



Universiteit
Leiden
The Netherlands

Hittite nasal presents

Shatskov, A.

Citation

Shatskov, A. (2017, October 25). *Hittite nasal presents*. Retrieved from <https://hdl.handle.net/1887/58877>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/58877>

Note: To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The following handle holds various files of this Leiden University dissertation:

<http://hdl.handle.net/1887/58877>

Author: Shatskov, A

Title: Hittite nasal presents

Issue Date: 2017-10-25

Introduction

1.1 The reconstruction of the Proto-Indo-European verbal system is based to a great extent on Indo-Iranian and Greek data. These languages have a large number of categories; for instance, Greek has three voices – active, middle and passive, four moods – indicative, imperative, subjunctive and optative, seven tenses – present, imperfect, aorist, perfect, pluperfect, future and future perfect, three numbers – singular, dual and plural, and three persons. Some of these categories, for instance, passive and future, are post-PIE innovations, but most have at least formal correspondences in Indo-Iranian and in other IE branches. In Fortson's presentation of the PIE verbal system (2010: 88ff.), there are therefore four tenses – present, imperfect, aorist and perfect¹, two voices – active and middle, four moods – indicative, imperative, subjunctive and optative as well as three numbers and three persons; cf. similarly Clackson 2007: 120ff. and slightly differently Beekes 2011: 282ff. This situation contrasts with the Hittite verbal system that has only two tenses – present and past, two moods – indicative and imperative, two voices – active and middle, two numbers – singular and plural, and three persons. A similar paucity of categories is also characteristic of other Anatolian languages. But it is not the simplicity of the verbal system that makes the Hittite verbal system special – there are other branches with few verbal categories, for instance, two tenses, three moods and virtually no voice distinction in Old English².

1.2 There are two principal specific features that do make Anatolian special. One of them is the Hittite *hi*-conjugation, which has no counterparts in other branches and is only partially preserved in the other Anatolian languages³.

¹ Though he notes that nowadays the perfect is believed to originally have been a stative that turned into a resultative past tense.

² In Old English there were special optional constructions to express future or passive, but there were no specific syncretic forms, with the exception of *hätte* 'was called' and *hätton* 'were called'.

³ The endings of the *hi*-conjugation are very likely to be related to those of the middle and the perfect, but the exact relation between these categories is unclear and it is debated whether or not the *hi*-conjugation goes back to the PIE perfect, see Jasanoff 2003: 7ff.

The second characteristic feature of Anatolian languages is the lack of tense-aspect stem differentiation in the verbal system⁴. Finite and infinite verbal forms in most other ancient IE languages were derived from one of the three temporal/aspectual stems – perfect, present and aorist, rather than immediately from the root. The perfect stem was marked by an *o*-grade in the singular and zero grade in the plural⁵ and by reduplication, e.g., Gr. 1sg. perf. act. πέποιθα ‘to persuade’, PIE **b^heid^h-*. Present and aorist athematic stems were marked by an *e*-grade in the singular and a zero grade in the plural, e.g., Gr. εἶμι (1sg. pres. act.) / ἴμεν (1pl. pres. act.) ‘to go’, PIE **h₁ei-*. For an overview of PIE verbal stems see LIV: 14ff.

1.3 These stems are generally well recognizable even despite significant restructurings that occurred in most branches after the collapse of PIE. For instance, in Latin PIE perfect and aorist stems merged into a new perfect, but it is often still possible to tell whether a specific Latin perfect stem goes back to a PIE perfect or aorist stem (thus, *ēmī* ‘I took’ goes back to the PIE perfect, while *dūxī* ‘I led’ goes back to the PIE aorist), see a detailed discussion in Meiser 2003. In Germanic, the aorist indicative stem was lost virtually without a trace⁶, but the I-V class strong verbs generally show **e* in the root in the present stem, reflecting the PIE present stem, e.g.,

⁴ Melchert (1997: 84ff.) argued that *karp-* ‘to lift, pick up’ preserved both the PIE present stem with the suffix **-ye/o-* (*karpīye/a-*) and the PIE root aorist stem (*karp-*), with *karpīye/a-* attested mostly in present active and *karp-* elsewhere. However, there are also OS present forms like *kar-ap-zi* KBo 20.26+ II 24 and *kar-pa-an-zi* KBo 17.11+ 46, KBo 17.43 IV 7; in fact, due to the productivity of the suffix *-ye/a-* in Hittite the alleged distribution may be coincidental. In some cases, *ye/a-*-stems are used to distinguish active and middle stem, at least in Old Hittite, cf., e.g., middle stem *hatt-^{ant}* vs. active stem *hazziye/a-^{mi}* ‘to pierce’. Melchert (ibid.) also mentions several verbs (*hark-* ‘to perish’, *istalk-* ‘to flatten’) that show the opposite distribution, i.e. with suffix *-ye/a-* marking the middle voice stem; however, due to the low number and late attestation of *ye/a-*-middle forms this could be easily just a coincidence. Note, however, that different verbal stems from several PIE roots indeed survived as distinct active and middle stems in Hittite, e.g., mid. *wess-* ‘to be dressed’ vs. active *wasse/a-*, later *wassiye/a-* ‘to put on smth., (causative) dress someone’ of **wes-* ‘to be dressed’.

As for *tarh-/tarhu-* ‘to be able, overcome’, and *lah/lahu-*, I believe that all the forms go back to a PIE *u*-present, see Kloekhorst 2008: 836ff. Forssman (1994) suggested that *sipant-* ‘to pour’ is actually a distinct stem from *ispant-* ‘id.’ and reflects PIE perfect, but this is not convincing, for different approaches cf., e.g., Kassian and Yakubovich 2002: 33ff. and Yakubovich 2009b who argue that the alternation *sipand-/ispand-* is graphic in OH and MH, and Melchert forthc. b who argues that *ispand-* is a late formation and only *sipand-* is of PIE origin, reflecting the PIE reduplicated aorist; nevertheless he also does not assume *sipand-/ispand-* to be reflexes of two different PIE verbal stems.

⁵ As in οἶδα (1sg.) / ἴμεν (1pl.) ‘to know’, though most Greek verbs have given up the ablaut in the perfect stem; the *o*-grade/zero grade ablaut is still well seen in Indo-Iranian and Germanic.

⁶ Nevertheless, some aorist subjunctives may have survived as present stems, see Ringe 2006: 160f.

Goth. *qiman*⁷ ‘to come’ or Goth. *wairþan*, OE *weorþan* ‘to become’, while the singular past stem has an *o-grade, reflecting the PIE perfect stem, e.g., Goth. *qam* ‘came’ or Goth. *warþ*, OE *wearþ* ‘became’. In Modern English, simple present *sit* and simple past *sat* ultimately go back to the same *e/*o ablaut, even though both stems must be post-PIE, see LIV: 513f., Ringe 2006: 157 and 151ff. for the general overview. Summing up, the verbal paradigms in all branches but Anatolian at least partially preserve the distinction of the present, aorist and perfect stems.

1.4 In Hittite a verb may have several stems as well. As in other ancient IE languages, the singular stem may differ from the plural (most commonly it is the full grade of the root in the singular and the zero grade in the plural, e.g., *kuenzi* : *kunanzi* ‘to strike, kill’, cf. Skt. *hánti* : *ghnánti* ‘to strike, kill’, PIE **g^{wh}en-*). However, in Hittite the same stem is used both for present and preterite forms⁸, cf. footnote 4 above; the imperfective aspect is marked with suffixes (-*ske/a-*, -*anna/i-* and -*ss(a)-* in Hittite) or reduplication⁹, and this situation is likely to be a post-PIE development. That is, derivation of different tenses from different stem allomorphs, one of the principal features of the PIE verbal system as reconstructed on the basis of Greek and Indo-Iranian, is missing in Hittite and Anatolian.

Several explanations have been proposed for the apparent absence of the PIE stem differentiation in Anatolian. It has been accounted for either as an archaism (e.g., Cowgill 1979: 33ff. and Strunk 1979: 258f.), which would imply that the Anatolian languages split off from PIE before the development of the present-aorist-perfect stem opposition, or as a simplification of the Graeco-Aryan model (e.g., Eichner 1975). Jasanoff (2003: 7ff.) argues against a straightforward deduction of the Anatolian

⁷ Unless *qiman* is a post-PIE formation, cf. LIV: 210, notes 5a, 14

⁸ Note though that most verbs with the ablaut in the present stem do not show it in the preterite, e.g., 3sg. pret. *kuenta*, 3pl. pret. *kuener*, s. Hoffner, Melchert 2008: 187.

Kümmel (2015) compared the *e*-grade in plural in the preterite of some Hittite verbs to the full grade in the 1st and 2nd pl. of the athematic root aorist in Indo-Iranian, further on this issue see, e.g., Watkins 1969: 32ff., Malzahn 2004. The ablaut patterns in Hittite preterite and Indo-Aryan athematic aorist are only partially similar: in Hittite the full grade in the preterite plural is not restricted only to the 1 and 2 person; besides, some *hi*-verbs also show this type of ablaut, and we find the *a*-grade (< *o) in the preterite plural as well. Therefore, the similarity between Indo-Iranian and Hittite regarding the grade of the plural stem may well be fortuitous.

⁹ See recently Dempsey 2015: 331.

system from the Graeco-Aryan model, while at the same time retaining the traditional reconstruction of present and aorist categories for PIE. The issue whether any Hittite verbs preserve reflexes of several different PIE verbal stems, e.g., of the PIE present and PIE aorist, stem remains disputed. Melchert (forthc.a. 35) notes that “at present one can neither affirm nor deny that development of a perfective/imperfective aspectual contrast is a common innovation of non-Anatolian Indo-European”; cf. also the discussion in Rieken 2009: 146, Oettinger 2013-14: 160ff.

1.5 In most other aspects the Anatolian verbal system is quite similar to that of Greek, Indo-Iranian and Indo-European in general. The endings and affixes are the same as in other PIE languages; the endings of the Hittite *mi*-conjugation and middle voice are well compatible with their counterparts in other IE languages. Hittite stem-affixes also generally find good correspondences in other branches, including reflexes of the suffixes **-ye/o-*, **-ske/o-* (for the reconstruction of this suffix with a plain velar, see Lubotsky 2001) or **-neu/nu-*. Reduplication and infixation are employed in Anatolian just as in other ancient IE languages. The difference is that in Hittite, in contrast to, e.g., Sanskrit, an infixed or a reduplicated formation, like *harnink-* ‘to destroy’ or *wewakk-* ‘to demand, ask’, is not restricted to a certain tense but is a distinct verb with a full paradigm of its own.

Therefore, a Hittite verb has to be compared with a specific stem of the cognate Greek or Indo-Aryan verb rather than with an entire verb with its several tense-aspect stems. For instance, some *mi*-verbs with the suffix *-ye/a-* can be compared to PIE present stems in **-ye/o-*, e.g., *siye/a-^{zi}* ‘to shoot’ is compared to Skt. present stem *áśya-* (3sg. *áśyati* ‘shoots’), whereas the aorist stem of the same verb in Sanskrit is *as-* without **-ye/o-* (3 pl. inj. (*vî*) *asan*). This also means that different stems of a PIE root may show up as different verbs in Hittite, e.g., *te-^{zi}* ‘to speak’ and *dai-ⁱ* ‘to put’ that both go back to the root **d^heh₁-* ‘to put’.

In the *Lexikon der indogermanischen Verben* (further LIV), which lists all stems that can be reconstructed for each verbal root, there are ca. 210 Hittite verbs¹⁰, and each Hittite verb is listed under a certain PIE stem; for example, *siye/a-*^{zi} ‘to shoot’ is listed as a reflex of the PIE **-ye/o-* present of the root **h₁es-* ‘to shoot’, *wess-* and *wasse-* are given as a stative present and a causative respectively of the root **wes-* ‘to be dressed’, while *te-* and *dai-* are interpreted as reflexes of a root aorist and perhaps of a reduplicated present made from the root **d^heh₁-* ‘to put’.

1.6.1 However, in many cases attribution of a Hittite verb to a certain PIE stem is not beyond doubt. According to LIV, p.33, Hittite verbs continue PIE root aorists, 29 Hittite verbs are the reflexes of PIE root presents, and 21 verbs are former perfects. Since Hittite verb lacks tense stem alternation and thus provides no indication whether it is a former present or aorist, the attribution in LIV is based on the stems attested for this root in other Indo-European languages. In the case of alleged Hittite reflexes of perfects, reduplication is generally missing in Hittite¹¹, and the usual reason for attributing a Hittite verb to a PIE perfect stem is its *hi*-conjugation and *a*-vocalism (< PIE **o*) of the root. In fact, all these equations are essentially root comparisons. This is true also for the 11 Hittite verbs that, according to LIV, continue present stative stems that are in fact root presents with stative endings and either zero grade or full grade of the root (types 1c (e.g., *ur-*^{āri} ‘to burn’, PIE **werH-*) and 1d (e.g., *wess-*^{tta} ‘to be dressed’, PIE **wes-*) respectively in LIV: 15)¹².

1.6.2 Among the extended (suffixed) stems, the most numerous type in Hittite, according to LIV, are the reflexes of PIE **ye/o*-present. However, out of the 18 verbs listed in LIV, two verbs (*parai/i-* ‘to blow’ and *sai/i-* ‘to impress, shoot’) belong to the *-ai/i-* type rather than *-ye/a-*-type, and 9 more verbs do not have **-ye/o*-counterparts in

¹⁰ I did not count verbs in *-iye/a-* and *-ske/a-* as separate verbs, if there already is a related stem without these suffixes, i.e. I counted *dai-* and *zikke-* ‘to put’ as a single verb, even though they continue different PIE stems according to LIV.

¹¹ From this list only *mēma/i-* ‘to speak’ has reduplication, but its derivation from the root **men-* ‘to think’ is not obvious. On *sipand-/ispant-* see footnote 4. Other Hittite verbs with reduplication are listed in LIV as PIE reduplicated presents.

¹² All three alleged Hittite reflexes of the zero-grade statives (*miya-* ‘to grow’, *dukk-* ‘to be seen, important’, *ur-* ‘to burn (intr.)’ and 4 out of 8 full-grade statives (*ā(i)/i-* ‘to be hot’, *happ-* ‘to arrange itself’, *kis-* ‘to occur, become’, *zē-* ‘to cook (intr.)’, be ready’) do not have any comparable stative stems in other IE languages.

other Indo-European languages. The interpretation and/or derivational analysis of 5 further verbs from this list is controversial¹³. In my opinion, the only somewhat reliable correspondences between Hittite verbs with the suffix **-ye/o-* and verbal stems in non-Anatolian Indo-European languages proposed in LIV are *siye/a-* ‘to shoot’ with Skt. *ásyati* ‘shoots’ and *tāye/a-* ‘to steal’ with Skt. *stāyāt* ‘secretly’, a fossilized form of the participle according to Rix 1985: 205.

1.6.3 Similarly, according to LIV, eleven Hittite verbs go back to PIE reduplicated presents, but either the etymology of these verbs is controversial or they do not have reduplication in Hittite¹⁴.

1.6.4 There are several Hittite verbs with a stem-final *-(s)s-* that etymologically does not belong to the root (e.g., *tamāss-* ‘to oppress’, PIE **demh₂-*). In LIV, these verbs are listed either as *s*-aorists or desideratives. Jasanoff (2003: 119⁷⁰) and Kloekhorst (2009: 250) argued, however, that (most of) these verbs are originally *s*-presents¹⁵. Whatever the function of *-s-* in these verbs might have been, it cannot be determined on the basis of the Hittite evidence alone.

¹³ The very existence of *tiye/a-* ‘to bind’ (2sg.imp.act. *ti-ya* in KBo 3.40+ rev. 13, 14, 15) is questionable, as it is attested only once in a rather unclear context – KBo 3.40 rev. 13 *nu=zza ishamaĩskezzi (ishamiskanzi in dupl. KBo 13.78) URU Ne[sas^{KI} TÚG^{HJ}]^{LA} URU Nesas^{KI} tiya=mmu tiya (14) nu=mmu annas=mas katta arnut tiya=[mmu t]iya nu=mmu uwaw=mas katta arnut (15) [tiy]a=mmu [t]iya. Melchert (1986: 102) translates this as follows: “One sings (dupl. they sing): “Clothes of Nesa, clothes of Nesa, bind on me, bind! Those of my mother bring down to me, bind (them) on me, bind! Those of my *uwa-* bring down to me, bind (them) on me, bind!” and argues further that *uwa-* means ‘nurse’. The verb *sakiye/a-* ‘to give a sign’ may be a denominative; ἐπέω ‘to ask’, the alleged Greek **-ye/o-* cognate for Hitt. *ariye/a-* ‘to consult an oracle’, is not related according to Beekes 2010: 391f.; the meaning of *sarhie/a-* ‘to press?’ or ‘to maul?’ (CHD Š: 252) is not clear and it is not necessarily related to Gr. ῥώομαι ‘to move intensively, dance’; finally, given the productivity of the *-ye/a-* suffix in Hittite, *parkiye/a-* ‘to raise, rise’ is likely to be an inner-Hittite derivative from *park-* ‘id.’; it may well be that most *-ye/a-* stems in Hittite are recent formations.*

¹⁴ Thus, *dai-* ‘to put’, *malla-* ‘to grind’ and *ishuwai-* ‘to throw, scatter’ are not reduplicated; *eku-* ‘to drink’ could be reduplicated, but there are other interpretations of the spelling *e-ku-*, cf. HED 1/2: 267f. and Kloekhorst 2014: 168ff.; *kikkis-* ‘to become’ and *pappars-* ‘to sprinkle’ have no reduplicated counterparts elsewhere. Hitt. *iyawa-* ‘to be healed?’ and Lat. *iuvō* ‘to help’ may be related; however, the meaning of the Hittite verb is in fact not clear (see HW² I: 33), and Lat. *iuvō* is likely to be cognate rather to Hitt. *huwai-* ‘to run’, see García Ramón 2016: 95 and the entry for *huinu-* in 4.1 below. The reduplicated stem *kukus-* ‘to taste?’ was compared by Watkins (2003: 391) to Skt. *jujōṣa* (perf.) ‘likes’ and Avestan *ā-zūzušte* (pres.) ‘is joyful (about smth.)’; Dempsey (2015: 266), however, assumes that *kukus-* is best explained as a pre-Hittite formation. As for the remaining verbs, their etymology is controversial, cf. the entries for *mimma-* ‘to refuse’, *pippa-* ‘to fell, drop’ and *wewakk-* ‘to demand’ in Kloekhorst 2008 and Dempsey 2015.

¹⁵ According to Jasanoff (2003: 119), the traces of *s*-aorist in Hittite are 3 sg. pret. ending *-s* < **-s-t*, and *-s-* in the imperative forms like 2sg. mid. *neshut* and 2 pl. mid. *naisdumat* of the verb *nē^{a(ri)}-*, *nai^{hhi}-* ‘to turn, send’.

1.7 While scholars may disagree with LIV on numerous details, this short survey shows that the attribution of a Hittite verb to a PIE stem is a complicated issue. In this light, nasal (infix) presents are perhaps the best candidates for a study of Hittite reflexes of a PIE verbal type. On the one hand, they are relatively numerous and have some undisputable cognates in other languages, such as *tarna-* ‘to let, allow’ (TochA *tärk-*, pres. *tärnā-* ‘to emit’) and *tamink-* ‘to attach’ (Skt. *tanakti* ‘to contract’ < **tṃnékti*); on the other hand, unlike, e.g., *-ye/o- stems, they were definitely not productive in the attested period of Hittite. Finally, the nasal-infixed stems, being distinct verbs in Hittite rather than a part of a paradigm, appear to have a distinct meaning of their own, therefore the semantics of these formations can be studied as well. In the present work I intend to examine two topics: (1) what are the characteristic features of the Hittite infixed verbs and the related type of *nu*-verbs, and (2) to what extent are they compatible with nasal stems in other IE languages?

1.8 In some language families infixation is a common morphological process. For instance, in Semitic, where in Akkadian the perfect tense is formed with a bound morpheme *-ta-* inserted after the first consonant of the root, while other infixes mark reflexive and iterative stems. In Indo-European, however, we only know of one such infix, namely the verbal infix *-*né/n-*, which was inserted before the last consonant of the root¹⁶ and appeared in the present stem, cf. Skt. pres. 3sg. *yunákti* : 3pl. *yuñjánti* and aor. *áyuji* ‘to yoke, join’, and Lat. *iungō*, *iunxi*, *junctum*, *iungere* ‘to harness, join’ (in the Latin verb the infix was generalized throughout the paradigm). The origin of the infix is still debated; I follow Milizia (2004) in that the infix /n/ is a former suffix, which entered the root via metathesis or prenasalization (*-*Cn-* > *-*nCn-*) with the subsequent dissimilation (*-*nCn-* > *-*nC-*), as in Lat. *pandō* ‘to spread’ < **pt-né/n-h₂-*,

¹⁶ Note that Strunk (1973: 67) argued that the position of infix was conditioned by the structure of the root aorist, from which the nasal presents were derived. According to Strunk, in the PIE roots of the type *CRéC* the infix was inserted before the accented vowel, *CRnéC*, while in the roots of the type *CéRC* it was inserted before the final consonant, *CéRnC-*. It contradicts the Indo-Iranian data which Strunk believes to be reshaped – the infixed stems of the type *CéRnC-* were remodeled after the type *CRnéC-*. However, since in other branches the infixed stems usually generalized the weak grade, *CRnC-*, this assumption is difficult to prove.

cf. de Vaan 2008: 442. In the late PIE, however, it must have been an established way of making present stems, see, e.g., LIV: 17.

1.9 Hittite nasal verbs have already been treated in monograph chapters by Oettinger (1979) and Kloekhorst (2008), as well as in several articles (e.g., van Brock 1962, Eichner 1982, Puhvel 1987, Luraghi 2010, Bader 1979 and 1987). However, a detailed and focused study of all the relevant verbs is still missing.

One of the immediate tasks of the present study is to establish the number of infix verbs. The problem is that infix verbs, with the exception of 5 verbs with the infix *-nin-*, do not form a distinct class (or classes) in Hittite. They are independent lexemes, and when there is no infixless counterpart, it is not always possible to tell apart an infix verb and a verb with a radical *-n-*. Semantically, the infix verbs are often simply transitives in Hittite. For these reasons we often have to rely on comparative data to reveal the internal structure of a verb, and many verbs are believed to contain an infix solely on the basis of their etymology, which sometimes is very uncertain.

1.10 I have tried to include as many attestations of the relevant verbs as possible. Still, some verbs are presented less thoroughly, since many dictionaries have yet to cover letters like T, U, W, Z, and those that do (Friedrich, Kloekhorst, Tischler), do not always give a full set of forms. I was able to check all the *nin*-verbs in the Mainz archives in 2005 (for this opportunity I am very grateful to G. Wilhelm and S. Kořak). As for the other verbs, like *zinni-*, I have to rely on published sources, so my files are admittedly incomplete. I do not give all the available forms for some very common verbs like *asnu-* and *arnu-*. However, I always cite an OS attestation if there is one.

1.11 The datings for the texts are mainly based on the data from the Mainz portal, while for the age of the original text I consulted the Hittite Dictionary of the University of Chicago and relevant editions. In case of discrepancies, I used the most recent dating available to me.

1.12 The relevant verbs are discussed in the first 4 chapters. The first two chapters deal with infixed verbs made from roots ending in a velar and from roots ending in a laryngeal. The third chapter covers a related type of *nu*-verbs. (Since this type was very productive, this chapter is also the longer one.) Then there follows a chapter on the suffix *-anna/anni-*, one of the markers of an imperfective aspect in Hittite; etymologically it can be compared to some infixed formations in Sanskrit. Finally, there are two chapters on the formal and semantic properties of the Hittite nasal stems and their relation to nasal-infixed stems, attested in other IE languages.

1.13 When discussing etymologies, for the sake of convenience I use the conventional voiced and voiceless signs for stops in proto-Hittite or proto-Anatolian reconstructions; the actual phonological distinction between stops, written single and double in intervocalic position could well be short : long rather than voiced : voiceless.

1.14 Again, for the sake of convenience I use the traditional terms Cuneiform Luwian and Hieroglyphic Luwian, even though Yakubovich convincingly argues (2009) that the distinction is rather between Kizzuwatna and Hattusa Luwian dialects.

1.15 I transliterate Hittite cuneiform signs according to Rüster, Neu 1989, with the only exception: following Kloekhorst 2008: 4⁵, I sometimes transliterate *-nir-* as *-ner-*, *-kir-* as *-ker-* and *-kit₉-* as *-ket₉-*. In the broad transcription I use *-s-* instead of *-š-*, since in Hittite this sibilant was denti-alveolar [s] rather than alveo-palatal [ʃ], see Patri 2009: 109f. I also use *h* instead of *ḫ*, since the exact pronunciation of this fricative in Hittite is not clear; most likely it was an uvular fricative, see Weiss 2016.