**CaR vs. Ca-aR spellings in Hittite: evidence for a phonemic distinction between /s/ and /a/**

Alwin Kloekhorst & Erik Mens

**Abstract:** Inspired by earlier work on the distribution between the sign kān and the sign sequences k/g/qa-an in Hittite texts (Frotscher fthc.), this article investigates the Hittite usage of three more cuneiform signs of the structure CaR (pār, ḫal and tar) vis-à-vis their corresponding Ca-aR spellings (pa-ar, ḫa-al, tda-ar). It is argued that the distribution between CaR and Ca-aR spellings is not random, but etymologically determined: consistent spelling with CaR reflects PIE *CR* and *CeR(C)*, whereas alternation between CaR and Ca-aR reflects PIE *CoR*. This is interpreted as evidence for a synchronic phonetic/phonemic distinction between the two types of spelling: consistent CaR renders the vowel /s/, whereas alternation between CaR and Ca-aR denotes the vowel /a/.

1. Introduction

The cuneiform script that is used to write Hittite is a syllabic writing system that contains signs of the structure V (a, i, e, etc.), CV (la, mi, ku, etc.), VC (ak, ir, uš, etc.) and CVC (tar, liš, kur, etc.). The number of signs of the latter category is limited, however: there are many syllables for which no CVC sign exists. In such cases, these syllables can only be spelled CV-VC: e.g. /nas/ ‘and (s)he’ can only be spelled naaš because no sign **naš** exists in the Hittite version of the cuneiform script. Syllables for which a CVC-sign is available are often spelled CVC, but not always: for instance, we find the word ‘he sprinkles’ being spelled both pa-ap-pär-si and pa-ap-pa-ar-si, where the CVC spelling -pär- alternates with the CV-VC spelling -pa-ar-. It is usually assumed that in such words the CVC and CV-VC spellings are fully equivalent to each other, and both pa-ap-pär-si and pa-ap-pa-ar-si are in bound transcription therefore rendered as papparsi and phonologically interpreted as /pap:ar:si/.

The idea that CVC and CV-VC spellings are fully equivalent of each other was challenged by Tremblay (1999/2000: 220-1), however, who states that CVC-signs represent “extra-short vowels, jers or schwars”, i.e. CaC = [CaC], CiC = [CiC], CuC = [CuC]. His reasoning is partly graphic, partly etymological. For instance, he points out that some CVC signs “do not alternate with any other sign in some words”, giving har-ni-ik- ‘destroy’, pār-ta-a-u-yā-ar ‘wing’, etc. as examples, which indeed are never attested with the spellings **ha-ar-ni-ik-** and **pa-ar-ta-a-u-yā-ar-.** However, the consistent presence of CVC-spellings in these words could in principle be explained by the fact that the CVC signs ẖar (\(\text{ẖ}r\)) and pār (\(\text{p}r\)) are graphically more simple than the CV-VC sequences ḫa-ar (\(\text{ẖ}a-ar\)) and pa-ar (\(\text{p}a-ar\)), so that it would be more economical for a scribe to use the CVC sign than the CV-VC spelling. Another graphic argument given by Tremblay is that CVC spellings “almost never [alternate] with scriptio plena”. He exemplifies this with the word for ‘(goddess of the) earth’, which is spelled da-ga-an-zi-p⁰ as well as ta-ga-a-an-zi-p⁰, but never **da-ga-n-zi-p⁰**. This distribution is certainly interesting, but on its own not enough to prove Tremblay’s interpretation of the CVC signs as denoting a different type of vowel than corresponding CV-VC spellings. As far as we are aware, no one has therefore taken his claim seriously.

Nevertheless, Tremblay’s assertion that some words seem to show some kind of distribution regarding CVC and CV-VC-spellings matches an observation made in Kloekhorst 2014b: 238⁶⁶² regarding the relationship between signs of the value CaC and their corresponding Ca-aC sequence. There it was noted that, for instance, the verb ḥalzai- ‘to call’ is always spelled ḥal-z⁰ but never **ḥa-al-z⁰**, whereas the noun ḥāḥal- ‘greenery’ is spelled both ḥa-aḥ-ḥal(\(\text{-}\)) as well as ḥa-(a)-ḥa-ḥa-al(\(\text{-}\)).

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¹ The basic concept of this article was developed by Kloekhorst, who is also responsible for the majority of the text. Substantial parts of the article, especially regarding the treatments of ḥal vs. ḫa-al and tar vs. tda-ar, have been taken over and adapted from Erik Mens’ 2020 BA thesis ‘tar and ḫal in Hittite: a distinction between CVC and CV-VC spellings in native Hittite words’ (Leiden University; supervised by Kloekhorst). In our phonological interpretation of Hittite we adhere to the view that Hittite knew a length opposition in its consonant system (e.g. /t/ vs. /t/, cf. Kloekhorst 2021), possessed ejectives (e.g. /t’/), cf. Kloekhorst 2010: 202-7; Kloekhorst 2013: 127-31; Kloekhorst 2020), and contained the vowel /ɪ/, spelled e/i (cf. Kloekhorst 2014a: 60-4). We would like to thank Sasha Lubotsky, Zsolt Simon, Xander Vertegaal, and an anonymous reviewer for useful comments on an earlier draft of this article.
Although the possibility is mentioned that such a spelling difference may be phonologically relevant, on that occasion this idea was not pursued any further.

The first scholar to give a systematic treatment of a specific CVC sign and its corresponding CV-CV spelling is Michael Frotscher, who in a forthcoming article discusses the usage of the sign kán vs. the sign combinations ka-an, ga-an and qa-an in the spelling of inflected forms of verbs with a root-final k (also thematic verbs in -ke/-, including imperfectives in -ške/a/-).

His results are spectacular. He convincingly shows that finite forms (3pl.pres.act. -kanzi, 3pl.imp.act. -kantu, 3pl.pres.midd. -kantairi, 3pl.pret.midd. -kantatt(i), 3pl.imp.midd. -kantar) are in principle always spelled with the sign kán, whereas infinite forms (participle in -kant-, oblique stem of the verbal abstract in -kann-) are spelled both with kán and with k/g/ga-an.

There is one real exception, viz. the verb múga(e)² to ‘invoke’ which both in its finite and infinite forms never shows kán, but always -ga-an- as well as -ga-a-an.-³ As Frotscher argues, the interesting aspect of these distributions is that they correlate with the etymological origins of the vowel a in these formations. In the finite forms, the a reflects PIE *e that was coloured to a before *-nt- (-anzi < *-énti; -antu < *-éntu; -anta(ri), -antatt(i), -antar < *-énto); in the infinite forms, the a reflects PIE *o (-ant- < *-ónt-; -ann- < *-ótn-); and in múgae-³, the ō reflects *-oio- (hatriae-verbs go back to the structure *Co-jo/o-).² To these observations made by Frotscher, we may add the following: in the verb kánk¹ ‘to hang’, we find plene spelling of the strong stem in OS texts, ka-a-an-k² / ga-a-an-k², but non-plene spelling in MS and NS texts, ka-an-k⁶, ga-an-k⁶, kán-k⁵. Since the strong stems of hi-verbs etymologically go back to *o-grade formations, these forms of kánk¹ must reflect PIE *kónk⁻. Combining the data from the verb kánk¹ with Frotscher’s observations, we arrive at the following scheme (in which Ka represents ka/ga/qa):

<table>
<thead>
<tr>
<th>PIE *Ken[T]</th>
<th>PIE *Kon</th>
<th>PIE *Kojon</th>
</tr>
</thead>
<tbody>
<tr>
<td>CaR</td>
<td>kán</td>
<td>kán</td>
</tr>
<tr>
<td>Ca-aR</td>
<td>--</td>
<td>Ka-an</td>
</tr>
<tr>
<td>Ca-a-aR</td>
<td>--</td>
<td>Ka-an (OH)</td>
</tr>
</tbody>
</table>

² We are very grateful to Michael Frotscher for sharing the manuscript of his article with us, and for his permission to quote from this manuscript even though it has not yet been published.
³ All other exceptions to Frotscher’s distribution are NS 3pl.pres.act. forms of root verbs spelled -ga-an- rather than expected -kán-.
⁴ To our minds, these can be explained as having taken over the hatriae-class 3pl.pres.act. ending: cf. Kloekhorst 2008: 132 for the idea that in New Hittite times the hatriae-class inflection is becoming very productive.
⁵ Some scholars assume that the hatriae-class inflection reflects PIE *-eh₂-jəlo/-, which is irrelevant for the present discussion, however.
⁷ Consisting of a collection of computerized transliterations of some 3300 Hittite texts (containing ca 280.000 words).
⁸ Note that some of these lexemes show inflected forms in which the r is followed by a vowel and which are spelled (-pa-rV-) (e.g. *h₁̆-įh₁̆-pa-rV(-), *h₁̆-up-pa-rV(-)); these are irrelevant for the present discussion and therefore have not been taken into account.
el−n° (over 20x in CHD)); park(ije/a)−zi ‘to raise; to rise’ (pär-k°, pär-g°, pär-ak− (27x in CHD)); parku−zi ‘to make high’ (pär-ga-nu−, pär-qa-nu−, pär-ak-nu− (9x in CHD)); paragāšti ‘height’ (pär-ga-aš-ti−, pär-qa-aš-ti− (over 20x in CHD)); paragāštar ‘height’ (pär-ga-tar (4x in CHD)); parakešṭar ‘height’ (pär-k-ya-tar (1x in CHD)); paragāškeš/ā−zi ‘to grow tall’ (pär-ga-u-e-es-k° (6x in CHD)); parkiçanu−zi ‘to raise’ (pär-kija-ta− (2x in CHD)); parkešš−zi ‘to become high’ (pär-k-ki-iš− (4x in CHD)); parakeššar ‘height’ (pär-ke-eš-n° (1x in CHD)); parku−/pargau−/ ‘high’ (pär-k-u− (10x in CHD), pär-ga−u° (23x in CHD)); parkuqya− ‘to clear’ (pär-k-ya− (3x in CHD)); ṭparkuqya(ja)−, a building (pär-kuqal−(ja)− (5x in CHD)); parkuqallu− ‘pure’ (pär-ku-qa-al i° (1x in CHD)); parkuqantarji/a− ‘to become pure(? )’ (pär-k-ya-an-ta-ri− (1x in CHD)); parkue− ‘to be pure’ (pär-k-u-i° (3x in CHD)); parkui−/parkuqat−(i)− ‘pure’ (pär-k− (over 80x in CHD)); parkuije− ‘to be pure’ (pär-k-ju-i° (2x in CHD)); parkuqatar− ‘purification’ (pär-k-i° (4x in CHD)); parkuemar− ‘purification’ (pär-k-e-m[a]r (1x in CHD)); parkuqess−zi ‘to bet(com) pure’ (pär-k(-e)-es−, pär-k-ju-is− (14x in CHD)); parkuqess−zi ‘to become high’ (pär-k-ju-e-es−, pär-k-ju-iš− (2x in CHD)); parkunu−zi ‘to purify’ (pär-k-nu− (108x in CHD)); parmi −parni (Hurr. offering term) (pär-mi−), pär-ni− (7x in CHD), par-mi (KUB 32.84 iv 9°); parn− ‘house’ (pär-n° (35x in CHD)); TEGGAparname−, a tapestry (pär-n° (20x in CHD)); parnalli− ‘of the house’ (pär-na-al− (2x in CHD)); parna(y)iške−a− ‘to make into the property of the royal house’ (pär-na−an° (5x in CHD)); pars−zi ‘to flee, to escape’ (pär-as−, pär-s° (17x in CHD)); (NINDA) parša− ‘morsel’ (pär-s° (19x in CHD)); parsāce−zi ‘to crumble’ (pär-ša− (20x in CHD)); pars(e)čina− ‘check, buttlock’ (pär-ši−n° (2x in CHD), pär-s-e-n° (5x in CHD), pär-as−n° (1x in CHD)); paršēšar ‘crack’ (pär-s-e-šs-ar (1x in CHD)); parši(jana− ‘to break (imperf.)’ (pär-si-(ja)-an° (39x in CHD)); (LU) paršina− ‘leopard(−man)’ (pär-sa-n° (6x in CHD), pär-as−n° (2x in CHD), pär-as−na−n° (1x in CHD)); paršina(ce−zi ‘to crouch’ (pär-sa-na− (16x in CHD), pär-as−na− (ca. 90x in CHD), pär-as−sa-na− (8x in CHD)); paršnili− ‘in the manner of a leopard’ (pär-sa-ni−li (1x in CHD), pär-as−ni−li (1x in CHD)); paršunu−zi ‘to make flee away’ (pär-as−ša-nu− (2x in CHD)); (GIB) paršu− ‘leaf, foliage’ (pär-as-du-tu− (17x in CHD)); paršulḫa− ‘earthenware cup’ (pär-as-du-tu-uh-š° (5x in CHD)); paršulṭae−zi ‘to break into pieces’ (päršu−(u)-ul-la− (3x in CHD)); (NMINDA) paršulṭi− ‘crumb’ (pär-as−šu-ul-l° (over 50x in CHD), pärši-ul-l° (1x in CHD)); parsur− ‘cooked dish’ (pär-š (20x in CHD)); parši−za− ‘wards’ (pär-as−za− (14x in CHD)); parṭiwar− ‘wing, feather’ (pär-da-at-ta−a−u° (39x in CHD)); partiun−, a bird (pär-tu-u-ni− (3x in CHD)); šupparši− ‘sleepy’ (šu-up-pär-ya-an− (4x in our files)); (NINDA) parpašuša−, a breed (pär-paša−(su− (ca. 25x in our files)); zašiparqu−, a deity (zi/zā-pa-qr-ya− (over 20x in our files)).

The sequence pa-ar is much less often attested,3 we have been able to find the following 31 attestations: iš-pa-ar-ḫi (KUB 12.44 ii 30 (NS)) ‘I spread out’; iš-pa-ar-zi−zi (KUB 4.72 rev. 5 (OS)) ‘he escapes’; la-pa-ar-na-š (KUB 11.23 vi 4 (LNS), KUB 35.4 iii 16 (NS)) ‘Labarna; “Mq-pa-ar[n]a (Kuša 1.15 ovb. 10 (LNS)), personal name; la-a-pa-ar-ša (KUB 7.1 i 24 (OH/NS)) ‘a garden vegetable’; GTPap-pa-ar-nu-li (KUB 58.99 i 4 (NS)) ‘an aromatic woody plant’; pa-pa-ar-ar-ši (KUB 13.260 ii 40 (NS), pa-pa-ar-ar-ši (KUB 38.98 iii 20 (MH/MS), ‘an aromatic woody plant’; pa-pa-ar-ar-ši (KUB 13.164 i 6 (OH/NS), ‘a building’; pa-pa-ar-ar-šu-an (KUB 17.10 ii 29 (OH/MS), ‘a building’; pa-pa-ar-ar-šu-ya-an-zi (KUB 21.12 rev. 22 (NS), ‘a building’; pa-pa-ar-ar-iš[x]... (HKM 116 ii 25 (OH/NS)) ‘to sprinkle’; pa-pa-ar-ta−a−an− (KUB 13.241 rev. 19 (NH/NS), ‘a building’; pa−pa−ar−x−x− (KUB 22.61 i 5 (NS), ‘to apply (a medicine)’; pa−pa−ri−li−ti (ibid. i 19) ‘to apply (a medicine)’; pa−pa−li−ja (KUB 23.1 i 8, iv 27 (FR), ‘an aromatic woody plant’; pa−pa−li−ja−a−ši (HT 24 obv. 5 (NS)) ‘offence, crime’; pa−pa−ši (HT 1 i 60 (MH/NS)), ‘he breaks’; pa−pa−ša−nu−ut (KUB 32.121 ii 31 (NS)), ‘he breaks open’; URTupa-pa-ar-la−a (KUB 57.108 iii 16 (NS), ‘a toponym; la−pa−ar−ta (KUB 3.4 iii 73 (with gloss wedge), 76 (NH/NS); KUB 16.17+ iii 31 (NH/NS), KUB 14.4 i 8, 11, 17 (NH/NS)) ‘he ruled, governed’; du−ú−du−du−ar−ša (KUB 9.6 iv 25 (MH/NS)), ‘a building’; du−ú−du−du−ar−ša (KUB 35.40 iv 6 (‘ša) (NS), KUB 35.41 iv 2 (NS), ‘name of a Luwian ritual.4

3 The sign PAR = UD.
4 The sequence ba-ar only occurs in the name/title labarna−, tabarna−, and will be left out of consideration here.
5 Another possible occurrence of the sequence pa-ar is cited by Grodek, Hagenbuchar & Hoffmann (2002: 139) for VSNF 12.95 rev. 2, which they translate as “["]p-“ar[“]. Note, however, that according to Jared Miller apud Hetkonk (v. 1.993), VSNF 12.95 is a join with IBOT 2.128 (CATH 446.2), on the basis of which it becomes clear that its line rev. 2 rather should be read [...] du-ya-ar[-ni-iz-ci [...] (cf. dupls. KUB 41.8 i 2 and KUB 10.45 i 29).
The number of attestations of the sequence pa-ar (31 occurrences) is extremely low when compared to the more than 3400 occurrences (in our files) of words spelled with pár: the sequence pa-ar thus takes less than 1% of the total number of attestations containing pár or pa-ar. As was mentioned above, one could argue that this distribution reflects the fact that the CV-C sign pár (Ḫ) is graphically much more simple than its CV-VC counterpart pa-ar ([Ḫ][Ḫ]). One could then assume that pár and pa-ar would denote the exact same phonetic sequence, but that in the far majority of cases the Hittite scribes preferred to use the graphically simplistic sign pár, whereas the graphically more complex sign combination pa-ar was used only rarely, as a marginal spelling variant of pár. If this indeed were the case, we would expect the few occurrences of pa-ar to be randomly distributed across the attestations of words with a syllable (-)par(-). However, this is not what we find. If we look at the attestations in which the sign sequence pa-ar is used in spelling, we clearly see that they cluster in certain lexemes: especially the verbs papparš- ‘to sprinkle’ and tapar- ‘to rule’ remarkably often show attestations that are spelled (-)pa-ar(-), much more often than can be accounted for by chance. It is therefore worthwhile to investigate whether the spelling pa-ar may mark a phonetic sequence that is distinct from pár. This can be done by investigating whether the two different spellings correlate with a specific etymological origin of the syllable they denote.

2.1 Etymologies of words spelled pa-ar
First, we will dive more into the details of the forms that show a pa-ar spelling, with a special attention to their etymologies.

**iš-pa-ar-hi** (KUB 12.44 ii 30 (NS)) ‘I spread out’: This word also occurs as iš-pár-ah-hi (KUB 7.57 i 8 (OH/NS)), spelled with pár.\(^{11}\) Since the verb išpär- / išpar- is a hi-verb, we would morphologically expect its strong stem forms to reflect an *e-grade stem *spór-. This means that iš-pa-ar-hi must go back to *spör-hše. Although we would expect *spör- to have yielded OH išpär-, with a long ā (as possibly attested in [i]š-pa-ar-hu-ul[n] (KUB 46.55 obv. 5 (NS))\(^{12}\)), in the post-OH period long ā was shortened in non-final closed syllables,\(^{13}\) yielding the form išpartihi, with short ā. In the verb’s weak stem forms we expect the zero-grade stem *spr-, for instance in 3pl.pres.act. iš-pa-aran-zi * spr-enti, which is also spelled iš-pår-ra-an-zi, always with pár (over 10x in our files). Zero-grade is also expected in the derivative išparnu- < *spr-neu-, which is always spelled iš-pår-nu- (8x in our files), with pár.

**iš-pa-ar-zi-i** (KUB 4.72 rev. 5 (OS)) ‘he escapes’: The verb išpart-{i} is mi-conjugated, so we would morphologically expect its strong stem to reflect an *e-grade stem *spérđ-. This means that iš-pa-ar-zi-zi must go back to *spérđ₃-ti, showing the development *eRC > aRC. Note that all other attestations of this verb (over 40x in our files) are spelled iš-pår-C₃, with the sign pár. Most of these are strong stem forms reflecting *spérđ₃ (including the 3sg.pres.act. form iš-pår-za(-az)-zi). A zero-grade stem *sprd₃- may be present in the derived stem išparti(e)a- < *sprđₑje(o)-, which is spelled iš-pår-ti-, with pár.

**la-pa-ar-na-aš** (KUB 11.23 vi 4 (LNS), KUB 35.4 iii 16 (NS)) ‘Labarna’; **la-pa-ar-na[a]** (KuSa 1/1.5 obv. 10 (LNS)), personal name: These forms belong to the lexeme labarna-, title of the king, which is in the vast majority of cases spelled la-ba-ar-na- and la-bar-na- (or la-pår-na-). Since this word is a loanword,\(^{14}\) we cannot compare its synchronic shape to its etymological predecessor, and it therefore cannot be used for the present investigation.

**la-a-pa-ar-ša** (KUB 7.1 i 24 (OH/NS)) ‘a garden vegetable’: The exact meaning of this word, which occurs only once, is unknown, and it therefore does not have an etymology. It cannot therefore be used in this investigation.

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\(^{11}\) Compare also the corresponding preterite forms iš-pår-ḫu-un (KUB 15.34 i 41, 42 (MH/MS)) and iš-pår-ra-ah-hu-un (KUB 7.60 ii 2 (NS)).

\(^{12}\) We would like to thank an anonymous reviewer for pointing out to us the existence of this form.


\(^{14}\) Cf. Kloekhorst 2008: 520-1 for a discussion.
pa-ap-pa-ar-si (KBo 13.260 ii 40 (NS)), pa-ap-pa-ar-a-š-zi (KBo 39.8 ii 20 (MH/MS)), pa-ap-pa-ar-aš-ša-an-zi (KBo 13.164 i 6 (OH/NS)), pa-ap-pa-ar-šu-ua-an-zi (KUB 17.10 ii 29 (OH/MS)), pa-ap-pa-ar-šu-ua-an-zi (KUB 21.12 rev. 7 22 (NS)), pa-ap-pa-ar-iš-x [...] (HKM 116 ii 25 (OH?/MS)): All these forms belong to the verb papparši 'to sprinkle'. Most of them occur spelled with pár as well: 3sg.pres.act. pa-ap-pár-si, pa-ap-pár-ša-zi, 3pl.pres.act. pa-ap-pár-(aš-)ša-an-zi, inf. pa-ap-pár-šu-ua-an-zi (see CHD P: 98 for attestation places). In the case of the infinitive papparšuanyanzi, we find the lines with pa-ar two lines below the spelling with pár (KBo 21.12 rev. 20 and 22, respectively). Since papparši is an original hi-verb, we would morphologically expect *o-grade in its strong stem, *pV-pör-si, whereas in its weak stem we expect zero-grade, *pV-prs. Interestingly, the majority of forms spelled with pa-ar are strong stem forms. In forms where we would morphologically expect the weak stem, we find in principle always the spelling with pár (e.g. part. pa-ap-pár-(aš)-ša-an-ti < *pV-prs-önti; imperf. pa-ap-pår-as-ke-a < *pV-prs-skö-öti). The only real exception is 3pl.pres.act. pa-ap-pa-ar-ša-an-zi (KBo 13.164 i 6 (OH/NS)): from an etymological / morphological perspective we would expect zero-grade here, *pV-prs-önti. However, since Hittite shows many instances of levelling of verbal paradigms through spread of their strong stem,16 it cannot be excluded that pa-ap-pa-ar-ša-an-zi, which is found in a New Hittite copy of an Old Hittite composition, is a form that has undergone this levelling and thus contains a strong stem with original *o-grade.

pa-ar-ta-ma<an> (KBo 13.241 rev. 19 (NH/NS)) ‘? ’: This word, which occurs only once, is a clear Luwianism (gloss wedge + Luw. part. suffix) and cannot therefore be used in this investigation.

pa-ar-x-x-x (KUB 22.61 i 5 (NS)), pa-ar-re-en-ti (ibid. i 6), pa-ar-ri-it-ti (ibid. i 19) ‘to apply (a medicine)’: It is interesting that all three attestations of this verb are spelled with pa-ar. Since this verb is Luwian (cf. the endings), it cannot be used in this investigation.

pa-ar-li-ju (KBo 23.1 i 8, iv 27 (fr.) (NH/NS), KUB 45.79 rev. 7 3 (NS)), pa-ar-li-ja-aš (HT 24 obv. 5 (NS)) ‘offence, crime’: This word, which as CHD P: 154 notes, ‘is never written w. pár.’, is a Hurrian loan, and therefore of no use in this investigation.

pa-ar-si (HT 1 i 60 (MH/NS)) ‘he breaks’: The verbal root ‘to break’ is attested with several different finite stems: a medio-passive root stem parši(e/a/)(e)(e)(e)/ (4 times); a medio-passive -i(e/a) stem parṣ̌i(e/a)/ (90+ times); an active mi-inflected root stem parṣ̌i(e/a)/ (2 times); an active mi-inflected -i(e/a)-stem parṣ̌i(e/a)/ (90+ times); and an active hi-conjugated stem parṣ̌i(e/a)/ (2 times). The medio-passive forms and active mi-inflected forms are consistently spelled with pár. From a morphological point of view, we would expect these stems to contain either *e-grade (parṣ̌i(e/a)/ < *h₂brs -(t)i; parṣ̌i(e/a)/ < *h₂brs -(t)i; parṣ̌i(e/a)/ < *h₂brs -(t)i) or zero-grade (parṣ̌i(e/a)/ < *h₂brs -(t)i; parṣ̌i(e/a)/ < *h₂brs -(t)i). A spelling with the sign sequence pa-ar is only found in a hi-conjugated form, 3sg.pres.act. pa-ar-si (HT 1 i 60 (MH/NS)). In fact, together with 3sg.pres.act.

15 An anonymous reviewer points out that pa-ap-pa-ar-šu-ua-an-zi in KBo 21.12 rev. 22 is at the beginning of the line, while pa-ap-pär-šu-ua-an-zi in ibid. 20 is at the end of the line, so that the form with pár may depend on the shorter space available.
16 This is best seen in mi-conjugated verbs, like OH šašanzi >> NH šašanzi ‘they sleep’, but compare also a case like hi-conjugated OH ušteni >> MH ušteni ‘you see’.
17 We cannot be always certain from which finite stems the infinite forms are derived, which means it is difficult to etymologize them, and we will therefore leave them out of consideration. Note, however, that they are always spelled with pår: 9 times pår-si; 60+ times pår-si. Note that the forms spelled pa-ra-ša-an-ti that are analysed by Puhvel (HEP Pa: 154) as participle forms of parši ‘to break’, are in CHD P: 138-9 convincingly interpreted as belonging to a different lexeme. They are therefore not taken into account here.
pa-şar-ša-nu-ut (KUB 32.121 ii 31 (NS)) ‘he broke open’: This form belongs to the verb paršmu-zi ‘to break open’, which is a causative to the verb parš(i)(e/a) ‘to break’, treated above. Next to this attestation spelled pa-ar, we find one other attestation spelled pár-ša-nu-ut (KUB 33.120 ii 36 (NS), with pár. From an etymological-morphological point of view, we would expect -nu-causatives to contain zero-grade in the root, i.e. paršnu- < *b'rs-neu-. However, since -nu-causatives are very productive and can be formed from any synchronic stem, it cannot be excluded that the form pa-şar-ša-nu-ut is built on the hi-conjugated stem parš- that is treated in the preceding lemma and that is spelled with the sequence pa-ar, too.

URU ta-pa-ar-la-a (KUB 57.108 iii 16 (NS)), a city: Since both the meaning and etymology of this toponym are unknown, it is useless for this discussion.

ta-pa-ar-ta (KUB 3.4 iii 73 (with gloss wedge), 76 (NH/NS), KUB 16.17+ iii 31 (NH/NS), KUB 14.4 i 8, 11, 17 (NH/NS)) ‘he ruled, governed’: Besides these forms with pa-ar, this verb is attested with the spelling pár as well (1sg.pret.act. ta-pár-ha, 3sg.pret.act. ta-pár-ta, etc.). Since it is a Luwianism (cf. the use of gloss wedges and the 1sg.pret.act. form ta-pár-ha with the Luwian ending -hā), it cannot be used in this investigation.

du-ū-pa-du-pa-ar-ša (KUB 9.6 iv 25 (MH/LNS)), du-pi-du-pa-ar-ša (KUB 35.40 iv 6 ([-ša]) (NS), KUB 35.41 iv 2 (NS)), name of a Luwian ritual: This word, which occurs only once, is a Luwianism as well, and therefore cannot be used.

We can conclude that the spelling pa-ar in the vast majority of cases alternates with pár (iš-pa-ar-hi – iš-pár-ah-hi, iš-pa-ar-zi-zi – iš-pár-zaz(az)-zi, pa-ar-nu-ul-li – pár-nu-ul-li, pa-ap-pa-ar-si – pa-ap-pár-si, ta-pa-ar-ta – ta-pár-ta, etc.). Nevertheless, its common occurrence in just a few lexemes makes clear that pa-ar is not a random alternative spelling for pár. Although the spelling pa-ar is clearly mostly attested in foreign words or borrowings (from Luwian and Hurrian), we find some genuine Hititite words that show it, too. In these words, the vowel of the syllable spelled pa-ar (~ pár) in most cases etymologically goes back to a PIE *o: iš-pa-ar-hi ‘I spread out’ < *spó̯r-ḥ2e; pa-ap-pa-ar-si ‘he sprinkles’ < *pV-pórs-ei;18 pa-pa-ar-as-hu-un ‘I sprinkled’ < *pV-pórs-ḥ2e; pa-ap-pa-ar-ša-u-ya-an-zi ‘to sprinkle’ < *pV-pórs-uen-ți; pa-ša-ři ‘he breaks’ < *b'órs-ei. There is only one case where from a morphological point of view we would expect an etymological *e: iš-pa-ar-ziz-hi ‘he escapes’ < *spérd₂. Ti. In two other cases we would expect an etymological zero-grade, pa-ap-pa-ar-ša-an-zi ‘they sprinkle’ < *pV-prs-ęnti and pa-ar-ša-nu-ut ‘he broke open’ < *b'rs-néu-t, but in both cases it cannot be excluded that these forms have secondarily received an *o-grade stem.

2.2 Etymologies of words consistently spelled pár
The preponderance of etymological *o-grade formations among the words spelled with pa-ar (~ pár) is remarkable when compared to the words that are consistently spelled with pár. Here we find two main groups.

1. The first group consists of words in which pár spells a syllable containing a vowel that is the result of a vocalization of *r in an original zero-grade formation (reconstruction of ablaut grade on the basis of morphological expectations):19 háppar ‘business, trade’ < *h₂ dép-r₂; háppar ‘bowl’ < *H(V)up-r₂; isparnur₂ ‘to scatter’ < *spr-neu-; parhy₂ ‘to chase, to hunt’ (in weak stem forms) < *b'ry₂h₂r₂; parḫanu₂ ‘to make gallop’ < *b'ry₂h₂r₂-neu; parḫeššar ‘haste’ < *b'ry₂h₂r₂-ḫ₁š₂h₁-r₂; park₂ ‘to raise; to rise’ (in weak stem forms) < *b'ry₂g₂-neu; pargatar ‘height’ < *b'ry₂g₂-ōt-r₂; parkešš₂

18 The 3sg.pres.act. form pa-ap-pa-ar-as-zi shows introduction of the mi-ending -zi. Yet, its stem is underlyingly still reflecting the *o-grade of the hi-conjugation.
19 See Kloekhorst 2008: s.vv. for etymologies.
‘to become high’ < *h₁gy₁-eh₁sh₁-; parkuešš₂ < *parkešh₂; ‘to be (come) pure’ < *prk₁-éh₁sh₁-; parkunu₂ < *parkešn₁u₂; ‘to purify’ < *prk₁-neu₁; paršk₂ < *paršku₂; ‘to flee, to escape’ (weak stem forms) < *h₁gy₁-; (NINDA) parša₁ < *parška₁; ‘morsel’ < *h₁gy₁-; paršne₁ < *paršnu₁; ‘to crumble’ < *h₁gy₁-o-; paršesšér < *paršesšer₂ ‘crack’ < *h₁gy₁-éh₁sh₁-; (A) paršna₂ < *paršna₂ ‘leopard(-man)’ < *prsync₁-; paršna₂ < *paršna₂; ‘to crouch’ < *prsync-eo₁-; paršniti ‘in the manner of a leopard’ < *prsn₁-; paršnu₂ < *paršnu₂ ‘to make flee away’ < *h₁gy₁-neu-; partūgar < *partūgar₂ ‘wing, feather’ < *proH₁-o-ur₁; partūni₁ < *partūni₁, a bird < *proH₁; supparyang < *sup-ur₁-yent₁.

2. The second group consists of words in which the vowel of the syllable spelled pár reflects an original *e-grade, which has been coloured in the sequence eRC.²⁰ parḫ₂ < *parḫ₂ ‘to chase, to hunt’ (in strong stem forms) < *h₁gy₁-erh₂₁; parḫ₂ < *parḫ₂ ‘to raise; to rise’ (in strong stem forms) < *h₁gy₁-erh₂₁; parḫ₂ < *parḫ₂ ‘to high’ (whereas its weak stem should have had zero-grade, *sprh₂₁-). Of its in total four (secured) occurrences, two are strong stem forms, which both are spelled with pár: 2sg.pres.act. iš-pár-ra-at-ti (KUB 21.27 iii 30 (NH/NS)) and 1sg.pret.act. iš-pár-ra-ah₂₁-hu₂₁-un (KUB 17.27 ii 12 (MH/NS)).²⁵ However, since we are dealing with two forms only, it could easily be coincidental that no strong stem form spelled *iš-pa-ar-ra- is attested. This verb therefore does not alter the overall distribution regarding pár vs. pa-ar.

2.3 Conclusions on pár vs. pa-ar

We may thus conclude the following: consistent spelling with pár correlates with the etymological sequences *Pr₁ and *Pér₁[C], whereas a spelling that alternates between pa-ar and pár in the majority of cases correlates with the etymological sequence *Póρ₁ (only once do we find that pa-ar spells an etymologic sequence *Pér₁[C]). The plene spelled sequence pa-a-ar- (attested once, in [i]š-pa-a-ar-hu₂₁[n] (KUB 46.55 obv. 5 (NS))) reflects the original, Old Hittite, outcome of *Póρ₁.

<table>
<thead>
<tr>
<th>PIE *Pr₁</th>
<th>PIE *Pér₁[C]</th>
<th>PIE *Póρ₁</th>
</tr>
</thead>
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<tr>
<td>CaR</td>
<td>pár</td>
<td>pár</td>
</tr>
<tr>
<td>Ca-aR</td>
<td>--</td>
<td>1.²¹ pa-ar</td>
</tr>
<tr>
<td>Ca-a-aR</td>
<td>--</td>
<td>pa-a-ar</td>
</tr>
</tbody>
</table>


²⁰ See Kloekhorst 2008: s.vv. for etymologies.
²¹ The adjective parku₁ / parquₐ₁- is usually reconstructed as *h₁gy₁-(e)u₁- (thus, e.g., Kloekhorst 2008: 637) on the assumption that *h₁gy₁-(e)u₁- should have yielded Hitt. *perku₁ / perkau₁-, with the development *erCV > erCV. However, all words showing a synchronic sequence erCV may be explained differently: e.g. ku₂rzi ‘he cuts’ may have an analogical e after ku₂rmi; ku₂ršu₂₁ ‘I cut’ may reflect *e-grade, *k₁e₂̆-r₁-s₁- (the expected ablaut grade in s-arist); sēr₂₁- ‘an object to rinse feet with’ may reflect *sēr₂₁h₁-; etc. This opens up the possibility to assume that *erCV regularly yielded arCV, just like erCC > arCC (Kloekhorst plans to expand on this topic elsewhere). Since other u-stem (and i-stem) adjectives regularly show e-grade in their root (e.g. tēp₂u₁ / tēpₐ₁u₁-), it has now become morphologically attractive to assume that parku₁ / parquₐ₁- had *e-grade, too: hence *h₁gy₁-(e)u₁-.
²² Although parku₁ / parquu₁- is usually reconstructed as *pyrk₁-(e)j₁- (thus Kloekhorst 2008: 638-9), for reasons set out above (footnote 21), a reconstruction *pérk₁-(e)j₁- seems now preferable.
²⁴ Although in Kloekhorst 2008: 684 this adverb was reconstructed as *py-r₂-t₂, it now seems preferable to reconstruct *pér-t₂ (with the rule *erCV > arCV as discussed in footnote 21).
²⁵ The other two attestations are weak stem forms: 3pl.pres.act. iš-par-ra-an-zi (KBo 6.34 iii 25 (MH/NS)), 3pl.imp.act. iš-par-ra-an-du (KBo 6.34 iii 28 (MH/NS)). Here we would etymologically expect zero-grade, *sprh₂₁-, and their spelling with pár is thus in line with the other words where consistent spelling with pár correlates with an etymological zero-grade PIE *Pr₁.
3. **ḥal vs. ḫa-al**

In our files, the sign ḫa-al occurs with some 1100 times in phonoetically spelled words. The majority of these show spelling with ḫa-al only, never with ḫa-al (words that occur only once or twice have been left out): ḫallanna[ī]́- ‘to lay waste’ ([ḥa]-la-an-ī́ (3x, cf. HED 3: 13)); *ḥallapuanza*? (*ḥa-la-pu-ya-an-za* (3x, cf. HW2 Ḫ: 19)); ḫālāḫut(m)ār- ‘corner’ (*ḥa-la-tu-du-(um-)m-a-ri-* (over 30x in our files)); ḫāllītja-, an animal (*ḥa-la-li-ja-* (5x, cf. HW2 Ḫ: 38)); ḫāllīt(ja)ri-, a cult-singer (I[H]a-li-(ja)-ri-* (over 140x in our files)); *ḥalki* ‘grain (deity)’ (I[H]a-li-ki-* (over 150x in our files)); *ḥalkuššar / ḫalkuššān*- ‘supplies’ (*ḥa-la-ku-* (over 30x in our files)); *ḥalmaššuitt*- ‘throne (deity)’ (‘ḥal-mašš-ur-it-ī́* (over 70x in our files)); ḫu[l]a[p]a- ḫalpa- ‘Aleppo’ (UR[ī] ḫal-pā̀ (over 10x, cf. Del Monte & Tischler 1978: 71)); UR[ī] ḫalpīmāna- ‘man from Aleppo’ (UR[ī] ḫal-pu-u-ma- (1x, KBo 3.27 obv. 30 (OH/NS))); ḫullu[I]a-e- ‘to fight’ (*ḥa-la-tu-ya-i-* (5x, cf. HW2 Ḫ: 86-7)); ḫu[l]a[n]-, a vessel (*ḥa-la-ni-* (4x in our files)); ḫu[l]a[n]ššī-, an oracle bird (*ḥa-la-aššī-* (4x in our files)); ḫa[l]zāt*- / ḫa[lt]- ‘to call out’ (I[H]a-zā́t (over 600x times in our files)); tuḫa[l]zi-̀, a certain type of offering (tu-[u]-ḥa-[z]ī-̀ (4x in our files)).

The sign combination ḫa-al, however, is much less often attested: we have found only the following 18 cases: nom.-acc.sg. ḫa-[a]-ḥa-al (KBo 17.1 iv 27 (OS), KBo 17.3 iv 24 (OS)); ḫa-[a]-ḥa-al (KUB 39.61 i 12 (NH/NS)), dat.-loc.sg. [ḥa-aḥ-ḥa]-al-li (KUB 17.15 ii 2 (NS)) instr. ḫa-aḥ-ḥa-al-li-it (KBo 17.3 iv 27 (OS)), ḫa-[a]-ḥa-al-li-it (KBo 17.3 iv 30 (OS)), erg.sg. ḫa-[a]-ḥa-al-la-an-za (KBo 13.248, 12 (NH/NS)) ‘greeneries, bush’; ḫu[l]a-[a]-ḫa-al-[a]-li-es (KBo 20.68 i 7 (MH/MS)) ‘greeneries women (nom.pl.)’; nom.sg. ḫa-[a]-la-ra-aś (KBo 5.9 iv 7 (NH/NS), KUB 19.50 iv 18 (NH/NS)), a deity; ḫa-[a]-al-z[a]-ni-it (KUB 7.55 obv. 7 (NS)), a body part (instr.); ḫa-[a]-ḥa-[a]-pa-an-x (HKM 111, 21 (NH/NS)), personal name; ḫa-[a]-ḥa-al-pu-u-tī (KUB 28.75 ii 1 (OS)), a wooden object (dat.-loc.sg.); acc.plc. ḫ[al]a-[a]-l-[u]-u-[a]-u-uś (KUB 3.8 iii 4 (OH/NS)) ‘hollow’; 1sg.pres.act. te-[a]-ḥa-[a]-l-[a]-li-[a]-uš-ke-mi (KUB 33.65 iii 4 (OH/NS)), 3sg.pres.act. te-[a]-ḥa-[a]-ḥa-al-[a]-li-[a]-uš-ke-[a]-zi (ibid. 2) ‘?’; nom.sgc. [te-eš]-ḫa-[a]-l-[a]-l-[e]-iš (KUB 13.87, 5 (OH/NS)), acc.sgc. [t]e-eš-[a]-ḫa-al-li-in (KUB 36.35 iv 10 (LNS)) ‘sleepy’.

Just as in the case of pār vs. pa-ar, we see also here that the number of attestations of the Ca-Ar spelling ḫa-al (18 occurrences) is extremely low when compared to its corresponding Ca-R spelling ḫal, which shows more than 1100 occurrences in our files: the sequence ḫa-al thus represents not more than 1.4% of the total of number of attestations containing ḫal or ḫa-al. Also here, if ḫal and ḫa-al would express the exact same phonetic sequence, we would expect the occurrences of ḫa-al to be randomly distributed. However, this is not what we find: especially the fact that the lexeme ḫăḥhalla- ‘greeneries, bush’ shows multiple attestations with ḫa-al is telling.

### 3.1 Etymologies of words spelled ḫa-al

In order to investigate whether the spellings ḫal and ḫa-al represent phonetically different sequences, we will first treat all words spelled ḫa-al in more detail.27

**ḥăḥhalla-** ‘greeneries, bush’: Next to the seven attestations spelled -ḥa-al- that were cited above,28 this word is also twelve times written -ḥal-29 and thus shows an alternation between the two. The etymology of this word is not fully clear, but on the basis of a structural resemblance to the noun mēnaaI- ‘coarsely ground meal’ < *mē-molh*I- (thus also independently?), it was proposed in Kloekhorst 2014b: 257 that ḫaḥhalla- goes back to a similar formation, i.e. *Ḥē-HolH-*. If this is correct, the second a in ḫaḥhalla- would go back to PIE *o*.

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26 The form [...]I-li-ja-ri (KUB 34.50, 3 (NS)) is read by Puhvel (HED Ḫ: 30) as [I[H]a-al]-li-ja-ri, i.e. a dat.-loc.sg. form of the noun I[H]a-lijir- ‘cult-singer’ (thus also independently(? E. Rieken et al. (ed.), hethiter.net/ CTH 370.18 (TX 2009-08-25): “[... ḥa-[a]-l-[a]-l-[a]-r]”. If correct, it would be the only occurrence of this word spelled ḫa-al-: all other attestations, more than 140 in our files, are spelled ḫal-ir-, with ḫal. We are therefore reluctant in taking the broken form [...]I-li-ja-ri as belonging to this lexeme, and we will leave it out of consideration for the present paper.

27 Leaving the personal name ḫa-[a]-pa-an-x (HKM 111, 21) out of consideration.

28 To which can be added the one attestation of the derivative MUNUS ḫaḥhallaI-', which, too, is spelled -ḥa-al-.

29 See the attestations gathered in Kloekhorst 2014b: 257923.
Ḫallara-, a deity: Next to the two attestations spelled ḫa-al- mentioned above, this theonym occurs 19 times spelled ḫal- as well, cf. van Gessel 1998: 70-1 for attestations. Since we are dealing with an onomastic form of an unknown origin, it cannot be used for etymological purposes.

Ḫalhalzana-, ḫalhanzana-, ḫalḥaldāna-, a body part: Next to the one attestation [ḫal’-]ḫa-al-ra-ni-it written with -ḫa-al- that was mentioned above, this word is in its other three attestations written with ḫal (see HED 3: 22). The alternation between the three stems ḫalhalzana-, ḫalhanzana- and ḫalḥaldāna- indicates that this word probably is of a non-IE origin, which means that it cannot be used in the present discussion.

Gisḫalputi-, Gisḫalmuti-, a wooden object exhibited in cult: Next to the one attestation Gisḫa-al-pu-u-ti spelled with ḫa-al- that was mentioned above, this word is in its other eight occurrences spelled ḫal- (see HED 3: 44 for attestations). The alternation between ṁ and m points to a non-IE origin of this word (probably Hattic, cf. HW² Ḫ: s.v.), which makes it useless for the present discussion.

Ḫalluwaš (acc.pl.c.) ‘hollow’: Besides the one form spelled [ḫ[a-a]l-]lu- that was mentioned above, the adjective ḫalluwa- ‘hollow, deep’ is usually spelled ḫal-lu-(u-)wa-, with ḫal (over 25x in our files). The etymology of this word is not fully clear. Puhvel (HED 3: 49) connects it with Lat. alvus ‘bowels, womb’, alveus ‘hollow, cavity’, which would point to a stem *ḫeIlu-. Note, however, that the gerundive -l- of Hitt. ḫallua- implies an earlier *-Ilu-. Moreover, Lat. alvus is generally derived from a root *heui- (through metathesis, cf. e.g. Schrijver 1991: 43). This makes it difficult to draw any conclusions.

teḫalhališke/a- ‘?': This verb, which occurs only twice, is in both its attestations spelled with -ḫa-al-. Since its meaning is unclear, we cannot know its etymology, which means it is of no use for the present discussion.

Tešhalli- ‘sleepy’: This adjective, which in both of its attestations is spelled with -ḫa-al-, is a derivative in -alli- of the noun tešḫa- ‘sleep’, which reflects *dēh₁-sh₂o-. The exact origin of the suffix -alli- is unclear, but there can hardly be any doubt that the initial part of tešhalli- reflects *dēh₁-sh₂o-l̂o, and that the syllable that is spelled with -ḫa-al- goes back to *-he₂ol-.

We can conclude that in practically all words that show one or more spellings with ḫa-al, this spelling alternates with ḫal: ḫa-a-ah-ḫa-al ~ ḫa-a-ah-ḥal, ḫa-al-la-ra- ~ ḫal-la-ra-, [ḥal-]ḫa-al-za-n̂ ~ ḫal-ḫal-zu-n̂, ḫa-al-pu- ti ~ ḫal-pu-ti, ḫa-al-lu-ti-ya ~ ḫal-lu-(u)-ya- (teḫalhališke/a- and tešhalli- are attested too few to be certain whether their ḫa-al spelling would alternate with ḫal or not). However, ḫa-al is not just a random alternative spelling to ḫal that just happens to be used once in a while: especially the fact that in the attestations of ḫāhhall- the relative number of occurrences of the spelling ḫa-al is much higher than can be attributed to chance (7 x ḫa-al vs. 12 x ḫal yields a ratio of 36%, which is much higher than the 1.4% of overall attestations of ḫa-al vs. ḫal), indicates that its usage is not random. In the two words whose etymologies are relatively secure, the vowel of the syllable spelled ḫa-al (~ ḫal) reflects a PIE *o: ḫāhhall- ‘greenery, bush’ < *H₂-HolH- (?) and tešhalli- ‘sleepy’ < *dēh₁-sh₂o-l̂o. This is strikingly reminiscent of the fact that the vowel spelled by pa-ar ~ pär and k/g/q-a-an ~ κάν goes back to PIE *o, as well.

3.2 Etymologies of words consistently spelled ḫal
If we now look at the origins of the words that show a consistent spelling with ḫal (taking into account only genuinely Hittite words of an Indo-European origin), we see the following:

Ḫallanna/t- ‘to lay waste’: This verb looks like an imperfective in -anna/t- of an unattested root verb *ḫall- that has been connected with the PIE root *h₂elh₁- (Gr. δλάμει ‘to destroy’, Lat. ab-oleō ‘id.’), cf. Kloekhorst 2008: 271-2. Since -anna/t- is usually attached to the weak stem of a verbal

root, we would morphologically expect zero-grade, *ḫ3ḥ1r-, but other options certainly cannot be excluded.

Ḫalhal tumar- ‘corner’: This word is generally seen as containing a reduplication of a root ḫal- that is connected with the root of Hitt. ḫalije/a/;2 ‘to kneel down’, and which seemingly reflects *h₂ʒe₁. However, the exact origin of the formation of Ḫalhal tumar- is unclear, so that we cannot decide whether the syllables written with the ḫal-signs should be reconstructed with PIE *e₁-, *o₁-, or zero-grade.

Ḫalkuēššar / Ḫalkuēšn- ‘supplies’: This word is generally connected with the PIE root *h₂ʒe₁g₁h₁. (Skt. ārhāti ‘to earn’, Gr. ἀλφα ‘to obtain’, Lith. algā ‘salary’). Since the suffix -ēššar / -ēšn- usually combines with zero-grade roots, we can reconstruct this word as *h₂ʒe₁g₁h₁/ēh₁sh₁-r/n-; cf. Kloekhorst 2008: 275.

Ḫalzai/ Ḫalzi- ‘to call out’: This verb has been connected by Puhvel (HED 3: 63f.) with Goth. lapon ‘to call, from’, from a PIE root *h₂ʒe₁t-, which implies that Ḫalzai- reflects a formation *h₂ʒt-oi- (Kloekhorst 2008: 277) with a zero-grade root *h₂ʒt-.

All words of this group that have a (reasonably) secure IE etymology, show that their syllable that is consistently spelled with the sign ḫal reflects an etymological sequence *H₁.

3.3 Conclusions regarding ḫal vs. ḫa-al
We may thus conclude the following: consistent spelling with ḫal correlates with the etymological sequence *H₁, whereas a spelling that alternates between ḫa-al and ḫal correlates with the etymological sequence *Hol. Note that a plene spelled sequence ḫa-a-al is unattested in Hittite.

<table>
<thead>
<tr>
<th>PIE *H₁</th>
<th>PIE *Hol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ḫal</td>
<td>ḫal</td>
</tr>
<tr>
<td>ḫa-aR</td>
<td>ḫa-al</td>
</tr>
<tr>
<td>ḫa-a-aR</td>
<td>--</td>
</tr>
</tbody>
</table>

4. tar vs. ta-ar / da-ar
In our files, the sign TAR occurs in phonetically spelled words over 3200 times. Many words (and morphemes) are consistently spelled with tar, which include the following: -ātar-/ānna-, verbal abstract suffix (nom.-acc.sg.m. -Ča(-a)-tar (over 500x in our files)); ḥilištar-, a divine icon (ḫi-li-iš-tar-ni- (ca. 10x, cf. HED 3: 313)); ḫištar(k)-2 to ail, afflict (iš-tar-k₁, iš-tar-ak- (over 30x in our files)); ištar/n/i amidst, between, among (iš-tar-n° (over 180x in our files));32 ištar(n)i(2) to ail, to afflict (iš-tar-ni-(k)-° (over 15x in our files, including derivatives)); galaktar ‘smoothing substance’ (nom.-acc.sg. ga/kα-la-ak-tar (over 10x in our files)); kal/a/ištaryan- ‘feast, party’ (k/gal-li-e/iš-tar-ya-n° (6x in HED 4)); nuntar-, nutter- ‘haste, swiftness’ (nu-un-tar-, nu-ut-tar- (over 40x in our files, including derivatives)); pattar / paddon- ‘wing’ (nom.-acc.sg. pät-tar (12x in CHD)); pattarpalha/i- ‘broad-wing’ (pät-tar-pal-h° (over 15x in CHD)); šuýatar- ‘horn’ (šu/a/-a/-ya-tar(-) (13x in CHD)); šittar ‘sun disk?’ (ši-it-tar(-) (over 20x in CHD)); ţarra/-a ‘to be able’ (tar-r° (over 10x in our files)); ḫa-r‘ to conquer’

31 Melchert 1983: 13; Rieken 1994: 364-6. The further proposal to connect this root with Gr. ἀλλάν, Lat. ulna, etc. “elbow” are difficult, since the latter words rather reflect *H₁H₁-n- (Kloekhorst 2008: 274).
32 As an anonymous reviewer informs us, HW² (I: 272-3) lists in its lemma ištar/n/i the spellings iš-tar-na and iš-tar-ni, as well as “iš-ta-ar-na”, which would occur in KUB 8.41 ii 2 (OS), “u[nd] ō[ter]”. However, the reviewer states that (s)he “was not able to find this form anywhere”, which is our experience as well. KUB 8.41 only shows the spelling iš-tar-na, with tar (ii 3, 8, iii 8, 18), and we have been unable to find any other secure attestation of the shape “iš-ta-ar-na” (unfortunately, it is not clear whether HW²’s remark “u[nd] ō[ter]” refers to more attestations of “iš-tar-na” on the tablet of KUB 8.41 itself, or within the Hittite corpus as a whole). Note that Hagenbuchner (1989: 133) reads a form [iš-t]a-ar-na in KBO 18.115 rev. 10, but this cannot be ascertained. Only a vertical wedge of the broken sign is visible, which would fit other signs than TA, as well, like, e.g. BA, which would yield a possible reading [l-a-b]a-ar-na. We have therefore left this broken form out of the discussion.
(tar-ḫu-, tar-ȗ) (over 140x in our files); tarḫutil- ‘strong, powerful’ (tar-ḥu-i-Š (over 10x in our files, including derivatives)); tarḫu-Š to dance’ (tar-ḫu-, tar-ȗ-, tar-ȗ- (over 20x in our files)); tarkummae-Š, tarkummišša (Š to translate’ (tar-kum-m-o, tar-ku-m-o (over 45x in our files)); tarlipa-Š, a substance used in rituals (tar-li-p-Š (4x in our files)); tarna-Š ‘nail’ (tar-ma- (7x in our files)); tarmae-Š to nail, to hammer’ (tar-ma- (over 30x in our files)); tarna-Š ‘to let go’ (tar-n-o (over 600x in our files)); Štarna-, a building (tar-nu- (ca. 10x in our files)); štarpal-Š, a cloth (štar-pal-a)Š (ca. 10x in our files)); štarpall-Š ‘substitute’ (štar-pal-li (over 40x in our files)); štarsi-Š ‘to dry’ (štar-s (3x in our files)); štaršanip-Š, place in temple (štar-ša-an-z-p-Š (over 15x in our files)); štar-Š/štar-Š ‘to speak’ (štar-Š, štar-ši-ke-a, štar-aš-ke-a- (ca. 15x in our files)); šṭarur-Š ‘water (nom.-acc.sg.)’ (šṭar-Š-tar (over 200x in our files)); šndnašša,Š a bread (šṭa-mar-aš-ši- (5x in our files)); šṭañarnahl-Š ‘to order, to instruct’ (šṭa(-Š)-štar-aḥ-Š (over 50x in our files)).

The sequences štar- and šda-štar are much less often attested: we have counted 23 cases: [šhu-Š]-štar (KBo 20.33 obv. 14 (OH?/MS)), [šhu-Š]-šsar (ibid. obv. 15), šhu-Š-štar-r-Š=a (KBo 4.2 i 59 (OH/NS)), šhu-Š-da-Š (VSNF 12.143, 4 (NS)) ‘game, wild animals’; šta-Š-štar-ki-Ša (KBo 4.2 iv 2 (NH/NS), KUB 15.36 obv. 24 (NH/NS)), a bird omen term: šku-Š-šsar (Bronzetafel i 95, 101 (NH/LNS)) ‘abode or shrine of the storm-god’; šku-Š-šsar-r-Š=a (KBo 4.2 ii 34 (OS)) ‘refuse’; špt-Š-šsar-r-Š=a (KBo 17.1 i 24 (OS)), špt-Š-šsar-r-Š[a] (KBo 17.3 ii 24 (OS)), špt-Š-šsar-r-Š=a (KBo 17.6 iii 16 (OS)) ‘basket(s)’; šta-Š-r-Š=p-Š[i]-Š (KUB 34.91 i 1 (OH/NS)), šta-Š-Š-p-Š-in (KUB 33.66 ii 11 (OH/MS)) ‘something evil’; šud-Š-da-Š (KUB 12.65 ii 9 (NH/NS)), KUB 55.38 iii 13 (NS), šud-Š-da-Š=m=-a-Š[s-Š-ta] (KUB 27.29 ii 17 (MH/NS)); šud-Š[d]-šsar-Š=Ša (KBo 26.70, 17 (MH/NHS)), šud-Š-da-Šše-Še-Š (KBo 22.6 i 7 (OH/NS)) ‘word(s)’; šu-Š-uš-sta-Š (KUB 13.3 iii 23 (OH/NS)) ‘waters’; broken […]ši-Š-da-Š (KUB 55.15 ii 3 (NH/NS)).

The number of attestations of the sequence štar-Š/šda-Š (23 occurrences) is extremely low when compared to the more than 3200 occurrences (in our files) of words spelled with štar: it takes up ca. 0.6% of the total number of cases. If štar-Š/šda-Š and štar would express the exact same phonetic sequence, we would expect the occurrence of štar-Š/šda-Š to be randomly distributed. However, this is not what we find: it seems to cluster in certain lexemes, especially šhuitar/šhudar, štappar, and šuddar. This makes it worthwhile to investigate whether štar-Š/šda-Š may mark a phonetic sequence that is distinct from štar.

4.1 Etymologies of the words spelled štar-Š/šda-Š

In order to find out whether štar may denote a different phonetic sequence than štar-Š/šda-Š, we will look more closely at all words containing štar-Š/šda-Š.

Some of these words are probably non-Hittite or have an otherwise unclear origin, and therefore cannot be used for etymological purposes:

ši-štar-Ški-Ša (KBo 4.2 iv 2 (NH/NS), KUB 15.36 obv. 24 (NH/NS)): this word occurs in an enumeration of birds in a bird omen passage, and is therefore probably of Hurrian origin. It is interesting, though, that both attestations of this word are spelled with ša-Šar, not with štar.

(e)škuntarra- ‘abode or shrine of the storm-god’: This word occurs twice with štar-Š (dat.-loc.sg. šku-Š[š]-štar-Šra (Bronzetafel i 95, 101 (NH/LNS)), but is also found spelled with štar (acc.sg. šku-Š[š]-štar-Šra-an-[š][š]=a (KUB 33.92 iyi 17 + KUB 33.93 iv 27 (MH/NS)), šku-Š[š]-štar-Šra-an-[š][š]=a (KUB 33.106 i 19 (NS)), šku-Š[š]-štar-Šra-an-[š]=a (KUB 26.65 iv 27 (NS)), stem form šku-Š[š]-štar-Šra (KUB 36.12 i 16 (MH/NS)). According to Puhvel (HED 4: 254), this word is Hurrian, and it therefore cannot be used for etymological purposes. Note, however, that it shows an alternation between spellings with ša-Šar and štar, and as such represents a category that is known from šašša; kš/g/qš-Š and pšŠ vs. pa-Šar as well.

šuptar ‘refuse’: This word is attested once as šku-Š[š]-štar-Š (KBo 6.2 ii 34 (OS)), with duplicates that are spelled šku-Š[š]-štar-Š (KBo 6.3 iii 55 (OH/NS), KBo 6.5 iv 8 (OH/LNS)), which goes for all other attestations as well (KUB 12.58 iii 14 (NS), KUB 24.9 iii 51 (OH/NS), KUB 27.67 iii 47 (MH/NS)).

33 This broken form is hesitatingly (with question mark) cited by CHD Š: 457 under the lemma šittar- ‘(sun) disk’, but this is far from assured.
KUB 58.83 ii 14 (NH/LNS)). According to Puhvel (HED 4: 259), this word may be an “old frozen abstract noun (of the type itar, kalaktar)”, and he reconstructs *g³ub³-tə. However, this is far from assured. For the time being, we are therefore hesitant in using this word as an argument in the present discussion.

tarpi- ‘something evil’: Next to the two attestations spelled with ta-ar (nom.sg. [ta-a]r-p[i-iš] (KUB 34.91 i 1 (OH/NS)), acc.sg. ta-ar-pi-in (KUB 33.66 ii 11 (OH/MS)), we also find some attestations spelled tar-pi- (see HEG T: 214-5). This word, too, would thus belong to the category where ta-ar and tar spellings alternate. Unfortunately, the etymology of this word is unclear (HEG T: 217).

This means that we are left with huidar / huitar, pattar, uddar and ujuitar, which all four belong to Hittite words that are clearly inherited.34 Interestingly, they all belong to neuter r/n-stems: huitar / ḥuint- ‘game, wild animal(s)’, pattar / paddan- ‘basket’, uddar / uddan- ‘word’ and yūtar / yīten- ‘water’. For three of these forms, this fact obscures their formal interpretation. For instance, the paradigm of uddar / uddan- ‘word’ knows a nom.-acc. singular form that is usually spelled ut-tar (which in principle can also be read ud-dar), reflecting a PIE form ending in *-r̥-, and a nom.-acc. plural form that is usually spelled ud-da-a-ar (sometimes also ut-ta-a-ar), which reflects PIE *-ōr. This makes it a priori difficult to judge the few spellings ud-da-ar: are they nom.-acc. singular forms, corresponding to ut-tar = ud-dar (and would prove an alternation between tar / dar and da-ar), or are they nom.-acc. plural forms, corresponding to ud-da-a-ar (and thus show a mere absence of plene spelling)? Likewise in the case of ḥu-i-dar- / ḥu-i-ta-ar and pāt-ta-ar: do they correspond to nom.-acc.sg.n. ḥu-i-tar and pāt-tar, or to nom.-acc.pl.n. ḥu-i-ta-a-ar / ḥu-i-da-a-ar and *pāt-ta-a-ar / *pāt-da-a-ar (the latter forms being unattested)? This problem is absent in one of these forms, however: ū-ūis-ta-ar (KUB 13.3 iii 23 (OH/NS)) is clearly a plural form, since its root vocalism corresponds with nom.-acc.pl. ū-i-ta-a-ar / ū-i-da-a-ar < *yd-ōr, but not with nom.-acc.sg. ya-a-tar < *yōd-ɾ. There can thus be no doubt that the sequence -ta-ar in ū-ūis-ta-ar represents a ‘shortened’ version of the normally plene spelled sequence -ta-a-ar. For the other three words we have to discuss the context they occur in:

**uddar**: The form spelled ud-da-ar occurs five times. In four of these cases, the form is clearly plural:

KUB 27.29 ii:

(56) ..... ud-da-ar=m=a-[aʔ-ta]

(57) ku-e KAxU-az pa-ra-a i-já-a-ta-ri [ ... ]

(58) n=a-at LÁL-it i-ya-a ša-ni-iz-zi e-š-đu [ ... ]

‘... (And / but) the words which come out of the mouth must be sweet like honey.’

In this passage ud-da-ar stands in a relative clause with ku-e as its corresponding relative pronoun. Since this form is specifically plural, ud-da-ar must be plural as well.

KUB 55.38 iii:

(13) [ ... ] ar-t[a-]ri nu šu-up-pa ud-da-ar
(14) [ ... ]x me-mi-iš-ke-ez-zi

‘... he/she stands and he/she speaks pure words ...’

In this passage ud-da-ar is preceded by the adjective šu-up-pa. Since this latter form is specifically plural, ud-da-ar must be plural as well.

KBo 26.70,


34 The remainder of this section, including the analyses of the contexts in which these words occur, has largely been adapted from Erik Mens’ BA thesis (see footnote 1).
(17)  ḫuídar / ḫuitar  

‘Kumarbi [began] speaking [the words] to his vizier: “O Mukišan[u, my vizier, the wo]rds wh[ich I speak] to you ...”.’

The additions are taken over from Siegelová (1971: 38), who undoubtedly based them on the following parallel (duplicate?) text

KBo 26.82,
(1) [ ... ] [ud-[d]a-ar A-NA ḫu-
(2) [me-mi-iš-[k]e-u-ya-[a]n d[a]-iš ḫu-ki-[s][a]-nu .... ]
(3) [ud-da]-a-ar=ta ku-e te-mi nu=mu ud-[d][a]-na-aš .... ]

In line 3 of the parallel text we see plene spelling in [ud-da]-a-ar as well as the presence of the nom.-acc.pl.n. relative pronoun ku-e, which means that in this case the word for “word” is plural. This implies that the form [ud-d]a-ar in KBo 26.70 is plural, too.

KUB 12.65 ii
(5) ḫu-ki-[s]a-nu-uš ḫu-mar-bi-ja-aš ud-da-a-ar a-ru-ni EGI-
(9) ... ma-a-an šal-li-iš a-ru-na-aš ud-da-ar IŠ-ME

‘Mukišanu began to pass on the words of Kumarbi to the sea: [quotation follows]. When the great sea heard the words, ...’

Since the form ud-da-a-ar of line 9 refers to the same words that in line 5 are indicated with the specifically plural form ud-da-a-ar, the form ud-da-a-ar in line 9 must be interpreted as a plural as well. This is confirmed by the fact that its duplicate text, KUB 33.122, contains the form [ud-d]a-ar (iii 7), with plene spelling that proves the form’s plural number.

There is one case, however, where it cannot be independently determined whether the form ud-da-a-ar is singular or plural.

KBo 22.6 i
(7) [nu] <A-NA> ḫu-ša-an-da-aš UN-E MEŠ SAG ud-da-ar=še-et me-mi-iš-ke-u-ya-an da-[iš]

‘And he began saying his word(s) to the heroes.’

In this passage, there is no word that agrees with ud-da-ar=še-et that could indicate whether it is singular or plural, nor does the context provide any clues, since the sentence that follows is simply a quote. Nevertheless, there can hardly be any doubt that here a plural form is meant, too. We can thus conclude that the spelling ud-da-ar is always used as a variant of ud-da-a-ar ‘words’, and not of ut-tar (= ud-dar) ‘word’. This implies that the spelling of nom.-acc.sg.n. ut-tar (= ud-dar) with the sign tar (= dar), which occurs over 250x in our files, is a consistent one.

**ḫúidar / ḫuitar:** We find three forms spelled with ta-ar, and one with da-ar. Of the four forms in total, there are two attestations where a plural interpretation seems certain.

KBo 20.33 obv.
(14) [ḫu]-a-[a]-aš KU.BABBAR i-ša-an-di 1 ḫu-pár GEŠTIN A-NA PİRIG.TUR 1 ḫu-pár GEŠTIN A-NA ŠAH.NIŠTA la-ḫu-an-di
(15) [ḫu]-i-[a]-aš ša-mi-nu-an-di pé-e-ři-in ša-mi-nu-an-di

13
Since the two forms spelled ḥu-i-ta-ar in this passage refer to both the panther and the boar, the forms are to be interpreted as plural forms.

The interpretation of the two other attestations is less clear.

In conclusion, the singular form NUMUN(II)A kue ḥūman šanḫuta (KBo 4.2 i 62) ‘all the seeds which were roasted’ (transl. Höffner & Melchert 2008: 425), in which the formally singular form ḥūman agrees with the clearly plural form NUMUN(II)A kue ‘which seeds’ (note the specifically plural form kue). This implies that ḥu-i-ta-ar-r=a may be interpreted as a plural form, too: ‘mankind, livestock and all (of) silver’.

This fragment is so small that there is no way to determine from context what the number of ḥu-i-da-ar is.

In this passage, ḥu-i-ta-ar-r=a is followed by the postposing adjective ḥūman ‘all’, which is a nom.-acc.sg.n. form. Since we expect this adjective to agree with the noun it modifies, the implication is that ḥu-i-ta-ar-r=a must then be singular as well: ‘mankind, livestock and all wildlife’ (sg.). However, note that just three lines below this passage we find the clause nu NUMUN(II)A kue ḥūman šanḫuta (KBo 4.2 i 62) ‘all the seeds which were roasted’ (transl. Höffner & Melchert 2008: 425), in which the formally singular form ḥūman agrees with the clearly plural form NUMUN(II)A kue ‘which seeds’ (note the specifically plural form kue). This implies that ḥu-i-ta-ar-r=a may be interpreted as a plural form, too: ‘mankind, livestock and all wildlife’ (pl.).

This implies that this latter form (which occurs over 5 times, cf. Puhvel HED H: 352) is consistently spelled with tar.

**pattar:** All three attestations of pāt-ta-ar are in fact duplicates of each other: [pāt]-ta-ar-r=a (KBo 17.1 iii 24 (OS)) // pāt-ta-ar-[a] (KBo 17.3 iii 24 (OS)) // pāt-ta-ar-r=a (KBo 17.6 iii 16 (OS)). The fact that all three forms are spelled with ta-ar, a sequence that in general is very rare, is peculiar. Moreover, for many other words attested in these duplicate texts, no consistency in spelling can be found. Compare, for instance, i-ja-mi (KBo 17.6 iii 13, 15) vs. i-e-mi (KBo 17.1 iii 21, 23) ‘I do, make’, mu-ri-ja-la-aš (KBo 17.3 iii 27) vs. mu-ri-ja-le-eš (KBo 17.6 iii 19, KBo 17.1 iii 27) ‘fruit breads’, ti-iš-šu-mi-uš[š] (KBo 17.3 iii 23) vs. te-eš-šu-mi-uš[š] (KBo 17.6 iii 15) vs. te-eš-šu-mi-uš (KBo 17.1 iii 23) ‘cups’. And compare also i-NA SI-ŠU (KBo 17.6 iii 18, 19) vs. garaun-ši (KBo 17.1 iii 26, 27) ‘on its horn’. The fact that in all three duplicates the form pāt-ta-ar-ra is spelled in the same, remarkable way can thus hardly be coincidental. The passage in which this word occurs can, on the basis of the three duplicates, be read as follows (taking KBo 17.1 iii 23-24 as main text):

(23) [ ... ḫa-li]-i-na-aš te-eš-šu-mi-uš [(i)]=e-mi ku-un-ku-ma-tiš[AR]
(24) [ ... (x-hi pát)-ta-ar-r=a ḫar-mi nu-u=š-ša-an NUMUN-an []
(25) [ k]i-it-ta G1S2u-pa-a-rī ki-it-ta 1 MĀŠ.GAL-r[i]

‘I make cups of clay. I [...] kunkumati-plants [in it?]’. I also hold a basket / baskets. Seed is lying [inside?], a torch / torches lie(s) (inside). One billy-goat ...

It cannot be independently determined whether pát-ta-ar denotes a singular or a plural form here: both ‘a basket’ and ‘baskets’ would be fitting translations. However, since in the preceding clause the narrator of the text refers to making multiple cups (teššummiš), it certainly does not seem impossible that (s)he was also holding multiple baskets. If so, pát-ta-ar would be equivalent to the (unattested) nom.-acc.pl. form *pād-da-ar-/*pāt-ta-ar, and not the nom.-acc.sg. form pāt-tar. This would imply that the nom.-acc.sg.n. form of this word, which is attested 2x as pa-at-tar and 14x as pát-tar (cf. CHD P. 241) is consistently spelled with the sign tar.

All in all, it seems fair to say that all forms spelled -ta-ar / -da-ar belonging to neuter r/h-stems can be interpreted as plural forms, and thus show a spelling variant of the plene spelled sequences -ta-a-ar / -da-a-ar.

4.2 Etymologies of words consistently spelled tar

When we look at the origins of the words that are consistently spelled tar, we find two main groups (note that only assuredly Hittite words with a secured Indo-European origin are relevant here).

1. The first group consists of words in which tar spells a syllable containing a vowel that is the result of a vocalization of ṭ in an original zero-grade basis (reconstruction of ablaut grade on the basis of morphological expectations): -ātar, verbal abstract suffix (nom.-acc.sg.n.) < *-ō-tr; ḫuhtar ‘wild animals, game’ (nom.-acc.sg.) < *hu̯tu̯edr; īštar(k)zi-2 ‘to ail, afflict’ < *st̥r-K (weak stem forms); īštarni(n)kzi-2 ‘to ail, to afflict’ < *st̥r-nen-K; galaktar ‘smoothing substance’ < glog̣-tr; kalle/īštaryan- ‘feast, party’ < *keḷhu̯-tr; nuntar-, nutter- ‘haste, swiftness’ < *num-tr; pattar ‘basket (nom.-acc.sg.)’ < *pēthu-2; pattar ‘wing (nom.-acc.sg.)’ < *pēthu-2; tar- ‘to speak’ < *ṭr- (weak stem forms); tarhū-21 ‘to conquer’ < *ṭ̥ru̯u (weak stem forms); tarku-2 ‘to dance’ < *ṭr̥k- (weak stem forms); tarna-1 ‘to let go’ < *ṭ̥k-ne-H; tarš- ‘to dry’ < *ṭr̥s- (weak stem forms); uthar ‘word, thing, case (nom.-acc.sg.)’ < *uthu-2; ūtar ‘water (nom.-acc.sg.)’ < *ʊ̣d̥-r.

2. The second group consists of words in which the vowel of the syllable spelled tar reflects an original *e-grade, which has been coloured in the sequence eRC: tarra-‘to can, to be able’ < *t̥r̥hy2-o; tarhū-2 ‘to conquer’ < *ṭ̥r̥hy2- (strong stem forms); tarku-2 ‘to dance’ < *ṭr̥k- (strong stem forms).

There are two lexemes whose reconstruction is unclear. The first, īštarnali ‘amidst, between, among’, can be reconstructed as either *styn- or *storn- (with the root *stern- as in Gr. στήριγμον ‘breast, heart’), cf. Kloekhorst 2008: 418. This word is therefore of no use in the present discussion. The second, tarma- ‘nail’ (with its derivative tarmae2- ‘to nail’), can likewise be reconstructed either as *t̥mo- or as *t̥r̥mo- (Kloekhorst 2008: 845), and therefore should be left out of the discussion.

We can thus conclude that the only secured sources for consistent spelling with the sign tar are the sequences *Tr and *Ter[C].

4.3 Conclusions regarding tar vs. ta-ar / da-ar

We may thus conclude the following: consistent spelling with tar correlates with the etymological sequences *Tr and *Ter[C]; a spelling that alternates between ta-ar and tar does occur, but not in words with an Indo-European origin; the spelling ta-ar / da-ar that alternates with the plene spelled sequence ta-a-ar / da-a-ar reflects PIE *Tôr.

<table>
<thead>
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<th>PIE *Tr</th>
<th>PIE *Ter[C]</th>
<th>origin unclear</th>
<th>PIE *Tôr</th>
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<tr>
<td>Ća-aR</td>
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<td>t/a-ar</td>
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<td>Ća-a-aR</td>
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<td>t/a-ar</td>
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5. Overall conclusions

If we combine the tables of the treatments above, and add Frotscher’s findings regarding kán vs. k/g/qa-an, we get the following result:

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<th></th>
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<th>*CoR</th>
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<th>* CôR, *CojôR</th>
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Although the outcomes of some etymological sequences are unattested for some of the signs, the combined distributions show a clear pattern: the etymological sequences *CR and *CeR[C] yield outcomes that are virtually consistently spelled with signs of the structure CaR; the etymological sequence *CoR yields an outcome that is spelled with CaR signs as well as the sign combination Ca-aR (and with Ca-a-aR in Old Hittite when the o was accented); the etymological sequences * CôR and *CojôR yield an outcome that is primarily spelled Ca-a-aR but can be spelled Ca-aR as well. We are thus dealing with three different graphemes here, two non-plene spelled ones, which we may term <a₁> and <a₂>, and a plene spelled one, <ā>:

1. <a₁> is always spelled CaR, and reflects PIE *CR and *CeR[C];
2. <a₂> is spelled CaR and Ca-aR, and in principle always reflects PIE *CoR;
3. <ā> is spelled Ca-a-aR and occasionally Ca-aR, and reflects * CôR / *CojôR.

6. Interpretation

It is widely acknowledged that the difference between the plene spelled grapheme <ā> and its non-plene spelled counterpart <a> (which in fact are now two, <a₁> and <a₂>) is a phonetic / phonological one: <ā> is generally interpreted as denoting a long /ā/, whose length is phonemic vis-à-vis non-plene spelled <a>, which is generally regarded to be a short vowel. The question now arises whether the difference between the two non-plene spelled graphemes, <a₁> and <a₂>, is phonetic / phonological as well, or is based on some other characteristic.

6.1 Frotscher’s proposal: an orthographic relic

In his forthcoming article on the the difference between kán and k/g/qa-an, Frotscher explores the latter possibility. He points out that PIE accented *ó in Old Hittite in principle yields a long vowel, /ā/, which is spelled plene: e.g. *spónd-ei > OH iš-pa-a-an-ti /ispânti/ ‘he libates’. However, already within the Old Hittite period, this long /ā/ was shortened when standing in a non-final, closed syllable: early OH iš-pa-a-an-ti /ispânti/ > late OH / MH / NH iš-pa-an-ti /ispânti/. This means that in all words where we synchronically find a non-plene spelled a that etymologically reflects an accented PIE *ó, we may assume that in earlier times these words contained a long /ā/. According to Frotscher, we may therefore assume that the spelling k/g/qa-an that is used for denoting etymological *-Kán- is in fact an orthographic relic from the time that the vowel actually was long, and thus was spelled k/g/qa-an. In other words, the k/g/qa-an spelling arose as a defective spelling of k/g/qa-a-an, which was retained also when the vowel itself had undergone shortening from /-Kán- to /-Kán-. Synchronically, this spelling would thus be merely traditional: the spelling k/g/qa-an, which alternates with kán, (i.e., <a₂>) would not signify a vowel that is phonetically or phonologically distinct from the a that is consistently spelled kán (<a₁>): both represent a single vowel, i.e. short /a/.

Although this scenario may not be impossible, there are, to our minds, some unattractive sides to it. First, if we look beyond the case of k/g/qa-an vs. kán, the grapheme <a₂> need not only reflect a PIE
accented *ό, but may in some cases also reflect a PIE unaccented vowel. The most prominent such case is ḥāḥall- ‘greenery’, where the OH plene spelling of the first a (ha-ah-ha-al-) unambiguously indicates that this word was accented on its initial syllable, ḥā-hāl-, and not on the syllable that contains the <ā2>: hence the reconstruction *He-HoH-, with accent on the first syllable (see above). This means that this word thus contains an <ā1> that must reflect an earlier unaccented vowel, possibly *o. Since it is commonly assumed that, in the prehistory of Hittite, PIE unaccented vowels in principle never underwent lengthening, there thus could never have existed an earlier spelling of this word where the a of the second syllable was spelled plene (no **ha-ah-ha-a-al-). The Ca-R spelling of this vowel therefore cannot have been the result of an orthographic tradition going back to a defective spelling of an originally plene spelled sequence Ca-a-R. This then implies that also in the cases where <ā2> spells an accented vowel the Ca-R spelling need not have been the result of an orthographic tradition reflecting earlier *Ca-a-R.

Another reason for doubting Frotscher’s analysis is that it must assume that a historical spelling was retained as a spelling convention for centuries after the original phonetic difference that caused the spelling difference had ceased to exist (cf. the attestations of Ca-R spellings in NH/(L)NS texts). And although writing systems with historical spellings exist, and synchronically unattested writing conventions in such writing systems can be maintained for long periods of times, one would expect to find at least some spelling mistakes in Hittite texts (occasional Ca-R spellings for <a1> if the distinction between <a1> and <a2> had no synchronic phonetic basis and was solely a conventional one.

6.2 An alternative proposal: two phonemically distinct vowels

We will therefore propose an alternative solution, namely that the spelling distinction between <a1> and <a2> was a phonetic / phonological one. There are several possible ways in which <a1> and <a2> could be phonetically / phonologically distinct. The first one is that they are distinct in a quantitative way, i.e. that the two vowels differed from each other in length. Since both <a1> and <a2> should be shorter than <ā>, we should then assume a triple length distinction, i.e. <a1> = [a] vs. <a2> = [aˑ] vs. <ā> = [aː]. Or perhaps <a1> = [ā] vs. <a2> = [a] vs. <ā> = [aː]. However, this seems relatively unattractive to us: triple length distinctions are cross-linguistically rarely attested, and this interpretation may therefore not be a preferred option.

We therefore think it is better to explore the second possibility, i.e. that <a1> and <a2> are qualitatively distinct vowels. Since both vowels are spelled with signs that, at least in Akkadian, render the low vowel /a/, one option is to assume that both vowels are indeed low ones, but that one of them is the low front vowel, [a], and that the other is the low back vowel, [ɑ]. Since one of the etymological sources of <a1> is the front vowel *e, whereas <a2> reflects the back vowel *o, it would make sense to assume within this scenario that <a1> is [a] vs. <a2> is [ɑ]. Since <a2> often is the shortened outcome of an earlier <ā>, it would then imply that this latter vowel = [ɑ]. Another option is to assume that both vowels are relatively low, but did show a difference in height, and that one of them represents the general low vowel [a], whereas the other is the near-low central vowel [n]. Since one of the etymological sources of <a1> is the vocalization outcomes of resonants, and since cross-linguistically such vowels are very often centralized ones, we may in this scenario assume that <a1> = [e] vs. <a2> = [a] (which would imply that <ā> = [aː]). A third option is that the outcome of the vocalized resonants was in fact a schwa, i.e. the mid central vowel [ɑ], as it cross-linguistically often is, and that <a1> is in fact [æ], contrasting with <a2> = [a] (with <ā> being [aː]). The fact that this [æ] is written with Ca-R-signs containing the vowel a may then be compared to the fact that a (in Ca, aC and CaC-signs) is the preferred way by Hittite scribes to write dead vowels, which implies that a was viewed as the most “neutral” vowel.

To our mind, a scenario that assumes a qualitative distinction between <a1> and <a2> is clearly preferable over the scenario that they were distinct in quantity. However, it is not easy to determine which of the three discussed options of a qualitative distinction is the better one. At present we have a slight preference for the third one, i.e. <a1> = [e] vs. <a2> = [a] (with <ā> being [aː]), and we will use this interpretation from now on.

Note that this interpretation of the distinction between <a1> and <a2> does not only have consequences for the interpretation of the Hittite sound system on a phonetic level. On the basis of near-minimal pairs like pár-aš-zi (with <a1> = [ˈparsːtsi] ‘he flees’ < *bʰe/rs-ti vs. pa-ap-pa-ar-aš-zi (with
for the idea that the colouring of PIE *eRC was not *aRC but rather /əRC/. Moreover, explained within the framework as presented in this article, namely that the outcome of the PIE sequence *aRC respectively, were transferred to the Hittite *əRC, but rather /ə/.

6.3 Consequence: proof for a phonemic /ə/ in Hittite

Some of Kloekhorst’s earlier publications already worked with the assumption of an /ə/ spelled a, as the outcome of the vocalization of syllabic resonants in Hittite (most explicitly in Kloekhorst 2014b: 249-50). However, this assumption was never fully watertight: a phonemic distinction between /ə/ and /a/, both spelled a, could thus far not be orthographically proven. Yet, the present study of the difference between CaR signs and their corresponding Ca-aR spelling now does support the assumption of an /ə/ as the result of the vocalization of *R in Hittite and as a phoneme that is distinct from /a/. Moreover, an unexpected additional outcome of this study is the realization that whenever PIE *e was in Hittite coloured by a following cluster of resonant + consonant(s) (*enRC, including *enT) its outcome was not /a/, but rather /ə/.

This implies that such an /ə/ < *e did not only occur in words treated in this article, like tarhu- ‘to conquer’ = /təɾh̥uː/ < *təɾh₂u- or parku- “pure” = /pəɾk̥uː/ < *pəɾk̥-i-, but must also be assumed for other words, like ašanzi ‘they are’ = /aʃənntsí/ < *h₁əʃəntsí, karši ‘he separates’ = /kəɾtsí/ < *kəɾtsí, daššu- ‘strong’ = /dəʃ̥suː/ < *dELh₂sú-, etc.

To what extent the difference between /ə/ and /a/ is expressed in other signs of the structure CaC vs. their corresponding Ca-aC spellings, is a matter that will have to be addressed in future research.

References

Hetkonk = S. Košák, Konkordanz der hethitischen Keilschrifttafeln, Online-Datenbank, www.hetkonf.uni-wuerzburg.de/hetkonf/k.


35 The NH form pa-ap-pa-ar-aš-zi is an inner-Hittite remodelling of earlier pa-ap-pa-ar-ši < *pV-pórs-ei.
36 Note that this insight has in the meantime been fruitfully applied by Leiden colleague Stefan Norbruis in his discussion of the prehistory of the Hittite ha-conjugation (Norbruis 2021: 151-71): he shows that originally mi-conjugating verbal stems in which a PIE *e was coloured by an adjacent *h₁ or *h₂ to Panat. *o and *a, respectively, were transferred to the ha-conjugation (e.g. dā- ‘to take’ < *deh₂-; hātā- ‘to dry up’ < *h₂ed), but not verbal stems in which *e was coloured due to a following sequence *RC: mi-conjugating verbs of the structure *CeRC-, which yield Hittite CaRC-, all remained mi-conjugated. As Norbruis cogently argues, this can only be explained within the framework as presented in this article, namely that the outcome of the PIE sequence *eRC in Hittite was not **/aRC/ but rather /əRC/. Moreover, Norbruis shows that the development *eRC > /əRC/ overrules the colouring of PIE *h₁e and *h₂ to *Ha and *Ho, respectively: hence the fact that hark- ‘to have’ < *h₂erkk- and hark- ‘to perish’ < *h₂erγγ- are mi-conjugated verbs, not hi-conjugated ones (see already Kloekhorst 2014b: 242 for the idea that the colouring of *enT overrules the colouring of *h₁e).

Frotscher, M., fthc., Die Verteilung von „offener“ (-k/g/qaan-) und „geschlossener“ Schreibung (-kán-) innerhalb des Paradigmas hethitischer Verben (ms.).


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