in all the languages, leading to fortis or lenis consonants in etymologically unexpected positions. These processes will be discussed in more depth where relevant.

The exact nature of the fortis/lenis opposition is disputed. Some argue that it continues the PIE voice/voiceless opposition (where fortis = voiceless and lenis = voiced),[56] while others argue that it instead represents only an opposition between long (fortis) and short (lenis) consonants.[57] This paper will not take a stance on the exact phonetic nature of the fortis/lenis opposition. For this reason, where relevant fortis consonants will be designated as voiceless (e.g. *t*), while lenis consonants (where they can be distinguished) will be designated as voiced (e.g. *d*) as is common in much of the literature. This does not mean this paper assumes a real voice opposition in these cases. In the case of fortis and lenis /s/, the fortis variant[58] (which will be referred to often) is designated with an upper case letter (i.e. [S]).[59]

It is important to note that the opposition between fortis and lenis consonants is only indirectly observable in HLuw. through the phenomenon of rhotacism (discussed below),[60] but on the basis of this it can be assumed that it was present. As mentioned previously, in Hittite and also Palaic and Cuneiform Luwian so-called 'fortis' consonants are spelled with geminate consonants.

1.4 A note on Rhotacism in Hieroglyphic Luwian

Laroche (1960) originally hypothesised that the 'thorn' <+ra/i> could, in some cases, also reflect <+ta/i> on account of its appearance in forms such as <"PES"-wa/i+ra/i> 'he went' where the 3sg.pret.act. ending <ta> would be expected (visible in the form *á-wa/i-tà* 'idem'). However, it was

---

[55] 'Sturtevant's Law'.
[56] E.g. Melchert (1994).
[57] E.g. Kloekhorst 2008a: p.23.
[58] E.g. written in CLuw. as <Vs-sV>.
[59] There is no phonemic voice opposition for the sibilant in PIE or PA, although there may have been a voiced allophone *[z] or */s/ in PIE and PA (Melchert 1994: 45, 63).There are multiple processes, however, that lead to fortition of [s] > [S] in the Anatolian languages such as Čop's Law whereby PIE **éCV* > Luw. *aCCV* (Čop's Law is clearly visible in CLuw. by comparison of geminate/singleton forms with their Hittite cognates. Evidence for Čop's Law in HLuw. comes from the fortis/lenis distinction visible through rhotacism in the adverb forms in *-adi*/*-ari* of *ápa-* 'that' and *za-* 'this' where the absence of rhotacism in the dat.-loc. cases in *-ati* implies fortition according to Čop's Law. – Goedegebuure 2010: 87-88).

Therefore, while for convenience the fortis/lenis opposition in HLuw. is usually transcribed as a voice opposition (e.g. <t> reflects fortis, while <d> reflects lenis) it would be misleading to apply this same system to the sibilant and designate lenis [s] as voiced since no such voice opposition existed in PIE/PA within the sibilant, and the fortis/lenis opposition within the sibilant of the Anatolian languages arose through secondary processes unrelated to voice.
[60] HLuw. does not write geminate consonants.

later understood that this sign instead demonstrated that the dental stop had undergone 'rhotacism' (i.e. had become rhotic in quality). These rhotacised variants were eventually found to only reflect historic *lenis* dental stops, primarily developing from original PIE **$d^{(h)}$* as well as some cases of **t* where a historic merger with /d/ has occurred[61]. Therefore, the lenis/fortis distinction is indirectly observable within HLuw. in the process of rhotacism affecting only lenis dental stops.

It appears that /l/ also underwent rhotacism in HLuwian.[62] For example cf. HLuw. *wa/i+ra/i-* 'die' alongside forms in *wa/i-la-* < PA **wel-* or **g^{w}el-* 'to die', and *ha+ra/i-ti* 'proclaim' < PA **H$_2$lti* 'call'. Furthermore, there may be a single case of rhotacism of /n/ > /r/ in HLuw.: (*ni-i-i) ma-ru-ha*, beside (*ni-i-i*) *ma-nu-ha* (both '(no one) at all').[63]

[61] Morpurgo Davies 1982/3: 268-269.
[62] Not CLuw. – Melchert 1994: 259.
[63] Melchert 1994: 259.

2 The Hieroglyphic Luwian sign <sa$_5$>

This section will present all the evidence which may be taken directly from the Luwian corpus which is considered by the author as relevant to determining the nature of <sa$_5$> (𔓰).

The phoneme /s/ (reflecting [s] and [S]) is represented in HLuw. with signs commonly transcribed as <sa> through to <sa$_8$> and <sa$_x$> (henceforth the '<sa> signs').[64] The <sa$_5$> sign is identified as *sa* or *s* by Laroche (1960) who notes its frequent alternation with both <sa> and <sá>, particularly in word final position for the nom.sg.c. ending *-s*, and also notes its logographic use for "sceau".[65] As has been discussed in previous sections, while further investigation has enabled scholars to establish a phonetic (and perhaps phonological) distinction between some of these signs,[66] no such analysis has been proposed for the sign <sa$_5$>. The purpose of this paper will be to discern if any phonetic or phonemic distinction can be established for <sa$_5$>.

To investigate <sa$_5$>, first a distribution demonstrating the attestation of the sign in comparison to the other <sa> signs must be established. Some signs, <sa$_x$> for example, appear only a handful of times in only a couple of texts and may be as likely to represent local variants as distinct sounds or phonemes. If <sa$_5$> represents such a case then further investigation down the path of determining its phonetic or phonological character (if distinct from e.g. <sa>) may be all-but impossible.

A comparative distribution of the <sa> signs in the HLuw. corpus looks as follows:

Fig. 2.1 – Occurrences of <sa> signs

	<sa>	<sá>	<sà>	<sa$_4$>	<sa$_5$>	<sa$_6$>	<sa$_7$>	<sa$_8$>	<sa$_x$>	**Total**
Number	1719	403	327	48	117	12	11	14	4	2655
Percentage	64.8	15.2	12.3	1.8	4.4	0.5	0.4	0.6	0.2	100.2

As demonstrated above, <sa> appears to rightfully occupy its place as the first and primary <sa> sign, being by far the most prevalent. It occurs more than four times as often as the next most common sign, <sá>.

---

[64] Therefore, there are 9 <sa> signs identified as distinct from each other: <sa>, <sá>, <sà>, <sa$_4$>, <sa$_5$>, <sa$_6$>, <sa$_7$>, <sa$_8$> and <sa$_x$>.
[65] Laroche 1960: 169-70.
[66] E.g. as in Rieken (2010a) where <sà> is argued to reflect [ʃ(a)].

<sa$_5$>, however, sits somewhere in the middle, being neither particularly rare nor particularly common, taking fourth place in number of occurrences. At 116 occurrences it does, however, seem a viable candidate for an investigation of its phonetic and phonemic character.

2.1 <sa$_5$> environments

An overview of the environments in which we find the <sa$_5$> sign is essential to understanding its phonetic character. At this point, I propose to break down the distribution of <sa$_5$> into four basic environments, listed below from most common to least common. These environments will be investigated in more detail in the following sections. The four-environments are described in the table below:

Fig. 2.2 – <sa$_5$> environments

	Number	**Percentage**
Environment (1): <sa$_5$> is found with <+ra/i> (the 'thorn')	73	62.4
Environment (2): <sa$_5$> is found word-internally or word-initially *without* <+ra/i>	21	17.9
Environment (3): <sa$_5$> is found word-finally	21	17.9
Environment (4): other environments[67]	2	1.7
Total	117	99.9

[67] These include two particularly unclear cases, the first of which should be re-assigned to environment (2) and the second removed from the investigation, as a brief discussion here will hopefully illustrate:

In the first case (<sa$_5$?> at MALPINAR (VI. 3) 2. §8), the damaged nature of the inscription makes a reading particularly difficult. Nevertheless, the <sa$_5$> sign is relatively clear (compared to those following it, at least) as is a preceding word-divider which implies it should be considered as word-initial, with the two subsequent signs following it in the word, giving a reading <sa$_5$-ni?-sá?>. It should, therefore, be placed within environment (2), although a translation is still not readily achievable.

In the second case (AIN DARA (VII. 10)) the <s[a$_5$> sign, while broken down the middle, is nevertheless clear. However, only six signs are visible on this fragmented inscription and interpretation is not possible. The logogram <REL> reflects the relative pronoun and is followed here by <sa$_5$>, which might imply a nom.sg.c. case ending (*kwis*). However, it is equally probable that the <sa$_5$> sign reflects the beginning of another word. Due to the uncertainty here about the environment we find the sign in, I propose to remove this case from the investigation.

Immediately evident is the prevalence of <sa$_5$> with the 'thorn' <+ra/i> (Environment (1)).[68] The following sections will examine particular cases of <sa$_5$> (and the other <sa> signs) to develop a more accurate distribution, eliminating misleading cases and restoring those which should be included, where possible. An accurate distribution will be essential to developing an accurate phonetic interpretation in section 3.

First, however, a brief discussion of the HLuw. form *asaza-* 'to speak' will be presented to demonstrate that a phonetic (or phonological) opposition between <sa$_5$> and the other <sa> signs is likely and worthy of further investigation.

2.2 A note on HLuw. *asaza-*

Forms of HLuw. *asaza-* 'to speak' (cf. CLuw. *āšša-* 'idem' < *āaš* 'mouth', also cf. Hitt. *aiš / išš-*, Skt. *ā́s-*, Lat. *ōs-*, OIr. *á* all 'mouth') are attested 14 times in the corpus, with 6 of those forms occurring in the ASSUR letters (XI. 1-6). In each form we find exclusively the sign <sa$_5$>, and never any other <sa> sign.

This form illustrates clearly that <sa$_5$> had a phonetic quality distinct from the other <sa> signs. The use of <sa$_5$> in this word, to the exclusion of the other <sa> signs, precludes the hypothesis that <sa$_5$> was simply either interchangeable with or some local or chronological variant of the other far more commonly used <sa> signs since, in this form, we never find these signs, despite the form being attested several times from different periods and geographic areas.[69]

The discussion will return to *asaza-* in section 3.5 when the form's phonetic character will be examined more closely.

---

[68] This frequent use of <sa$_5$> was already observed by Laroche (1960, p.169): "noter la fréquence de la ligature *sa$_5$+ra/i*".

[69] The earliest attestation (TELL AHMAR 5, from northern Syria) may be identified as from the late-10th to early-9th century BCE. In comparison, the latest (KARATEPE 1, discovered in the Cilicia region of south-eastern Anatolia) probably originated in the final years of the 8th century BCE. – Hawkins 2000: 44-5, 227, 232.

2.3 The 'thorn' <+ra/i> following <sa> signs

As demonstrated in Fig. 2.2, the environment <sa_5+ra/i> is by far the most prevalent position in which we find <sa_5>. A comparative distribution with the other <sa> signs reveal that they almost never occur in this same environment with the 'thorn' <+ra/i>.

Fig. 2.3 – Occurrences of <sa> signs with the 'thorn' <+ra/i>		
	Number	**Percentage**
<sà+ra/i>[70]	5	6.4
<sa_5+ra/i>[71]	72	92.3
<sa_x+ra/i>	1	1.3
Total	78	100

The above distribution demonstrates, therefore, that in the vast majority of cases the sequence of

70 A form *...s]à+ra/i-zu* may occur in an inscription from the Empire period (KÖYLÜTOLU YAYLA, L1) discovered near the modern-day village of Köylütolu in southern-central Anatolia (cf. Masson 1980: 108). The three-line inscription is particularly damaged on the first line, within which this form occurs. If the above reading is correct, this form represents the only case of any <sa> sign before <+ra/i> in the Empire period, the <sa> signs occurring most commonly in word-final position during this period.

However, aside from the thorn, the sign is barely visible. Only a round lower-element is discernible and this part of the sign shows as much similarity to, perhaps, <pa> (). The fragmented nature of the line makes a translation of the form undesirable. For these reasons, this case will be ignored, since it seems as likely to reflect another sign.

71 A number of damaged, unclear or disputed cases of <sa_5+ra/i> exist. Some are discussed here:
Firstly, a restoration of <+ra/i> suggested by Mittelberger (1962: 285) allows us to remove the otherwise unattested form <BONUS-sa_5-ti-i> and instead read it as the well-attested abl.-instr. form <BONUS-*sa_5+ra/i*(*-ti-i*)> = /wasaradi/ 'with goodness'. For this reason, this restoration should be accepted and the form included as a genuine case of <sa_5+ra/i>.

One form of this word, <BONUS-*sa-la-ti*>, demonstrates the rhotacism of /r/ > /l/ mentioned in section 1.4. Furthermore, this example shows that the <+ra/i> is key to understanding <sa_5> phonetically. When the <+ra/i> is absent (instead here being <la>) we find <sa> instead of the <sa_5> attested elsewhere for this word.

A second sign is partially damaged at the top (in (LIB]ARE)‹*sa_5*›*+ra/i-li-tà*, TELL TAYINAT 1 (VII. 1.) Frag. 2, 1.3.), although enough is preserved to make the reading <sa_5+ra/i> clear. This case should therefore also be considered with the other cases of <sa_5+ra/i>.

Lastly, an unclear form <sa_5?+ra/i> is found in the rather worn BOROWSKI 1 inscription (XII. 1.) within the word or phrase "x.x"(-)*sa_5*?*+ra/i-ka*?-||*za* (3. §2).

Interpretation of the unknown signs "x.x." is difficult and not immediately relevant to the discussion here. The <ka?> () might also be read as <MALLUS> () However, the <sa_5?> is distinct enough from the regular appearance of <sa_5> to warrant serious suspicion, although no similarity to any other sign is immediately obvious either. For this reason it must be considered as unknown and removed from the examples in question entirely – given that no interpretation of the form is possible, it is as likely to have a non-sigmatic quality as to have one.

[sibilant]+*ra/i*[72] is spelled <sa$_5$+ra/i>, occurring around 9 times in 10 with this spelling. However, we do find a few apparent exceptions to this general rule, which consist of cases of <sà> or <sa$_x$> with <+ra/i>. These exceptions suggest that the presence of <sa$_5$> with <+ra/i> is not simply an orthographic rule, whereby sequences of [sibilant]+*ra/i* must be spelled <sa$_5$+ra/i>, since spellings with other sibilant signs are possible. Rather, this preliminary distribution suggests that a genuine phonetic distinction is present at least between <sà>, <sa$_x$> and <sa$_5$> when followed by /r/.

The following sections will attempt to clarify or eliminate problematic or unusual cases of [sibilant]+*ra/i* to establish a more accurate distribution.

2.3.1 Counter-examples: <sà+ra/i>

There are 5 possible cases of <sà+ra/i>. The <sà> sign has been identified by Rieken (2010a) as reflecting phonetic (and perhaps phonemic) [ʃ]. Some of these cases are examined below, and in section 3.4.2.

Firstly, a form (“LIGNUM”)*sà+ra/i-ha-za* is attested in GELB (XII. 12.) 2. §2 and may be interpreted as a form of *salhat-* ‘succession; size, greatness’ (cf. Hitt. *šallātar* / *šallann-* ‘greatness; kingship, rulership’, a derivation of Hitt. *šalli* / *šallai-* ‘great, large, important; head, chief, notable’). This root is attested far more times with <la> rather than <+ra/i> (e.g. (“LIGNUM”)*sà-la-ha-za* (KARKAMIŠ A2 (II. 13.) 2. §2)). In fact we find it six times with <la>, and the form historically reflects /l/ as opposed to /r/, as confirmed by the Hittite evidence.

Another form, *ku-ki-sà+ra/i-sa*, attested in the GAZIANTEP seal (XIII. 18), is unknown in meaning and the <sà> sign itself is hard to read. On the accompanying DÜLÜK seal (XIII. 17) the word *ku-ki-sà-ti-sa* may be more clearly read and can be connected with other forms of *kukisati* (e.g. (DIES.OVIS)*ku-ki-sà-ti-zi* at KARKAMIŠ A2+3 (II. 13+14) 2 §17d). From context, these forms suggest a trade or profession, although perhaps in these seals rather a personal name might be preferable[73] (as e.g. Eng. ‘Smith’).

Therefore, we should consider both these forms to reflect the rhotacism of lenis /d/ in intervocalic position. It is interesting to note that (“LIGNUM”)*sà+ra/i-ha-za* does not represent a historic case of /sar/, but rather displays a secondary development, historically reflecting /sal/. The use of <sà> demonstrates that the presence of <sa$_5$> before <+ra/i> was by no means automatic (at

[72] Other rhotic signs are discussed separately in section 2.5.
[73] Hawkins 2000: 585.

least by this point, probably in the 8th century BCE[74]), and confirms that a phonetic (and possibly phonemic) distinction existed between (at least) <sà> and <sa$_5$> before /r/.

The remaining examples of <sà+ra/i> are more difficult to interpret. The form (UR]BS[…]-*za[...]sà+ra/i*) is found within a particularly fragmented form in AKSARAY (X. 16) 1. §c, but the <sà+ra/i> does appear to be clearly visible. However, the fragmented nature of the form makes interpretation too speculative to be of value. Another form, (*si-sà+ra/i-li-na*) in HİSARCIK 1 (X. 19) 3. §5, is clearly legible but the form is a *hapax legomenon* and no interpretation is possible either without further context or identifiable cognates. Given the presence of rhotacism throughout the text it is possible this form also is a rhotacised variant of **sisada/ilina*, as in the previously discussed cases of <sà+ra/i>, but such a suggestion is also speculative.

It is possible to identify in many of these forms the presence of rhotacism, which may explain the use of <sà> in these environments. A further phonetic interpretation in section 3.4.2 will attempt to clarify the use of this sign in these cases.

2.3.2 <sa$_x$+ra/i>

The single example of <sa$_x$+ra/i> is found within the SUVASA (X. 13.) inscription on the west-facing side (inscription B) to the far right, within the word <sa$_x$+ra/i-ya-sa>. This word appears to be a name ('Sariyas'), according to the text a servant of the local ruler Wasusarmas (c.740-730 BCE[75]) during whose reign the inscriptions seems to have been created.[76]

The <sa$_x$> sign (L *417) is found elsewhere only in the TOPADA (X. 12.) inscription. This inscription is located geographically in the same general region as the SUVASA inscription, and can be dated to a similar period. Both these inscriptions (particularly TOPADA) demonstrate unique signs, some of which may be identified "as local, and as conscious archaism",[77] and some of which cannot be effectively identified at all.

The <sa$_x$> sign of TOPADA is found alternating with <sa$_5$> (cf. §10 ANNUS(-)*na-ha-sa$_x$-ha$_x$*, §12 ANNUS(-)*na-ha-sa$_5$-ha*, also cf. the nom.sg.c. case ending of §4 *pa-la$_x$-wa/i-sa$_x$)*. From this it can be deduced that <sa$_x$> is a regional variant of <sa$_5$> and we should assume the same for the case of <sa$_x$+ra/i> in the related SUVASA inscription, reading instead <sa$_5$+ra/i>.

---

[74] Hawkins 2000: 567.
[75] Hawkins 2000: 443.
[76] Hawkins 2000: 443.
[77] Hawkins 2000: 452.

The single case of <sa_x+ra/i> can therefore be confidently grouped among the prevailing cases of <sa_5+ra/i>. However, we must also consider the occurrence of <sa_x> in ANNU(-)*na-ha-sa_x-ha_x* in the TOPADA inscription as a case of word-internal <sa_5> without the 'thorn' <+ra/i>. Additionally, the case ending in <sa_x> in the TOPADA inscription must also be placed among the examples of word-final <sa_5>.

2.4 Re-examining the relationship between the 'thorn' <+ra/i> and the <sa> signs

Taking the above discussion into account, a new distribution of the <sa> signs with the thorn <+ra/i> is presented below.

Fig. 2.4 – Revised occurences of <sa> signs with the 'thorn' <+ra/i>		
	Number	**Percentage**
<sà+ra/i>	5	6.4
<sa_5+ra/i>	73	93.6
Total	78	100

This new distribution again shows the close relationship between <sa_5> and the 'thorn' <+ra/i>, demonstrating that we find the sequence <sa_5+ra/i> in more than 9 out of 10 cases. This close relationship, which is key to understanding the phonetic quality of <sa_5>, is examined in more detail in section 3.2.

2.5 <sa> forms with rhotic elements other than the forms <+ra/i>

There are two other independent signs[78] demonstrating rhotic elements apart from the <+ra/i> discussed above. It is useful to examine how these signs appear when preceded by any <sa> sign.

As discussed in section 1.3, <ri+i> represents the sign <i> with the thorn <+ra/i> attached, and was initially read as such i.e. as /ira/ or /iri/. However, more recent investigations[79] have shown that a reading /ri/ is more likely in word-internal or word-final position, the sign being 'reversed' with the /r/ preceding the /i/. This sign, therefore, removes the ambiguity of the <+ra/i> sign regarding the following vowel, designating it specifically as /i/. It is therefore usually transcribed as <ri+i> in these positions. Nevertheless, the 'thorn' <+ra/i> can also reflect /ri/; its function is not displaced by the use of the <ri+i> and forms are found in <+ra/i> where the vowel must definitely be /i/.[80] Similarly, when the <+ra/i> is attached to <a>, word-internally or word-initially it may be read as /ra/ (transcribed <ra+a>) as opposed to /ar(a/i)/.[81] However, we find no cases of <ra+a> preceded by any <sa> sign.

The second sign is <ru> (/ru/). Unlike the other signs, there is no attached 'thorn' element, the sign stands entirely alone.

If we examine the occurrences of these signs following the <sa> signs we find the following distribution.

Fig. 2.5 – Cases of <ri+i> and <ru> preceded by <sa> signs

	Number
<sa-ri+i>[82]	4

[78] Not including the distinct signs such as *tara/i* or *pari* which consist of a consonant followed by a rhotic element (discussed in section 1.3) and which have unique signs.
[79] Hawkins, Morpurgo Davies and Neumann 1974: 29-30.
[80] For example, a comparison of the form "PES"-*wa/i-ti* 'he goes' and its rhotacised variant "PES"-*wa/i+ra/i* 'idem' demonstrates that <+ra/i> must here reflect /ri/ < /di/.
[81] Melchert 1988a: 31-2.
[82] Two forms of <sa-ru> are either damaged or unclear:

The damaged form <s]a-ru(-[w]a/i-ni-sa)> (ANDAVAL (X. 42) 1. §1) has been restored by Hrozný (1937: 408), who identifies it with the same Saruwanis of the NİĞDE 1 inscription (X. 41), there reflected in <sa-ru-wa/i-ni-sá>. This seems a reasonable restoration and is included here among the cases of <sa-ru>, given the relative chronological and geographic proximity of these two inscriptions, both originating in either the 9th or early 8th century BCE and being discovered within ten kilometres of each other in southern-central Anatolia. – Hawkins 2000: 513-515.

A second form <sa-ru?-ka> is attested in HİSARCIK 2 (X. 27) 2. §2. The inscription is very worn in places and most of the second line is not visible. Dating and interpreting the content is difficult, and the form has no obvious translation (Hawkins 2000: 496-7). However, upon inspection, the sign does not appear to be <ru> ( ) but rather <ha>

<sa_4-ri+i>	1
<sa-ru>	2

As this distribution shows, we never find cases of <sa_5> followed by these other rhotic signs. The distribution also shows that sequences of these types are very rare.

These forms which display both sibilant and rhotic elements apart from <sa_5> and <+ra/i> are examined further in section 3.4.3, where it is argued they are phonetically distinct from forms spelled <sa_5+ra/i>.

(Φ). The single vertical line of <ha> is clearly visible, as opposed to the two diagonal lines and dividers of <ru>. Therefore, I propose to instead read this form instead as <sa-ha-ka>, although this is based only on appearance since neither reading may be easily associated with any other understood form.

2.6 <sa$_5$> word-internally or word-initially without the 'thorn' <+ra/i>

Cases of word-internal or -initial <sa$_5$> without the thorn <+ra/i> occur frequently, 22 times in total[83]. This relatively-large number of forms demonstrate that the phonetic character of <sa$_5$> is certainly not simply dependent upon <+ra/i> alone, and that these forms deserve closer examination. As discussed briefly in section 2.2, 14 of these cases occur in forms of the word *asaza-* 'to speak', which occurs exclusively with <sa$_5$>.

Some of these forms which I consider dubious, unrelated or of unique interest to the discussion are presented below.

2.6.1 *<sa$_5$-sa$_5$+ra/i-la-i>*

We find a form *<sa$_5$-sa$_5$+ra/i-la-i>* in the BULGARMARDEN inscription (X. 45) 4. §11). It is the 3sg.pres.act. of a reasonably well attested verb, *sasarla-* 'offer'. The verb is probably a reduplicated form of the verb *sarli-* which is usually accompanied with the logogram LIBARE and is found referring to sacrificial offerings.[84] A connection with CLuw. *šarlātta-* 'exaltation, worship' is possible if it can be segmented *šarl-ātta-*.

Other reduplicated forms of this verb are exclusively spelled *<sa-sa$_5$+ra/i-la(-)>*. These other forms highlight the regularity with which <+ra/i> is almost exclusively coupled with <sa$_5$>. Even when proceeded by a regular <sa>, the scribe always chose to spell the following /s/ with a different sign, <sa$_5$>. This supports the theory that there must be a non-trivial phonetic difference between the two signs. It is possible that this aberrant spelling arises due to confusion about the correct phonetic nature of the reduplicated syllable, or change due to analogy.[85] For this reason it will be removed from the list and considered simply a misspelling or secondary development of regular <sa> word-initially, without the 'thorn' <+ra/i>.

---

[83] Including the form ANNUS(-)na-ha-sa$_x$-ha$_x$ from the TOPADA inscription (discussed in 2.3.2, where the <sa$_x$> has been shown to interchange with and reflect a local variant of <sa$_5$>).

[84] E.g. BOS(ANIMAL) OVIS(ANIMAL) LIBARE*(-)sa$_5$+ra/i-la-ti* 'they (shall) offer an ox and a sheep' (CEKKE (II. 27) §5).

[85] Analogy with the reduplicated or root syllable of a reduplicated stem may be present in Luwian and Lycian: we find 'lenition' in Luwian and Lycian in some reduplicated stems (e.g. CLuw. *ta(-a)-ta-ri-ya(-am)-ma-an* 'curse' < **tót(V)rye-*). This lenition appears to be analogical, since it does not occur in disyllabic words (Melchert 1994: 252). Similarly, we might see the spelling <sa$_5$-sa$_5$> as reflecting analogical change of the reduplicated syllable due to the influence of the stem syllable.

2.6.2 *<sa_5?-x+ra/i-ha>*

The form *<sa_5?-x+ra/i-ha>* is found within MARAŞ 8 (IV. 1.) 4. §9). The form is listed as unclear because its appearance does not yield an obvious interpretation. The following <-x> reflects an unknown sign with an attached <+ra/i>. The generally cursive signs of this inscription are "somewhat idiosyncratic".[86] An image of the form in question is shown below:[87]

We might instead interpret this form as *<sa_5+ra/i-ha>*. Rather than considering the second sign as separate, it instead might represent the lower element of the <sa_5> sign (), given that it also appears attached to the above <sa_5> which is without a lower enclosing stroke. This would mean the <+ra/i> was instead attached to the <sa_5> and this form could be added to the group of <sa_5+ra/i> forms.

With this interpretation the form would instead reflect an unknown verb **sar*(*a/i*)- or even **sar*(*a/i*)*ha*- without an ending, although this second form seems unlikely on the basis of the 1sg.pret.act. form in the line above which would suggest also a 1sg.pret.act. *-ha* ending for this form.

Another interpretation is to view the sign as the logogram <IUDEX> ()[88] which has no lower stroke and contains the two short, downwards strokes within the sign seen here. This alternative interpretation would therefore render the form as <IUDEX-*x*-*ha*>. This seems as likely an interpretation as *<sa_5?-x+ra/i-ha>* or *<sa_5+ra/i-ha>* on appearance alone, given that a semantic interpretation for any of these three forms is not possible.

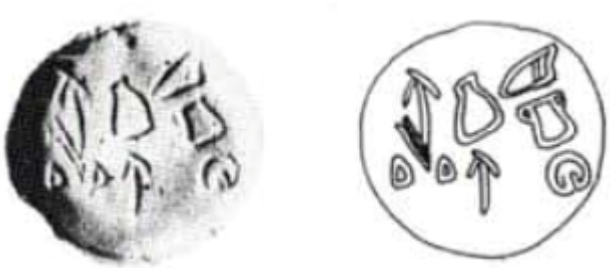
I therefore propose to remove this form from those under consideration entirely, given that it cannot be assuredly identified as any <sa> sign.

---

[86] Hawkins 2000: 252.
[87] Source of trace: Hawkins 2000: plate 107.
[88] Hawkins 2000: 255.

2.6.3 *<x-sa$_5$-hi>*

Another form, *<x-sa$_5$-hi>* occurs on seal (b) of the GELB seals (XIII. 11.b). These seals show similar short lines of the formula 'this is the seal of X' (*za-wa* SIGILLUM(*sa-sa*)-*za* X). The form *<x-sa$_5$-hi>* occurs following *<za-wa* SIGILLUM-*z<a*?>> and probably is the name of the bearer of the seal, as <tá-mi-sá> and <ta-a-sa-pu-ni-sa> appear to be in the other two seals. An image of the seal is shown below:[89]



However, I would instead suggest that the sign identified as <sa$_5$> in fact reflects <pa> (). The sign is clearly not the same as the <SIGILLUM> (= <sa$_5$> /) sign on the same seal which is the logographic rendering of <sa$_5$> and rendering the same sign differently right next to each other seems unlikely in any case.

Instead the sign has two 'hooks' at the top end. These hooks make it clearly appear more similar to <pa> than <sa$_5$>.

Regarding the <x> unknown sign, a correct interpretation is not immediately obvious, but perhaps <ka> () or <la> () are the most likely candidates, giving a form *<ka-pa-hi>* or *<la-pa-hi>* instead. Either way, as in the above case, I feel this form should be excluded from the list of forms under consideration in this discussion.

[89] Source of photograph and trace: Hawkins 2000: plate 332.

2.7 Word-final <-sa_5>

The final environment in which we frequently find the <sa_5> sign is in word-final position. Altogether, we find <sa_5> 21 times in this position in the HLuw. corpus.

These forms generally function as nom.sg.c. or gen.sg. with the sign <sa_5> reflecting the *-s* ending of the nominative or genitive (e.g. (INFANS)*ha-ma-si-sa*$_5$ 'grandson' nom.sg.c. İSPEKÇÜR).

These 21 forms are occur in only a few inscriptions.[90] An additional comparison of other inscriptions where <sa_5> is found word-finally reveals that the use of this sign in this position may be restricted to a small region or time period. Evidence for this restricted distribution is presented in the table and map below:

Fig. 2.6 – Word-final <sa_5> cases[91]

Inscription	**Number of cases**	**Date (BCE)**	**Region**
EMİRGAZİ altar	2	(Empire)	(Empire)
YALBURT	2	(Empire)	(Empire)
KARAHÖYÜK (ELBİSTAN)	1	12th century	MALATYA
KÖTÜKALE	3	12th century	MALATYA
GÜRÜN	5	12th-10th century	MALATYA
İSPEKÇÜR	4	11th-10th century	MALATYA
DARENDE	2	11th-10th century	MALATYA
TELL AHMAR 1	1	10th-9th century	TELL AHMAR
KARKAMIŠ A13d	1	10th-9th century	KARKAMIŠ
TOTAL	21		

[90] E.g. we find <sa_5> word-finally five times in GÜRÜN (V.2). By comparison, we find only a single case each of <sa> and <sà> in the same inscription.
[91] All dates are taken from Hawkins (2000).

Fig. 2.7 – Location of word-final <sa$_5$> cases

All but two of the cases of word-final <sa$_5$> occur in inscriptions dateable to the early 10th century or earlier. The form ^{I}*ka-tú-wa/i-sa$_5$* in KARKAMIŠ A13d (II. 16) 1. §1 appears six more times elsewhere with <sa> instead in this position. In TELL AHMAR 1 (III. 6) 2. §2 we find the form (DEUS.BONUS)*ku-pá*?+*ra/i-ma-sa$_5$* 'good God Kuparma' occurring in a list of deities where elsewhere <sa> is used for the case-ending *-s*. Nevertheless, the use of <sa$_5$> in these inscriptions in word-final position is unusual and exceedingly rare in this later period.

If we also take into account the apparent interchange of <sa$_5$> and <sa$_x$> in the TOPADA inscription (X. 12) in the form *pa-la$_x$-wa/i-sa$_x$* (§4, read <*pa-la$_x$-wa/i-sa$_5$*>, discussed in 1.3.2) then we also find a single other example of word-final <sa$_x$> which does not fit into this category of particularly early examples,[92] although we should bear in mind that the inscription demonstrates a "peculiar archaizing style".[93]

Aside from these exceptions, most of the early cases also form something of a geographic or local unit, associated with the Hittite city of Malatya, which would become an important Neo-Hittite state following the fall of the Empire. 4 other cases from this early period actually predate

[92] TOPADA being a late inscription dateable to the 8th century BCE on account of the ruler and author Wasusarmas mentioned therein. – Hawkins 2000: 429.
[93] Hawkins 2000: 429.

the fall of the Empire, occurring at the YALBURT pool and on the EMİRGAZİ altar. In all these early inscriptions, we find no cases of <sa_5+ra/i>, otherwise the most frequent environment for the sign.

It is possible that the absence of <sa_5+ra/i> in these inscriptions can be linked to the prevalence of logographic forms they display. Aside from rhotacised variants of, for example, case markers, which often occur in phonetic complements to logograms, the sequence <sa_5+ra/i> would be expected primarily in the stem. In these logogram-dominated texts, therefore, we would not expect to find many cases of <sa_5+ra/i>, since stems tended to be represented with logograms rather than syllabograms.

Another possible explanation, however, is that these earlier inscriptions reflect a different orthographic tradition pertaining to the usage of the sign, perhaps in use by the Hittites themselves and continued by the inhabitants of Malatya following the collapse of the Hittite Empire.[94] In these inscriptions it reflects the phonetic value of the case endings in /-s/, while in later inscriptions it appears primarily to reflect that of the combination of /s(a)-/ and /-r/.

[94] The inhabitants of Malatya continued the Hittite dynastic, political and cultural tradition, and the Assyrian king Tiglath-Pileser I referred to the region during this period as a part of Hatti. – Hawkins 2000: 283.

2.8 Summary of evidence

Taking into account the discussions in the previous sections, a new distribution of the attestations of <sa$_5$> looks as follows:

Fig. 2.8 – <sa$_5$> distribution		
	Number	**Percentage**
Environment (1): <sa$_5$> is found with <+ra/i> (the 'thorn')	73	64.0
Environment (2): <sa$_5$> is found word-internally or word-initially *without* <+ra/i>	19	16.7
Environment (3): <sa$_5$> is found word-finally	21	18.4
(Unknown)	1	0.9
Total	114	100

From this distribution the following conclusions may be drawn.

Firstly, there is a clear link between <sa$_5$> and <+ra/i>. Almost all forms denoting /s/ before /r/ are written with <sa$_5$+ra/i>. Nevertheless, the usage of the sign without this thorn demonstrates that this cannot be a purely orthographic tradition of using this sign in place of <sa> when followed by <+ra/i>.

Secondly, multiple forms are found word-finally and reflect case endings, although restricted to a small geographic area and time period.

Lastly, a number of other forms (e.g. *asaza*-) do not fit into either of these categories and require further analysis.

3 Determining the phonetic or phonemic quality of <sa_5>

As has been demonstrated in the previous sections, the <sa_5> sign does appear to have a unique distribution, distinct from that of any of the other <sa> signs. The data presented shows that the sign generally appears only in particular environments. Within some of these we generally do not find other <sa> signs. It seems likely, therefore, that there was a synchronic or historic phonetic opposition between the sound represented by <sa_5> and that represented by the other <sa> signs.

The purpose of this section will be to determine as accurately as possible the phonetic nature of the <sa_5> sign as distinct from the other <sa> signs. Following this, in section 3.7 it will be discussed whether any phonemic opposition can also be determined.

The approach undertaken in this paper to determine the phonetic quality of <sa_5> will be to analyse forms containing the sign and the other <sa> signs to determine if any underlying phonetic environment can be shown to be regularly represented by <sa_5> in opposition to the other <sa> signs. This approach will utilise etymological and comparative arguments. Comparison with CLuw. (and other Indo-European, primarily Hittite) forms will be particularly important for clarifying the phonetic nature of the HLuw. forms.

3.1 Etymological and comparative analysis of <sa$_5$> forms

This section will investigate whether any unique quality of <sa$_5$> can be confirmed utilising etymological or comparative methods.

First the discussion will turn to forms in <sa$_5$+ra/i>, since these are the most numerous. Following this, other uses of <sa$_5$> will be considered, as well as some cases of other <sa> signs which might appear to be counter-examples.

3.2 HLuw. /r/ and forms in <sa$_5$+ra/i>

HLuw. /r/ has multiple sources.[95] By far the most prevalent is PIE */r/, although we also find rhotacised forms developing primarily from lenis /d/ (< PIE *$d^{(h)}$), or occasionally from /l/ (as discussed in section 1.4).

However, it has been shown in sections 2.3.1 that, when preceded by an /s/, we often find <sà> rather than <sa$_5$> in environments where rhotacism of /d/ > /r/ has taken place intervocalically. In forms with <-ri+i> or <-ra+a> we never find <sa$_5$>, instead finding <sa> or <sa$_4$>.

3.2.1 The feminising suffix *-s(a)ra/i-*

Multiple cases of <sa$_5$+ra/i> reflect forms extended in the feminising suffix *-s(a)ra/i-*. This suffix is also observable in CLuw. (cf. **nāna-* 'brother' and **nānaš(ša)ra-* 'sister') and Hitt. (cf. *išḫā-* 'master, lord' and *išḫaššara-* 'mistress, lady'). The suffix itself may go back to a zero-grade form *-*h$_1$sor*, and this same suffix may be visible in the 'sister' word of many other IE languages, ultimately reflecting the form **su-h$_1$ésor* with full grade of the suffix (cf. Eng. *sister*, Skt. *svásṛ*, Lat. *soror* all 'sister').[96]

First, let us consider the HLuw. form *hasus(a)ra-* 'queen'. We find this form five times in the corpus, always preceded by a denominative such as <MAGNUS.DOMINA> and always spelled with <sa$_5$+ra/i>, such as in nom.sg.c. <(MAGNUS.DOMINA)*ha-su-sa$_5$+ra/i-sa*> (MEHARDE (IX. 13) §1). We also find two forms where only the phonetic complement <-sa$_5$+ra/i(-)> is visible, but which presumably reflect the same form.

The form is the same as the Hitt. **ḫaššuššara-* 'queen', observable in the Sumerogram

[95] Melchert 1994: 237-8.
[96] Oettinger 2014: 152-3.

<MUNUS.LUGAL-*ra*> and derived from the form *ḫaššu-* 'king'. The underlying phonetic interpretation of the Sumerogram is confirmed by the personal names ^{f}*Ḫa-šu-šar* and ^{f}*Ḫa-šu-uš-ra*, recorded in the Assyrian Kültepe-texts from the merchant quarter (*kârum*) at the early Hittite capital of Kaneš.[97] Hitt. *ḫaššu-* and its derived forms appear to be derived from *ḫāš-* / *ḫašš-* 'to give birth (to), beget', and the same may be said of the HLuw. *hasusara* form, deriving ultimately from *has-* 'to generate, create'. The verbal forms may go back to a root in **$h_2$ems-* with a *u*-extension for forming the derived nominal forms.[98]

In both the HLuw. and Hitt. forms, the feminising suffix *-s(a)ra-* (Hitt. *-šša-*) is clearly visible. If we compare the CLuw. form *nānašri(ya)-* 'of a sister' (itself formed with the same feminising suffix and a further suffix *-i(ya)-*) we see that the spelling *na-a-na-aš-ri-[e-ya]* implies the absence of a vowel between /s/ and /r/ in the suffix element, and a possible phonemic reading for the suffix is /-(a)ssra/ī-/.[99] This is confirmed by the personal name ^{f}*Ḫa-šu-uš-ra* mentioned above, formally identical to the HLuw. form under discussion, where no vowel is present between the /s/ and /r/.

In other Hittite forms with the same suffix we also find geminate spelling (e.g. dat.-loc. *iš-ḫa-aš-ša-ri* 'mistress, lady' KUB 33. 62 ii 18), which arises by fortition (/s/ > /S/) caused by contact with the following /r/,[100] also confirming the absence of a vowel between /s/ and /r/ in this feminising suffix.

To summarise, analysis of this form suggests we should read <sa_5+ra/i> as reflecting /sra/i/ (not /sara/i/), developing from a historic sequence of */s/ + */r/. We can also observe that the sibilant is fortis in the equivalent Hittite forms, although this is not confirmed by the CLuw. evidence.

The other HLuw. forms spelled with <sa_5> which reflect the same suffix (e.g. *amanasari-* 'concubine(?)',[101] *nanasari-* 'sister'[102]) should also be read as /-sra/i/.

---

[97] Kloekhorst 2008a: 327-8.
[98] Kloekhorst 2008a: 328.
[99] Melchert 2003: 196.
[100] As in, for example, Hitt. *eš(ša)ri-* 'shape, image, statue' < PIE **$h_1$es-ri-*. – Kloekhorst 2008a: 260-1.
[101] Which is perhaps also reflected in *472(-)*ma-*sa_5*+ra/i* (ASSUR LETTERS *a* (XI. 1) 3. §10 and *d* (IX. 4) 2. §7). – Melchert 1988b: 254-5 ft.18.
[102] < **nana* 'brother' (cf. CLuw. *nāna/i(ia)* 'of a brother'). It is interesting to note that in Hitt. the 'reverse' has occurred, with the 'brother' form (*nekna-)* apppearing to be instead a derivative of the 'sister' word (*neka-*). – Kloekhorst 2008a: 601.

3.2.2 *kutasari- and hatas(a)tari-*

The form *kutasari-* means 'orthostat', referring to the upright stone slabs on which many Hieroglyphic Luwian inscriptions are carved. The form is often found with the determinative <SCALPRUM>, which logographically reflects 'stone' (adj.). The noun has a CLuw. cognate ^{NA4}*kuttaš(ša)ra/i-* 'idem'.

The form can be segmented as composed of a stem **kut-* and a suffix *-as(a)ra/i*.[103] If we compare this with the Hittite evidence, we can identify the stem as cognate with Hitt. *kutt-*'wall' < PIE **ǵ^{h}(é)ut*, although this form is otherwise unattested in Luwian.

Luwian shows "sporadic epenthesis of [-t-] in clusters of /-sr-/"[104] and this same suffix might be connected to the HLuw. abl. form *ha-tà-sà-tara/i-ma-ti*, which reflects either 'wisdom'[105] or 'violence, terror' (cf. CLuw. *ḫattašt(a)ra/i-* 'idem')[106] and would display the addition of an epenthetic dental /t/ between the /s/ and the /r/ of the same suffix.

The presence of the epenthetic dental /t/ in the variant form /astra/i/ is of note and implies that in the *-asari* suffix observable in *kutasari*, no vowel is in fact present between the /s/ and the /r/. This causes the epenthesis of the /t/ between the two, the sequence *-sr-* > *-str-*. Such a development is not feasible for a sequence *-sar-* > **-st(a)r-*. The form should therefore be read *kutasri*[107]. Again, we see that the sequence of sibilant + /r/, without a vowel between, is spelled <sa$_5$+ra/i> as opposed to, for example, <sa+ra/i>. The <sa$_5$> might here be interpreted, therefore, as reflecting simply [s] without a vowel, the entire sequence being /sri/, similar to the case of *hasusara* in section 3.2.1.

Furthermore, comparison with the CLuw. cognate ^{NA4}*kuttaš(ša)ra/i-* 'orthostat', which is spelled with a geminate <šš>, implies that fortition has taken place due to contact between the /s/ and /r/[108] (as demonstrated also by the Hitt. examples in the previous section). This both confirms that we should read this suffix as /sri/ without a vowel, and also suggests that <sa$_5$> may reflect fortis [S], as opposed to lenis [s], since fortition would also be likely under the same circumstances for the examples of the feminising suffix *–sra/i* in the previous section.

---

[103] Semantically, this suffix clearly has no connection to the identical feminising suffix, perhaps instead forming bahuvrihi compounds (e.g. here *'having the form of a wall'). The suffix itself might be considered cognate with Hitt. *ēš(ša)ri-* 'image'. – Melchert 2002: 300-1.
[104] Melchert 2003: 183.
[105] Hawkins 2000: 524.
[106] Melchert 2003: 196.
[107] Similarly, comparing HLuw. *istra/i-* 'hand' (cf. CLuw. *īš(ša)ra/i-*, Hitt. *keššar*) and its derived form *is(a)rwila-* (cf. CLuw. *išaru̯ila/i-* 'right hand') we see the same irregular epenthesis of /t/ in clusters of /sr/.
[108] [s] is fortited to [S] in clusters in Luwian – Melchert 1994: 266.

3.2.3 *was(a)ra- and isarwila-*

We find numerous occurrences of the form *wasara-* ‘kindness, favour’ in HLuw., most commonly represented by the logogram <BONUS> and a phonetic compliment, although a single attestation <(BONUS)*wa/i-sa$_5$+ra/i-ti-i*> (BULGARMADEN (X. 45) 3. §7) and comparison with the CLuw. form *u̯aššar* ‘favour’ confirms the underlying form.

Where visible, almost all forms of this word in HLuw. are spelled with the sequence <sa$_5$+ra/i>. A single form instead shows <BONUS-*sa-la-ti*>, demonstrating an interchange of /r/ and /l/.[109]

In the single case of the CLuw. equivalent *u̯aššar* we can observe geminate spelling (<*wa-aš-ša-ar*>) as well as in all cases of the more well attested derived form *u̯aššaraḫit-* (also ‘favour’). This spelling denotes a fortis /S/. As in the previous example, this fortition has taken place due to contact between the /s/ and /r/, with [sr] > [Sr], implying again that no vowel is present between the two phonemes.[110]

Another form, *isarwila*, occurs only once (in KARKAMIŠ A15a (II. 50) 6. §9) as <(“BRACCHIUM”)*i-sa$_5$+ra/i-wa/i-la*>. The poor condition of the inscription makes a reading from context difficult. However, it bears an obvious resemblance to the CLuw. form *išaru̯ila/i* ‘right (hand)’. The CLuw. form is never spelled geminate (instead always with the CVC-sign <*sar*>, along with its derivative *išaru̯ili(ya)-* ‘favourable’ < ‘of the right hand’). These CLuw. forms appear to be related to (or derive from) the form *īš(ša)ra/i* ‘hand’. In more than 9 in 10 cases, this form (and its derivatives) *do* show geminate spelling (e.g. <*iš-ša-ri-iš*>), again reflecting fortition of the cluster [sr] > [Sr].[111] We also find an HLuw. cognate *istra/i* ‘hand’. Here, we may identify an epenthetic dental stop (/t/), which develops sporadically in sequences of /sr/ in Luwian, and confirms the absence of the vowel.[112]

The HLuw. spelling <sa$_5$+ra/i>, therefore, again is used to spell a cluster /sr/, and this cluster has clearly undergone fortition of [sr] > [Sr]. The HLuw. form *isarwila* ‘right hand’, with a fortis [S], reflects what might be the standard phonetic character of a derivative of an unattested HLuw. form **isra/i* ‘hand’ which also yielded HLuw. *istra/i* ‘hand’ with an epenthetic dental stop. The CLuw. form *išaru̯ila/i* ‘right-hand’ is, in fact, the unusual form for appearing to display a lenis /s/.

---

[109] As possibly in HLuw. *parsa* ‘time, turn’ and *palsa* ‘way’. – Melchert 1994: 259.
[110] These forms may be connected with CLuw. *wašš*$^{ari-}$ ‘be favourable’. A possible root is **h$_1$u̯os*. – Starke 1990: 352-3.
[111] The Hitt. cognate form keššar / kiššar / kišr- ‘hand’ also shows consistent geminate spelling (and thus a fortis /S/).
[112] Melchert 1994: 272. Additionally, spellings with <tara/i> (e.g. (“[MANUS]”)*i-[sà]-tara/i-[…]*) further support the interpretation of <tara/i> as /tri/, as discussed in section 1.3.

3.2.4 *sarli-*

The verbal form *sarli-* means 'to sacrifice' or 'offer'. We also find a derived form *sarlata* 'libation'. Both forms are often preceded by the logogram <LIBARE>, which may also reflect *sarli-* on its own. These forms are attested multiple times, always with <sa$_5$+ra/i>.

These forms have a clear cognate in the CLuw. forms **šarli-/šarlai-* 'to exalt' and its derivate *šarlatta-* 'exaltation, worship'. Hittite demonstrates the possible borrowed but certainly related forms *šarli* 'uppermost, superior' and *šarlai-* (instead meaning 'to let prevail'). The adjective *šarli* has no transparent phonetic reading in Luwian, but we do find the HLuw. form <SUPER+ra/i-li> and the Lyd. form *serli-* / *selli-*, both also meaning 'uppermost, superior'.[113]

An etymological analysis of these forms requires comparison with the other Hitt. forms *šēr* 'on to' and *šarā* 'upwards' which are possibly lexicalised case-forms of a PIE root **ser-* / **sr-*, perhaps cognate with Gr. ῥίον 'mountain ridge'.[114] These suggest a zero-grade root **sr* and a suffix *-li-* for the Hitt. *šarlai-* and *šarli* forms.[115]

On the basis of these related forms, it seems probable that the HLuw. forms *sarlata-* and *sarli- / sarlai* should also be reconstructed as reflecting a historic zero grade root (**sr̥-*), as should the form <SUPER+ra/i-li>.[116] If a synchronic vowel exists between /s/ and /r/ in these forms, this vowel is not reflected historically. Any such vowel in this position is anaptyctic and a later development.[117]

Again, we might expect fortition due to contact between the /s/ and /r/. While geminate (fortis) consonants are not spelled word-initially in Hittite, CLuw. or Pal., they must have been present in Proto-Anatolian.[118] However, in the stops at least, the merger of fortis and lenis series does seem to have been "an areal feature across Anatolia".[119] It is still possible that this opposition was retained for the sibilant, resulting here in the spelling with <sa$_5$>. Therefore we should identify

---

[113] Yakubovich 2010: 236.
[114] Kloekhorst 2008a: 729-30.
[115] Kloekhorst 2008a: 735-6.
[116] The form <*pa+ra/i*(-)*sa$_5$+ra/i*> (SULTANHAN (X. 14.) §47) should perhaps be read as two separate adverbs *pari* and *sara*. This *sara* would correspond to <SUPER+ra/i-li> and its spelling <sa$_5$+ra/i> would be consistent with the above hypothesis that it is vowelless – Hawkins 2000: 471-2.
[117] There are multiple reasons to assume that the syllabic resonants (e.g. /r̥/) still existed as such in PA, and had not yet developed into sequences of an anaptyctic vowel + resosant. For example PA **-m̥* > Hitt. *-un*, Lyc. *-ā*. Furthermore we find a variation of *uR* and *aR* < PA **R̥* in Pal. and Luw. – Melchert 1994: 55. Any fortition of e.g. [sr] > [Sr] must have taken place before the development of an anaptyctic vowel to allow for contact between [s] and [r/r̥].

As for Hitt., this variation between <u> and <a> in HLuw. suggests that the vowel in this environment "cannot be identical to /a/ and phonetically may have been [ɐ] or [ə]" cf. Kloekhorst 2008a: 60.
[118] Since **ti-* > Hitt. *z-* and **di-* > Hitt. *s-*. – Kloekhorst 2008a: 24.
[119] Melchert 1994: 20.

<sa$_5$> here as [s] (if a merger [S] > [s] took place word-initially) or [S].

3.3 Returning to *asaza-*, and the form ANNUS-*na-ha-sa$_5$-ha*

At this point it is important to note that, while a possible phonetic reading for <sa$_5$> based upon the environment in which we primarily find it (with <+ra/i>) has been suggested, namely that it reflects fortis [S] without any vowel,[120] there is nothing so far to prove that <sa$_5$> need reflect anything more than an orthographic variant of <sa> for use before <+ra/i>, reflecting an /s/ followed immediately by an /r/.[121]

However, if a form demonstrating <sa$_5$> without <+ra/i> can be shown to reflect fortis [S] then this would lend a great deal of support to the hypothesis that <sa$_5$> is in fact [S].

The verbal form *asaza-* has been mentioned previously but no in depth analysis has yet been attempted. This form, which occurs 14 times[122] and is always spelled with <-sa$_5$-za->. It should be interpreted as 'to speak', and as a cognate of the CLuw. denominative *aššа* 'to speak', both being derived from the neuter *s*-stem *āšš* 'mouth' < **h$_1$eh$_3$-es*,[123] the HLuw. form extended with the imperfective *-za* suffix < PIE **-sḱe/o*.[124]

This suffix is used to extend zero-grade stems. For the CLuw. form *aššа* we should reconstruct the zero-grade of the nominal stem and a verbal suffix in the full-grade (yielding > /-a-/).[125] For the imperfective (HLuw.) form *asaza-* we would expect the entire stem to be in the zero grade (with the verbal suffix **-Ø-sḱe/o*).[126] For this reason we would expect any vowel between the /-s/ of the stem and the /t^s/ (= <z>) of the imperfective suffix to not be 'real' and should read the verb phonemically as /as-t^{s}a/.

Furthermore the CLuw. forms are always spelled geminate, implying a fortis [S] is present. It seems reasonable to assume, therefore, that the HLuw. form also reflects a fortis [S] spelled with <sa$_5$>, as in the previous examples. Here, however, no /r/ is present to cause fortition. This implies that the use of <sa$_5$> is more than simply an orthographic nuance of the Hieroglyphic script when /s/ is immediately followed by /r/, but may in fact directly reflect [S]. We may therefore read the form

---

[120] Or only a secondary, anaptyctic vowel [ɐ] or [ə] (not [a]).
[121] I.e. [sr], since [sar] may be spelled <sa-ri+i> or <sa-ra+a>.
[122] Each occurrence is very late in the corpus, from c. 800 to possibly the 7th century BCE. – Hawkins 2000: 44-5, 265.
[123] Kloekhorst 2008a: 166-7. CLuw. *āšš* 'mouth' consistently demonstrates hyper-plene spelling (e.g. <*a-a-aš-ša*(=)> KUB IX 6 + XXXV 39 Vs. II 10) implying /ā.aS/. CLuw. *āššа-* 'to speak' does not demonstrate this spelling and should be interpreted as /āSa-/ as a result of the suffix being in the zero grade.
[124] Cf. Hitt. *-ške-*, Skt. *-ccha-*, Gr. *-σκε-*. This imperfective suffix is also visible in CLuw. forms associated with the dialect of Hattuša (e.g. *ḫalwatnazzi* 'to be irritated' KUB XXXVI 89 obv. 39). – Yakubovich 2010: 55.

The semantic quality of the suffix on *asaza-* is not clear, but it does appear to have entirely replaced the unextended variant visible in CLuw.
[125] I.e. **(Ø)Stem-(e/o)Suffix*.
[126] I.e. **(Ø)Stem-((Ø)Suffix)-sḱe/o* cf. e.g. Skt. *gácchati* 'he goes'< **g^{w}m̥-ské-ti*, *pr̥cchа́ti* 'he asks' < **pr̥-ské-ti*.

phonetically as [aSt^{s}a].

It should be briefly mentioned from where the fortition of /s/ in this form may have arisen. In Hitt. we find that lenis consonants are fortited before the suffix *-*sḱe/o*.[127] A similar development might be posited for HLuw., but this creates a circular argument since the CLuw. forms without the imperfective suffix are also fortited.

An etymological analysis offers a possible solution. The form reflects a neuter *s*-stem which displays an apparently unusual ablaut patter. We would like to reconstruct a PIE nom.-acc.sg. form **h$_1$éh$_3$-s* to account for the presence of the *o* in Lat. *ōs* 'mouth' (from the colouring of the **e* by **h$_3$*) and the absence of an initial *ḫ* in the Hitt. form (since **h$_1$* does not yield Hitt. *ḫ*).[128]

It is possible that such a form would have yielded a fortis [S] by assimilation due to contact between the laryngeal and the sibilant ([h$_3$s] > [S]).[129] This fortition is visible as geminate spelling in the CLuw. forms and in the oblique cases of the Hitt. cognate *aiš* / *išš* 'mouth'.[130] Even if, as in Hittite, fortition only took place in the oblique cases in the Luwian languages, we can hypothesise that it was generalised throughout the paradigm. This would explain the geminate spelling in the CLuw. forms and the <sa$_5$> spelling of *asaza-* in HLuw.

Based upon this example, we might interpret some other unexpected forms containing <sa$_5$> without <+ra/i> as reflecting sequences of [SC]. For example, in the form <ANNUS(-)*na-ha-sa$_5$-ha*>[131] (TOPADA (X. 12) 3. §12) the <sa$_5$> may reflect a fortis [S].[132] The form may be identified as a 1sg.pret.act. in *-ha* affixed to a verbal stem in *-s*. In this case, the entire form might be read [(ANNUS)-n(a)h(a)Sha], with <sa$_5$> reflecting vowelless [S], despite the absence of <+ra/i>.

---

[127] Kloekhorst 2008a: 66.
[128] Kloekhorst 2008a: 166-7.
[129] Melchert 1994: 116.
[130] Kloekhorst 2008a: 167.
[131] And also <ANNUS(-)*na-ha-sa$_x$-ha$_x$*> (in the same inscription, at 3. §10) since the forms appear to be the same, and <sa$_x$> should be considered as interchanging with <sa$_5$>. <ANNUS> may also (rarely) be read <zà> or <zì>, as it should be in e.g. KAYSERİ (X. 15.) 4. §12 from the same region (TABAL).
[132] There is some evidence that fortition of [s] > [S] may occur in *all* clusters of /sC/ (cf. CLuw. *u̯aššpa(nt)-* < **wospo-* 'garment'). However, most evidence is restricted to clusters of sibilant and sonorant. – Melchert 1994: 266. There are also many counter-examples reflecting lenis [s] in clusters of sibilant + stop which seem to preclude this development in all clusters of /sC/ (cf. e.g. CLuw. *a-aš-ti*, HLuw. *a-sa-ti* 'it is' < **h$_1$és-ti*). As such, with the uncertain meaning of this form and the absence of cognates, if <sa$_5$> does reflect [S], the origin of its fortis nature is not clear.

3.4 Possible counter-examples

The following sections will attempt to address possible counter-example to the hypothesis that <sa$_5$> reflects fortis and vowelless [S].

3.4.1 The genitival adjective *–asa/i-* and *usa/i-*

The genitival adjective is among the most distinctive features of the Anatolian languages and has, in CLuw., in fact entirely replaced the genitive case. It is present in HLuw. as *-asa/i-*, and in CLuw. as *-aššа/i-*, where it has entirely replaced the genitive case.[133]

From the CLuw. examples it is clear from the geminate spelling that we should read a fortis [S] for these forms ([aSa/i]). For the HLuw. forms, however, we almost never find the spelling <sa$_5$> in these forms.[134]

It has been claimed that the gen. adj. *-asa/i-* may reflect < **eh$_2$-so* with assimilation of [h$_2$s] > [S][135], similar to as in *asaza-* where [h$_3$s] > [S]. However, this causes problems in Hitt., where the assimilation of [h$_2$s] > [S] is precluded by, for example, *palaḫša* /plaHsa-/ 'garment' < **pleh$_2$-so*.[136] Instead, we might reconstruct **os-io*,[137] with cognates in Skt. *-asya* and Hom.Gr. *-οιο*.[138] Regardless of the correct etymological interpretation, the presence of a 'real' vowel (/a/ < **o*) is clear and so the form should be read [aSa].

The form *usa/i-* 'year', which is attested with both <sá> and <sà> and more commonly *i-* mutated, may reflect a similar case. The CLuw. cognate *ušša/i-* clearly displays a fortis [S] through its geminate spelling. However, an etymological analysis shows the vowel must be 'real' and reflect /a/, the form developing from < PA **uts*V- with assimilation of [ts] > [S].[139]

Both these forms demonstrate that the absence or presence of a vowel is key to the use of

---

[133] Lycian also demonstrates a cognate gen. adj. form in *–a/ehe/i-*, Pal. in *-aša/i-*. – Melchert 2012: 275-6. Hitt. also has a few forms appearing to reflect the same gen. adj. (e.g. *ḫanzāšša-* 'offspring').
[134] There is a single case of <sa$_5$> in the gen. adj. The abl. form. *apasadi* – 'his', which consists of the demonstrative adj./pron. *ap-* and the gen. adj. is found in a single case (at TOPADA (X. 12) §8) spelled <á-pa-sa$_5$-ti>. Other abl. forms of *apasadi* are spelled with <sa$_4$> or <sa> (if a damaged form <[…]-sa-ri+i> in a parallel line in SULTANHAN (X. 14) §51 should also be read as *apasadi*) instead, suggesting that spelling this form correctly was problematic. The existence of no other cases of the gen. adj. with this <sa$_5$> spelling, among dozens of attested forms, means it will be ignored in the present discussion.
[135] Melchert 2012: 282-3.
[136] Kloekhorst 2008a: 216.
[137] Georgiev 1972: 90.
[138] Kloekhorst 2008a: 216.
[139] Melchert 1994: 269.

<sa$_5$>. When writing fortis sibilants, HLuw. uses <sa> (or <sá>, <sa$_4$> etc.) when [a] is present following the sibilant (such as in these two examples where it reflects [Sa]), while <sa$_5$> is used when no vowel is present (reflecting simply [S]), or only an anaptyctic vowel (reflecting e.g. [S$_ə$]).[140]

3.4.2 Interpretation of forms in <sà+ra/i>

As discussed in section 2.3, a few forms of the structure <sà+ra/i> do exist. Those forms will be discussed here.

The form <(BESTIA)*HWI-sà+ra/i-sa*>[141] is attested as such in ALEPPO 2 (III. 5) 2. §5. It is interpreted as a form of *hwisar-* 'wild beast' (cf. CLuw. *ḫuitar-* / *ḫuitn-*, Hitt. *ḫuitar-* / *ḫuitn-* both 'idem' < **h$_2$uéid-r* / **h$_2$uid-n-ós*, ON *vitnir* 'creature'[142]) with the nom.-acc.sg.n. enclitic particle –*sa*/-za attached. We also find what appears to be the word in the same case twice with <sa$_5$>, as might be expected (BULGARMADEN (X. 45) 3 §7, BOHÇA (X. 17) 3. §5) and these should be interpreted as nom.-acc.pl.n. with the ending *-a*.

The interchange between forms in *-sar* and *-tar* in HLuw., CLuw. and Hitt. is remarkable and no etymological interpretation of this phenomenon will be attempted here. However, all forms can be considered as *r*/*n*-stems which explains the presence of the <sa$_5$> in some of the forms as due to contact between a root *hwis-* and a historic suffix **-r*[143] in the nominative. We also find a form (BESTIA)*HWI-sá-na-ma-i̯a* (ASSUR letter a (XI. 1) 3. §10 of unclear meaning. This example supports the conclusion that the <sa$_5$> is conditioned by the following <+ra/i>, since this other likely related form[144] without <+ra/i> instead displays <sá>.

We may identify the <sà> of <(BESTIA)*HWI-sà+ra/i-sa*> as reflecting palatalisation of [s] > [ʃ] due to the presence of the preceding [i].[145] However, we would like to account for the

---

[140] <sa> is used for lenis consonants without a vowel e.g. as the nom.sg.c. case ending *–s*.
[141] The sign <HWI> was initially confused with <REL> (= /kwi/a/). However, it is now clear that it corresponds to CLuw. <hu-i> (cf. also the personal name HLuw. <*sa-HWI-*>, Cun. Urartian *ša-hu-*). In later inscriptions the sign does in fact become sometimes used instead of <REL> and therefore a transcription <HWI> (as opposed to <hwi/a>) is used to reflect the uncertain phonetic nature of the sign at different periods in the corpus.
[142] Kloekhorst 2008a: 355-356.
[143] In this archaic class of substantives, **-r* and **-n* are attached directly to the root, giving *-r̥* in consonant stems such as *hwis-* (cf. Skt. *yák-r̥-t*, *yak-n-ás* 'liver'. The origin of the *-t* in these Skt. nom. forms is unclear but is probably the same as in the Gr. suffix *-ατ-* < **-nt* within the same inflection class. – Beekes 2011: 206.
[144] As is implied by the determinative (BESTIA) and possibly the *-n-* of the oblique cases in these *-r/-n* stems.
[145] Rieken 2010a: 654.

differences in spelling between the nom.-acc.sg.n. form with <sà> ([hwiʃ$_{(ə)}$r-sa][146]) and the two nom.-acc.pl.n. forms with <sa$_5$> ([hwiS$_{(ə)}$r]). There seems little reason to assume a different historical phonetic environment for each form. Perhaps instead, since both palatalisation and fortition occurred or were possible in all cases and this may have led to the confusion in spelling.

Another form, <*ku-ki-sà+ra/i-sa*>, appears to reflect a rhotacised variant of the more common *kukisati* extended with the neuter nom.-acc.sg. element *-sa*(*/-za*). The meaning of the word is not clear. This rhotacism of lenis /d/ > /r/ occurs intervocalically and so no contact between /s/ and /r/ should be expected.

The <sà> of these two forms of *ku-ki-sà+ra/i-sa* (both the rhotacised and unrhotacised forms) may also be explained as palatalised due the presence of the preceding [i]. The /a/ vowel in <sà-ti> was real, as demonstrated by the rhotacism of lenis /d/ > /r/ which only occurs intervocalically. Thus no fortition due to contact between /s/ and /r/ would have occured in the rhotacised variant. This form would therefore phonetically represent [kukiʃari] as opposed to **[kukiSri] which would instead be spelled **<sa$_5$+ra/i>.

In another form, <("LIGNUM")*sà+ra/i-ha-za*>, no palatalisation is immediately obvious. However, if, as Rieken (2010a) argues, the form *salha-* 'size, greatness' is derived from PIE **sy̯élH-* 'to boast' then a similar palatalisation process is feasible due to the presence of the following [u] (although the resulting sound would be less retracted).[147] This process can be observed in other forms where [s] is preceded by [u] (e.g. <CURRUS-*ku-sà-ti*> '(?)').[148] If, instead, we connect it to Hitt. *šalli-* 'big, great' from a root **solH-*,[149] we would still not expect <sa$_5$+ra/i> since the presence of a historic vowel (**-o-*) between /s/ and /l/ would prevent any fortition following the rhotacism of /l/ > /r/, but the palatalisation would remain unexplained.

These forms can be identified as phonetically distinct from those with <sa$_5$+ra/i> discussed previously. Phonetically, they reflect [ʃ(a)r] rather than [Sr], as argued for <sa$_5$+ra/i>.

3.4.3 Interpretation of forms with rhotic elements other than <+ra/i>

As discussed in section 2.5, there are several forms which display a <sa> sign followed another rhotic sign than <+ra/i>, either <ri+i> or <-ru>. These signs are never written with <sa$_5$>.

---

[146] As mentioned in section 3.2.4, the vowel here is anaptyctic and not historical, and should be considered [ɐ] or [ə] (not [a]).
[147] Rieken 2010a: 655.
[148] Rieken 2010a: 654.
[149] Kloekhorst 2008a: 709-711.

It will be argued below that most[150] of these forms can and should be analysed as reflecting a 'real' vowel between the /s/ and /r/, and for this reason that the spelling <sa$_5$> for (vowelless) fortis [S] was not used, since the presence of a vowel restricted contact between the /s/ and /r/ and did not lead to fortition.

The absence of forms in **<sa$_5$-ri+i> or **<sa$_5$-ru> may, in fact, be coincidence, reflected in the fact that there are few forms utilising the other <sa> signs either. A sequence /sru/ would have yielded by fortition [Sru] (spelled **<sa$_5$-ru>), but no such forms exist. Any sequences of /sri/ > [Sri] have instead been spelled with the 'thorn' as <sa$_5$+ra/i>.[151]

What follows is an etymological and comparative analysis of forms reflecting any <sa> sign with <-ri+i> or <-ru>.

(1) The first example of <sa-ri+i> occurs in <(*474)*sa-ri+i-ia-si-sa*> 'eunuch' at ANCOZ 4 (VI. 8) §2. Elsewhere, we find the symbol <*474> as a determinative before *wasinasi-* 'attendant', and probably also 'eunuch' from context. *sariyasa* appears to be a loan from Akk. *ša rēši* 'eunuch'.[152] This would imply a real vowel /a/ between the /s/ and the /r/ and no fortition due to contact phenomena.

(2) The second example, <a+ra/i-ma-sa-ri+i> (perhaps 'monthly') in SULTANHAN (X. 14) 2. §3, appears to reflect a rhotacised sequence /sadi/ > /sari/:

2. §3 a-wa/i-sa |á-pi-i |CRUS-nú-wa/i-mi-i-na |BOS(ANIMAL)-ri+i-i 9 OVIS a+ra/i-ma-sa-ri+i-i

The verb <CRUS-nú-wa/i-mi-i-na> 'to establish, build, set up' reflects a gerundive in *-mi-na*.[153] <a+ra/i-ma-sa-ri+i-i> appears to demonstrate a formal connection with CLuw. **Armašša/i*[154] 'month' and HLuw. **arma-* 'moon(-god)'[155] and to refer to the previous logogram <OVIS> 'sheep'.

[150] Some names have no reliable interpretation.
[151] E.g. *nanasari-* 'sister' = [nanaSri].
[152] The Akk. form may be read as ultimately meaning 'he (*ša*) of the head (*rēši*)'. The Luw. form *wasinasi* 'eunuch' can be considered a calque of this form, reflecting 'he of the body' (cf. CLuw. *ua̯ššina-* 'body'). – Hawkins 2000: 349.
[153] As argued in Melchert (2004).
[154] Note the sequence of fortis [S] + vowel is again reflected with regular <sa> here.
[155] Kloekhorst 2012: 207.

An adjectival translation ‘sheep of a month/monthling’ is therefore preferable.[156] The entire sentence may be understood as ‘in addition (<á-pi-i>) he is to be set up with one cow and 9 monthling-sheep’. For both this form and <BOS(ANIMAL)-*ri*+*i*-*i*>, they appear to reflect rhotacised abl.-instr. forms of -*adi* > -*ari*. Therefore, as in the first example, it appears that we are dealing with a sequence /sari/ with no contact phenomena between /s/ and /r/.

(3) Similarly to the above example, <(“CAELUM”)ti-pa-sa-ri+i> (SULTANHAN (X. 14) 4. §14) clearly reflects a rhotacised abl.-instr. form *tipasadi* ‘from the sky’ < *tipas* ‘heaven’. Again we should read the sequence as /sari/.

(4) The final case of <sa-ra+i> also occurs in SULTANHAN (at 5. §51), as with the above two cases, but the preceding signs are too damaged to read (<[ ]-sa-ra+i>). However, given the widespread rhotacism of abl.-instr. forms in this inscription (and the following verb *tupi*- ‘to strike, chisel’ which we might expect to be associated with an instrumental form), we might reasonably speculate that this too represents a rhotacised abl.-instr. form -*ari* < -*adi*, and that <sa-ri+i> reflects /sari/. This hypothesis is further supported by a parallel line in TOPADA 3. §8 which has the abl.-instr. form *apasati* (with <sa$_5$>, as discussed in section 2.7.4.), so we might also read this damaged form as *apasari*.

(5) We also find a single case of <sa$_4$-ri+i> in the rhotacised abl.-instr. form of the demonstrative pronoun <á-pa-sa$_4$-ri+i> (KAYSERİ (X. 15) 3. §7). As in the above cases, this form reflects the abl.-instr. ending -*adi* rhotacised to -*ari*, so the sequence should be read /sari/, without contact between the /s/ and the /r/.

Additionally we find this abl.-instr. form spelled with both <sa$_5$> (unrhotacised) and <sa$_4$> (rhotacised), and perhaps also with <sa> (as also mentioned above). These three variant <sa> signs suggest that this form had a phonetic character which was difficult to assign to either <sa>, <sa$_4$>[157] or <sa$_5$>.

(6) The two cases of <sa-ru> (NİĞDE 1 (X. 41) and ANDAVAL (X. 42) §1) both occur in

---

[156] Hawkins 2000: 466.

[157] Although the phonetic character of <sa$_4$> is not understood, and its relatively few attestations (48) may suggest it is only an equivalent variant of <sa>.

nominative forms of the name '*Saruwanis*'. The self-professed 'ruler of the city of Nahitiya', modern day Niğde in southern-central Anatolia, Saruwanis was probably lord of this city in the 8th or 9th century BCE.[158]

Without obvious comparative or etymological evidence, interpretation of this form is difficult. It could be read /sar(u)wani/ or /sruwani/, for which we would expect the spellings <sa-ru> (as here) or <sa_5-ru> respectively. Interpretation of this form must be considered inconclusive.

[158] Based upon genealogical, stylistic and paleographic evidence. – Hawkins 2000: 515.

3.5 <sa$_5$> in word-final position

As discussed in section 2.9, cases of <sa$_5$> in word final position are limited almost exclusively to very early texts, primarily in the Malatya region. However, it should be noted that we do find cases of <sa> in word-final position in these texts as well.[159]

The meaning of some forms is not clear, for example in KARAHÖYÜK (ELBİSTAN) (V. 1) 10. §17:

10. §17 *234.SUPER *263-*ta-na-sa$_5$* DOMUS-*zi/a i(a)-zi/a-ha*

The above sentence demonstrates multiple unknown signs. The 1sg.pret.act. verbal form *i(a)-zi/a-ha* derives from *izi(ya)-* 'to make'. DOMUS-*zi/a* is a neut.nom.-acc.sg. substantive 'house'. The lack of any ending on *234.SUPER makes a grammatical interpretation difficult.

The form containing <sa$_5$> also reflects a word of unknown meaning.[160] However, grammatically, the sign must reflect either a gen.sg. in /-as/ or possibly a nom.sg in /-s/. The entire sentence can be translated 'I made a house of *263-*ta-na-sa$_5$* (for *234.SUPER)' or 'I, *263-*ta-na-sa$_5$*, made a house (for *234.SUPER)'.

Similarly to the above example all forms showing word-final <sa$_5$> can be considered nom. sg. in /-s/ or gen. sg. in /-as/. An example which demonstrates clearly both these forms is given below from GÜRÜN (V. 2) 2. §1b:

2. §1b CERVUS *ku-zi*-TONITRUS-*sa$_5$*||MAGNUS.REX|INFANS.(*NI.*)NEPOS HEROS *kar-ka-mi-i-si-sa$_5$*(URBS) (…)

CERVUS reflects the authors name. The two signs with <sa$_5$> in this line reflect two different case forms, *ku-zi*-TONITRUS-*sa$_5$* being genitive and *kar-ka-mi-i-si-sa$_5$*(URBS) being nominative. These two forms tells us something about the author, *ku-zi*-TONITRUS-*sa$_5$* MAGNUS.REX INFANS.(*NI.*)NEPOS meaning 'grandson of Kuzi-Tešub, the Great King' and HEROS *kar-ka-mi-i-si-sa$_5$*(URBS) meaning 'the hero from Karkamiš', an adjective in *-i(ya)-*.

---

[159] Additionally, the widespread use of logograms in this text may obscure what would otherwise be the more common use of <sa> elsewhere in the word.

[160] Masson (1979: 228, 238) instead reads <REGIO> for this sign but, while the sign does not show an immediately striking resemblance to <sa$_5$>, it appears far less similar to <REGIO>, lacking the 'double-triangle' shape of the sign, and such a reading also in no way aids in interpretation.

All other word-final forms of <sa$_5$> can also be interpreted as nom.sg. in /-s/ or gen.sg. in /-as/.

3.5.1 Nominative singular in /-s/ and genitive singular in /-as/

The nom.sg. ending /-s/ is found only in the common gender and reflects the PIE athematic ending *-*s* common to many IE languages (cf. Hitt. -*š*, Lat. -*s*, Gr. -*ς*, Skt. -*ḥ*). Firstly of note about this ending is that the vowel of <sa$_5$> is not 'real'. We should therefore interpret the ending phonemically as simply /-s/.

We should also consider the word-final nature of the sibilant, meaning that it always occurs at a word or clitic boundary. In the examples of <sa$_5$> in word-final position, none are followed by clitics and all can at a word-boundary.

Phonetically, there is nothing to suggest from this information that we should interpret these forms as any different from /-s/. They tell us nothing about their fortis or lenis quality. Additionally, the widespread use of <sa> (and the other <sa> signs) in the same position in other texts suggests that the use of <sa$_5$> here in word-final position for the nom.sg.c. is a way of expressing /-s/[161] in early texts (primarily from this region) alone and is replaced by the more prevalent <sa> in later texts.

Genitive singular forms in <Ca-sa>[162] derive from PIE *-*os*[163] and reflect HLuw. /-as/.[164] As above, no vowel is present after the /-s/ and we find the form without following clitics and at a word-boundary. <sa$_5$> must here also be considered to reflect /-s/.

We should distinguish therefore between the use of this sign in this early period, where it reflects simply /-s/, and its use in later inscriptions where it is more specifically [S].

---

[161] This helps us to understand why the underlying phonetic reading for <SIGILLUM> (= <sa$_5$>) is not in fact written with <sa$_5$> but rather <sa> (e.g. ("SIGILLUM")*sa-sa-za* from GELB seal (c) (XIII. 11c) 1. 1), since the signs <sa> and <sa$_5$> were effectively interchangeable at the point of their development.
[162] The genitive singular form -*si* is also found in HLuw., primarily in *i*-stems and demonstratives which may reflect a close relationship with genitival adjectives in -*sis* (Hawkins, Morpurgo Davies and Neumann 1974: 171).
[163] Melchert 2012: 278-9.
[164] Observe the same spelling in Hitt. and Pal. – Melchert 2012: 276.

3.6 Phonetic character of <sa$_5$>

As shown above, there are two primary environments where we find <sa$_5$>. The first environment reflects clusters with /s/ as the initial member. Most commonly, these are clusters of /sr/ which further analysis has revealed to have been fortited to [Sr]. Other examples of clusters (e.g. *asaza-*) may also support the hypothesis that /s/ in these cases was foritited. Nevertheless, it seems clear that <sa$_5$> only ever reflects [S][165] alone in these environments (never [Sa]).

The second environment, visible in early texts only, is found word finally where historically the forms developed from only word-final ***-s*** without a vowel, and must reflect /-s/. The single attestation of <sa$_5$> in this position in the KARKEMIŠ (A13d (II. 16) 1. §1) inscription can be viewed as a conscious archaism, which is a common orthographic practice in these inscriptions.[166]

These two uses of <sa$_5$> do correspond to some extent in their vowelless quality, but clearly represent different orthographic practices. It is feasible that the vowelless quality of <sa$_5$> in the earlier texts easily translated to its vowelless and fortited quality in the later texts, as the vowelless but lenis [s] was more often reflected with only regular <sa>.

To summarise, therefore, I present the following conclusion for the *phonetic* value of <sa$_5$>.

Fig. 3.1 – Phonetic function of <sa$_5$> sign	
Empire/early period	<sa$_5$> = [-s] (/ [-S]?)
Later Period	<sa$_5$> = [S] (/ [S$_ə$])
	(<sa> = [s] / [sa] / [Sa])
	(<sà> = [ʃ] / [ʃa])

3.7 Phonemic character of <sa$_5$>

The clearest indication that a fortis/lenis distinction in the sibilant was phonemic in HLuw. would be a set of minimal pairs reflecting both /s/ and /S/. No such pair seems immediately evident,

[165] Or [S$_ə$] with a secondary anaptyctic vowel.
[166] Hawkins 2000: 5.

however.

It is possible that the phonemic status of /S/ might also be observable in the automatic or non-automatic use of the symbol <sa$_5$> (= [S]). It has been shown that use of this symbol was not automatic in, nor restricted to, positions before <+ra/i> (cf. examples of <sà+ra/i> and *as(a)za*). However, in positions where we find lenis [s] the conditions for fortition are not present (primarily due to the presence of a following vowel preventing contact phenomena). The fortition of [s] > [S] (and use of <sa$_5$> in these positions) does, therefore, appear to be automatic, since we find lenis [s] in environments such as [sar], but never in environments such as **[sr], where fortition occurs automatically.

I would argue, therefore, that the opposition of fortis/lenis sibilants in HLuw. is not phonemic. However, establishing the phonemic status of [s]/[S] beyond doubt is not within the scope of this paper.

4 Conclusions

It is possible to identify a clear distribution of the <sa$_5$> sign by comparison with the other <sa> signs, the most striking feature of which is the widespread use of the sign preceding the 'thorn' <+ra/i>.

As has been shown in sections 2 and 3, this distribution reflects an underlying phonetic difference between the <sa$_5$> sign and the other <sa> signs. However, it is important to distinguish the use of the sign within the Malatya context, where it certainly reflects simply [-s], as distinct from its use elsewhere in the HLuw. corpus, where it has been argued it reflects a fortis sibilant which is either vowelless (i.e. [S]) or any following vowel is anaptyctic and a later development (i.e. [S$_ə$]). This distribution of the sign, which has different functions in two different chronological contexts, allows us to speculate somewhat about the evolution of the script.

The script's development and refinement was clearly ongoing.[167] With the widespread adoption of the <sa> signs (and other <sa> signs) to represent /s/ as well as /sa/, the <sa$_5$> sign would be without function. It may be, therefore, after this point that it was re-interpreted as fortis only, while continuing its vowelless quality.

[167] As can also be seen, for example, in the use of 'logogram markers' in later texts utilising more phonetic symbols, where correctly identifying the logographic use of symbols might become increasingly difficult.

5 Bibliography

Beekes, Robert Stephen Paul. 2011. *Comparative Indo-European Linguistics: an introduction* (2nd edition, Amsterdam: Benjamins)

Bryce, Trevor Robert. 2003. 'History', in *The Luwians*: 27-127 (ed. H. C. Melchert, Leiden: Brill)

- 2005. *The Kingdom of the Hittites* (Oxford University Press)

Georgiev, Vladimir Ivanov. 1972. 'Der luwische Genitiv auf -*assa*', in *Revue Hittite et Asianique* 30: 89-90 (Paris: Klincksieck)

Goedegebuure, P. M. 2010. 'The Luwian demonstratives of place and manner', in *ipamati kistamati pari tumatimis: Luwian and Hittite studies presented to J. David Hawkins on the occasion of his 70th birthday*: 76-94 (ed. I. Singer, Tel Aviv)

Güterbock, Hans Gustav. 1956. 'Review of Margarete Riemschneider, *Die Welt der Hethiter*', in *Orientalistische Literaturzeitung* 11/12: 512-522 (De Gruyter)

Hawkins, John David. 1995. *The Hieroglyphic Inscription of the Sacred Pool Complex at Hattu (Südburg)* (Wiesbaden: Harrassowitz)

- 2000. *Corpus of Hieroglyphic Luwian Inscriptions, Vol. I, Inscriptions of the Iron Age* (Berlin-New York: De Gruyter)

- 2003. 'Scripts and Texts', in *The Luwians*: 128-169 (ed. H. Craig Melchert, Leiden: Brill)

Hawkins, John David, Morpurgo Davies, Anna and Neumann, Günter. 1974. *Hittite Hieroglyphs and Luwian: New evidence for the connection (*NAWG, Göttingen: Vandenhoeck & Ruprecht)

van den Hout, Theo. 2006. 'Institutions, Vernaculars, Publics: the case of second-millennium Anatolia', in *Margins of Writing, Origins of Cultures*: 217-256 (ed. S. Sanders, Chicago: Oriental Institute)

Hrozný, Bedřich. 1937. 'Inscriptions «hittites» hiéroglyphiques de Nigdeh, Andaval, Ekrek et Asardijk', in *Archiv Orientální* 9: 407-416 (Prague: Orientální Ústav)

Hutter, Manfred. 2003. 'Aspects of Luwian religion', in *The Luwians*: 211-280 (ed. H. Craig Melchert, Leiden: Brill)

Kloekhorst, Alwin. 2004. 'The Preservation of *h_1 in Hieroglyphic Luwian: Two Separate *a*- Signs', *Historische Sprachforschung* 117: 26-49 (Göttingen: Vandenhoeck & Ruprecht)

- 2006. 'Čop's Law in Luwian Revisited', in *Die Sprache* 46: 131-136 (Wiesbaden: Harrassowitz)

- 2008a. *Etymological Dictionary of the Hittite Inherited Lexicon* (Leiden: Brill)

- 2008b. 'Studies in Lycian and Carian Phonology and Morphology', in *Kadmos* 47: 117-46 (de Gruyter)

- 2014. ‘Once more on Hittite *ā*/*e*-ablauting *ḫi*-verbs’, in *Indogermanische Forschungen* 119: 55-77 (de Gruyter)

Laroche, Emmanuel. 1960. *Les hiéroglyphes hittites: Première partie - L'écriture* (Paris: Centre National de la Recherche Scientifique)

- 1981. ‘Les hiéroglyphes hittites de Meskéné-Emar et le style “syro-hittite”’, in *Akkadica* 22: 5-14 (Brussels: Assyriological Center George Dossin)

Masson, Emilia. 1979. ‘La stèle de Karahöyük-Elbistan: nouvel examen’, in *Florilegium Anatolicum: Mélanges offerts à Emmanuel Laroche*: 225-241 (Paris: Boccard)

- 1980. ‘Les inscriptions louvites hiéroglyphiques de Köylütolu et Beyköy’ in *Kadmos* 19 (II): 106-122 (de Gruyter)

Melchert, Harold Craig. 1988a. ‘“Thorn” and “Minus” in Hieroglyphic Luvian orthography’, in *Anatolian Studies* 38: 29-42 (Cambridge University Press)

- 1988b. ‘Luvian Lexical Notes’, in *Historische Sprachforschung* 101 (II): 211-243 (Göttingen: Vandenhoeck & Ruprecht)

- 1993. *Cuneiform Luvian Lexicon* (Chapel Hill)

- 1994. *Anatolian Historical Phonology* (Amsterdam-Atlanta: Rodopi)

- 2002. ‘Covert Possessive Compounds in Hittite and Luvian’, in *The Linguist's Linguist: A Collection of Papers in Honour of Alexis Manaster Ramer* (ed. Fabrice Cavoto, München: Lincom)

- 2003. 'Language', in *The Luwians*: 170-210 (ed. H. Craig Melchert, Leiden: Brill)

- 2004 'Hieroglyphic Luvian Verbs in *-min(a)*', in *Per Aspera ad Asteriscos. Studia Indogermanica in honorem Jens Elmegård Rasmussen sexagenerii Idibus Martiis anno MMIV*: 355-362 (ed. A. Hyllested et al., Innsbruck)

- 2012 'Genitive case and possessive adjective in Anatolian', in *Per Roberto Gusma: Linguistica storica e teórica. Studi in Ricordo* (II): 273-286 (ed. V. Orioles, Udine: Forum)

- Forthc. ‘The position of Anatolian’, to appear in *Handbook of Indo-European Studies* (ed. A Garrett and M. Weiss, Oxford)

Meriggi, Piero. 1962. *Hieroglyphisch-hethitisches Glossar* (Wiesbaden: Harrassowitz)

Mittelberger, Hermann. 1962. Review of Laroche, E. *Les Hiéroglyphes Hittites. I: L'ecriture* (Paris 1960), in *Die Sprache* 8: 276-286 (Wiesbaden: Harrassowitz)

Morpurgo Davies, Anna. 1982/3. ‘Dentals, Rhotacism and Verbal Endings in the Luwian Languages’, in *Zeitschrift Für Vergleichende Sprachforschung* 96: 245-270 (Göttingen: Vandenhoeck & Ruprecht)

Oettinger, Norbert. 2014. ‘Die Indo-Hittite-Hypothesis aus heutiger Sicht’, *Münchener Studien zur Sprachwissenschaft*

67 (II): 149-76 (München: Kitzinger)

Rieken, Elizabeth, 2010a. 'Das Zeichen <sà> im Hieroglyphen-Luwischen', in *Acts of the VIIth International Congress of Hittitology, Çorum, August 25-31, 2008*: 651-660 (ed. Aygül Süel, Ankara: Anit Matbaa)

- 2010b. 'Das Zeichen <tá> im Hieroglyphen-Luwischen', in *Pax Hethitica. Studies on the Hittites and their Neighbours in Honour of Itamar Singer*: 301-310 (Wiesbaden: Harrassowitz)

Starke, Frank. 1985. *Die keilschrift-luwischen Texte im Umschrift* (StBoT 30, Wiesbaden: Harrassowitz)

- 1990. *Untersuchung zur Stammbildung des keilschrift-luwischen Nomens* (StBoT 31, Wiesdbaden: Harrassowitz)

Sturtevant, Edgar Howard. 1926. 'On the position of Hittite among the Indo-European languages', in *Language* 2 (I) (Washington DC: Linguistic Society of America)

- 1932. 'The development of stops in Hittite', in *Journal of the American Oriental Society* 52: 1-12 (New York)

Texier, Félix Marie Charles. 1839. *Description de l'Asie Mineure faite par ordre du Gouvernement français* (Paris: Firmin-Didot)

Waal, Willemijn. 2011. 'They wrote on wood. The case for a hieroglyphic scribal tradition on wooden writing boards in Hittite Anatolia', in *Anatolian Studies* 61: 21-34 (Cambridge University Press)

Yakubovich, Ilya. 2010. *Sociolinguistics of the Luvian Language* (Leiden: Brill)