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More on ablaut patterns in the *ḫi*-conjugation

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Abstract

Evidence from Palaic shows that contrary to some claims Hittite nasal presents such as *šunna-* and *tarna-* do not reflect original PIE *ḫi*-inflection. This paper presents a new account of how they come to inflect as *ḫi*-verbs in attested Hittite. It also shows that the so-called class of "*ḫi*-verbs in *-i-*" reflects in part presents with a suffix **-ói/-i-* (Kloekhorst 2006 & 2008), but in part modified acrostatic presents with **o*/zero root ablaut. The lexicalized participle LÚ *pitteant-* 'fugitive' preserves a trace of the original acrostatic paradigm with **o/e* root ablaut. Reasons are also given for why this class appears in Nuclear Indo-European as **ye/o-* presents with either **e-* or zero-grade of the root.

Keywords

ablaut – *ḫi*-conjugation – *ḫi*-presents in *-i-* – nasal presents in final laryngeal

1 Secondary *ḫi*-inflection of nasal-infix verbs with root-final **-$h_{2/3}$*

Kloekhorst (2008: 153, 785 & 846) assumes original h_2e-conjugation inflection with **-nó-/-n-* ablaut of the nasal infix in Hitt. *šunnai, šunnanzi* 'to fill' < **su-nó-$h_{1/3}$-ei, *su-n-$h_{1/3}$-énti* and *tarnai, tarnanzi* 'to let go' < **tr-K-nó-$h_{1/3}$-ei, *tr-K-n-$h_{1/3}$-énti*. This account is also adopted by Frotscher (2012: 142). This reconstruction faces two problems. First, as noted by Frotscher, from **-nó-$h_{1/3}$-ei* one would predict present third singulars in *-Cnāi* with a long diphthong. However, the only OH/OS form of 'to fill' is *šunnai* (KBo 6.2 iv 50), and four of five examples of 'to let go' are *tarnai*, versus only one *tarnāi*.[1] Since the latter

1 KBo 22.1 Vo 22, 17.18 ii 12, 17.43 i 3, 25.36 iii 11.

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occurs directly beside *ḫuttiannāi* (KBo 17.43 i 11), it is likely that both show the newer variant analogical to monosyllabic *ḫi*-verbs with present third singulars in *-āi* (a shift that is completed in later Hittite).

Furthermore, no motivation is given for a different inflection of nasal-infix verbs with roots in final **-$h_{2/3}$* versus *ḫullizzi*, *ḫullanzi* 'to defeat' < **$h_2$wl̥-né-h_1-ti*, **$h_2$wl̥-n-h_1-énti* (Kloekhorst 2008: 358–359), *d(u)warnizzi*, *d(u)warnanzi* 'to break' < **dhwr̥-né-h_1-ti*, **dhwr̥-n-h_1-énti* (thus correctly Oettinger 1979: 151 and Kloekhorst 2007: 456–457 & 2008: 906–907 contra Melchert 1984: 36), and *zinnizzi*, *zinnanzi* 'to bring to an end, complete' << **k^{w}i-né-h_1-ti*, **k^{w}i-n-h_1-énti* (Rieken 2019: 315, revising Oettinger 1979: 152, Kloekhorst 2008: 1036–1037, et al.).[2] As per Yates (2015: 146–148), the last three verbs would have received default initial accent in Proto-Anatolian, thus accounting for the unexpected *i*-vocalism in *du-wa-ar-ni-iz-zi* and *zi-in-ni-iz-zi*. I thus also read with him *ḫu-ul-li-iz-zi* against the standard interpretation.[3]

That Anatolian (and thus PIE) originally inflected all nasal-infix presents as *mi*-verbs is assured by Palaic preterite third singular *šu-ú-na-at* 'filled', which preserves the regular result of expected **su-né-h_3-t*, as shown by the spelling with *-ú-* and single *-n-* (thus against Kloekhorst 2008: 786 "whereas *o*-grade is equally possible").[4] The Hittite *ḫi*-inflection must be secondary. So already Oettinger (1979: 155), but the account there is not convincing: influence of the factitives in *-aḫḫ-*. That does not explain the stem *tarna-* instead of †*tarnaḫḫ-*. Correct is his adducing of the class of *šuḫḫa-* 'to pour' (1979: 156), but the imperative or *-šḫe-* forms were not the point of contact, but rather the paradigm of the plural (which is *not* secondary in *tarna-*, but the basis for the restruc-

2 As per Rieken, the initial *z-* of the transitive nasal-infix verb is based on that of its intransitive base *zēa-* *'to come to an end' > 'to be (cooked) done' < **k^{w}yéh$_1$-o-*. Note that if one reconstructs the root of *tarna-* as **terh$_1$-* (one alternative in Kloekhorst 2008: 847), then there is no explanation for why it is not inflected as **tr̥(K)-né-h_1-ti*, **tr̥(K)-n-h_1-énti* > OH †*tarnizzi*, *tarnanzi* just like all other nasal-infix stems in root-final **h_1* (likewise for *šanna-* 'to conceal', contra Kloekhorst 2008: 719—for the prehistory see Melchert 2010a: 336–337). I reconstruct **terKh$_2$-* with *LIV*^{2}: 635 based on the much higher frequency of **h_2*, but an **h_3* would lead to the same results.

3 The preterite third singular *ḫi*-conjugation variant *ḫulliš* (OH/NS) also only makes sense if the model was *mi*-conjugation *ḫullit*. Cf. the reverse replacement of OH (*i*)*yanniš* by NH *iyannit*.

4 I must stress that it is the shape of the stem that is decisive, not the ending, since there is good evidence that Palaic generalized the preterite third singular ending **-t* also to the *ḫi*-conjugation, as in *parinat* 'blew' and *patḫinat* 'spread out' (with Sasseville 2020: 537). However, if 'to fill' had been a *ḫi*-verb, we would expect †*šunnat*, based on the weak stem, as in Hittite (cf. Pal. *šunnuttil-* 'filled bread' or similar). The long first vowel again reflects the Proto-Anatolian default accentuation rule (see Yates 2015: 155).

turing). By regular sound changes what we must assume as the prehistoric paradigms would have led to the following quite complex results (there is no trace of the **K* of **TerKh$_2$-* in Anatolian, so it is ignored in the following):

Pres1Sg	**su-né-h$_3$-mi* >	**šunāmi*	**tr̥-né-h$_2$-mi* >	**tarnaḫmi*
Pres2Sg	**su-né-h$_3$-si* >	**šunāši*	**tr̥-né-h$_2$-si* >	**tarnaḫši*
Pres3Sg	**su-né-h$_3$-ti* >	**šunāzzi*	**tr̥-né-h$_2$-ti* >	**tarnāzzi*
Pres1Pl	**su-n-h$_3$-wéni* >	*šunnumeni*	**tr̥-n-h$_2$-wéni* >	*tarnumeni*[5]
Pres2Pl	**su-né-h$_3$-teni* >	**šunātani*	**tr̥-né-h$_2$-teni* >	**tarnātani*[6]
Pres3Pl	**su-n-h$_3$-énti* >	*šunnanzi*	**tr̥-n-h$_2$-énti* >	*tarnanzi*

After expected regularization of the present second plurals to *šunnatteni* and *tarnatteni*, the plurals matched those of the *šuḫḫ(a)-* class, crucially not only in the synchronically irregular first plurals in *-umen(i)*, but also the verbal nouns in *-umar*, and the infinitive and supine in *-umanzi* and *-uman*.

I must insist against an anonymous reviewer that the role of the non-finite forms in the averbo of the verbs in question is non-trivial. If we limit ourselves just to the finite paradigms, the *-Cu-* allomorph appears in only two of twelve cells, or one-sixth. If we include the non-finite forms, they constitute five of sixteen, nearly one-third. The type frequency of *-Cu-* is thus almost doubled. It is thus unsurprising that the irregular singulars were leveled after the plurals in *šunna-* (NB geminate *-nn-*) and *tarna-*.[7] Once the allomorph *-Cu-* was created, all verbal forms with endings in initial *-wV-* then underwent the pre-Hittite dis-

5 We would expect the accented **é* to lengthen, but no plene spellings are attested, so I give the attested forms of the first plurals.

6 I reconstruct full grade of the stem with Oettinger (1979: 153). Cf. also Watkins (1969: 32–34). If one reconstructs a zero grade, the replacement of the regular outcome is also trivial. The syllabification was almost certainly **tr̥-n-h$_2$-* in PIE (cf. **yu-n-g-énti* > Skt. *yuñjánti* and Lat. *iungere*). In any case, the strong stem **tarna-* would have blocked or undone any syllabification of the **-n-* in **tr̥-n-h$_2$-téni* and third plural ** tr̥-n-h$_2$-énti*. The synchronically irregular result of the first, **tarnḫatteni* with anaptyxis or **tarnteni* with deletion, would have been leveled out, as would third plural **tarnḫanzi*.

7 The same reviewer claims that the first plurals *kuennumeni* 'we kill' (to original root *mi-*conjugation *kuen-/kun-*) and *ūnnumeni* 'we drive here' (an original "imperfective" *ūnni/a-*) are formed by surface analogy to the *-nu-meni* type. But this is false: NH *kuennumeni* is based on a secondary NH stem *kuenna-* (present second and third plurals *kuennatteni* and *kuennanzi*), which—however *it* was created—naturally was also affected, along with *ūnni/a-* and *penni/a-*, by the type of *ḫi-*verb(!) *šunna-* and *tarna-*. These three verbs actually offer further support for the crucial role of *tarna-* and *šunna-*.

similation rule of *-*uw*- > -*um*.[8] The later shift of *duwarni/a*- and *zinni/a*- to the *ḫi*-conjugation class in -*C*(*a*)-/-*Cu*- from OH to NH confirms the pivotal role of the -*Cu*(*mV*)- forms.[9]

Further support for this account has now come from Luvian. Oettinger (1979: 483) and Starke (1990: 380[1373]) had already argued that the Luvian *ḫi*-verb stem *tūwa*- 'to place' has been generalized from the first plural **dhh₁-wéni* (first to the rest of the plural and then the singular).[10] I had long resisted this scenario, on the grounds that a reshaping of the entire paradigm based solely on the first person plural was implausible.[11] However, Sasseville (2020: 362) points out that, just as in Hittite, the same allomorph would have been found in the verbal noun in -*war* and the infinitive in -*una*. And we now have proof that the same generalization took place also in the Luvian reflex of **tr̥-né-h₂*-! We find in a Hittite colophon (KUB 38.10+ iv 24) present third singular [EGI]R-*an tar-nu-u-wa-i*, in context a "Heischefutur" 'one shall release', equivalent to Hittite EGIR-*an tar-numaš* '(is) to be released' (see Sasseville 2020: 477–478 with refs.). As in the case of *tūwa*-, Luvian went further than Hittite and generalized the /-uwa-/ to the entire paradigm, there being no synchronic class of consonantal *ḫi*-verbs in Luvian.

I also regard /tarnuwa-/ as one assured model for the unexpected attested *ḫi*-conjugation of *-*neu*-/-*nu*- verbs in Luvian, against the claim of Sasseville (2020: 485–486) that denominal *-*neu*-/-*nu*- verbs may have belonged to the **h₂e*-conjugation in PIE, based solely on the Luvian evidence.[12] How many other verbs of the *šuḫḫa*-/*tarna*- class existed in Luvian is unknowable.[13]

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8 For which see Hoffner & Melchert (2008: 44 §1.126 with refs.). The suggestion by Kloekhorst (2010: 15) of a direct change of **CHuV* > /ComV/ makes no sense phonetically. It is in any case not viable for reasons given below in the appendix.

9 An anonymous reviewer justifiably found my first attempt to explain the origin of the -*Cu*- allomorph less than adequate. Since for my present purposes only its existence and distribution in nasal-infix verbs are crucial, I have relegated my more expanded treatment of the matter to an appendix.

10 Neither, however, addressed explicitly the phonetics of how the [u] arose. The initial accent and thus long vowel are parallel to *pí-i-ya*- 'to give', which also shows generalization of a stem based on the third plural.

11 And as suggested by an anonymous reviewer, a *u*-extension has been entertained: see Kloekhorst (2008: 809) and García Ramón (2015: 120–124). The latter must concede, however, that there is no evidence elsewhere for a *u*-extension **dheh₁-u*-, and contra García Ramón and the anonymous reviewer, the root must be **dheh₁*-! See note 12.

12 An anonymous reviewer objects to this and suggests that the shift of *nu*-verbs to the *ḫi*-conjugation might have resulted through influence of *tūwa*- 'to put, place' (sic!) on HLuwian *tanuwa*- 'to cause to stand'. However, none of the argumentation for this will withstand scrutiny. Both CLuvian and HLuvian /tu:wa-/ are occasionally used of stelae,

My account of the Hittite must acknowledge no such prehistoric shift in the type in **-n-eh₁-*, despite matching irregular forms in *-um-* (*ḫullummen*, *ḫūllumar*; *duwarnumaš*, *duwarnumanzi*; *zinnummēni*, *zinnumar*), but it cannot be coincidental that we observe the *same* transfer to the *ḫi*-conjugation in these verbs by New Hittite: it is limited for *ḫulla-* and *duwarna-*, but massive for *zinna-*! We may thus assume that the same analogy was retarded for them due to the pattern *-Cizzi*, *-Canzi*, where *mi*-inflection was supported by others of that synchronic class: *lukkizzi*, *lukkanzi*, *waššizzi*, *waššanzi*, etc. (versus the absence of a type †*-azzi*, *-umeni*, *-anzi* to serve as a model for *šunna-* and *tarna-*). Eventually, however, they succumbed to the same fate.

2 Ablaut in *ḫi*-presents in *-i-*

Jasanoff (1979: 88–89 & 2003: 99–103) reconstructs for this class a paradigm with **é*/zero ablaut of the root: **dhéh₁-y-ei*, **dhh₁-y-énti*. There are two serious difficulties with this reconstruction, morphological and phonological. First, if *-i-* is a true present-forming suffix (as shown by its distribution), *quantitative* ablaut in the root with an *inert* suffix violates normal PIE ablaut rules.[14] Second, contra Jasanoff (2003: 99), the short diphthong *-ai-* in the Old Hittite strong

but their overall usage is clearly 'to place, put', not 'to erect' (unlike in Lycian, where *tuwe-* 'to erect' and *ta-* 'to put' are secondarily differentiated). The CLuvian verb is used of placing a pot and things in it. The HLuvian verb is used repeatedly with 'name' (an inherited expression), an army camp (cf. Lat. *castra ponere*), and also of boundaries, furniture, bread, a vineyard, and of putting things and people into someone's hands or under/at their feet. There is no semantic correlation with HLuvian /tanuwa-/, and influence of the former on the latter is far-fetched. Note further that even by the analysis of Sasseville, deradical *nu*-verbs belonged to the *mi*-conjugation, so *tanuwa-* is hardly a suitable model for spreading *ḫi*-inflection in Luvian.

13 Based on the attested CLuvian noun *wašta-* 'sin', there is a fair chance that Luvian had a verb **wašt(a)-* 'to sin' matching the Hittite cited above. Due to the established sound change of **dw* > *kw/kʷ* in Luvian (cf. *waškuit-* 'sin, delict' < **wasdw-it-*), such a stem would have developed an allomorph **waskw-* in all forms of the averbo with a suffix in *-w-*. Based on the example of *tūwa-*, a *ḫi*-verb **wašk(u)wa-ⁱ* resulting from leveling of a similarly complex paradigm is entirely possible, but it obviously could not have served as a model for *nu*-verbs.

14 Defining the *-i-* as an "*élargissement*" (Jasanoff 2003: 99) is seriously inconsistent with the spirit of the rest of his account of the class. In any case, since the "presigmatic aorist" is itself a pre-PIE construct not recoverable by the comparative method, nothing proves that the **-s-* of the reconstructed sigmatic aorist is anything but an ordinary suffix. The category shows "acrostatic" ablaut with fixed accent on the root, so a fixed zero-grade suffix is expected.

stem (present second singular *da-it-ti* and imperative second singular *da-i*) is not derivable from *e*-grade **dhéh$_1$-i-*, necessarily syllabified as *[dʰé.h$_1$i] before a consonant or word-finally. Lowering of **e* by heterosyllabic **h$_1$* is not credible (only tautosyllabic **eh$_1$* apparently led to a relatively low front vowel in Proto-Anatolian—see Melchert 1994: 56). Contrast Hittite *mē(i)an-* 'period of time, course' < **méh$_1$-(o)n-* (Rieken 2001: 77). It is true that various Germanic dialects show that a diphthong [ej] can by "polarization" turn into [aj], but all evidence that we have argues that **ej* monophthongizes to [e:] and eventually in some cases to [i:] in all the Anatolian IE languages. Under these circumstances it is quite ad hoc to suppose that secondary **ej* < **e_i* < **eh$_1$i* did anything else. Furthermore, there is no evidence that Proto-Anatolian **ē* < tautosyllabic **eh$_1$* led to anything except [e:] in Hittite. Therefore a singular paradigm **dhéh$_1$-i-h$_2$ei, *dhéh$_1$-i-th$_2$ei, *dhéh$_1$-y-ei* could only have led to *tēḫḫi, taitti, *tēi* alongside a plural in **tī-, ty-* (see below). I see no motivation for any reshaping of this paradigm (and others like it) beyond leveling the second singular to **tētti*.[15]

Two other solutions have been offered (with the assumption of a PIE *h$_2$e*-conjugation not derived from the perfect). Kloekhorst (2006b: 113–118 & 2008: *passim*) reconstructs a type with zero grade of the root and an ablauting suffix *-ói-/-i-*, thus **dhh$_1$-ói-ei, *dhh$_1$-i-énti*.[16] Oettinger (forthcoming) also adopts this reconstruction, revising his dereduplicated iterative type sketched in Oettinger 2002: XXVIII. For the root being illustrated, he would now posit **(dhe-)dhh$_1$-óy-ei, *(dhe-)dhh$_1$-y-énti*, with ablaut in the suffix, not the root. I had long rejected this, on the grounds that **o*/zero ablaut is elsewhere attested only in roots, not suffixes. However, Yates (2019 & 2022) has reconstructed just such an ablaut pattern in two classes of nominal stems. This objection has thus lost its validity, since such suffixal ablaut is no longer unparalleled, and there are almost certainly some genuine verbal examples. The most straightforward explanation for *išḫāi, išḫiyanzi* 'binds' is a prehistoric paradigm **sh$_2$-óy-ei, *sh$_2$-y-énti* to the root **seh$_2$-* (with Kloekhorst 2008: 392). Likewise, rather than invent a "state II" to the root **peth$_{1/2}$-* or an enlarged **pt-eh$_{1/2}$-* for which there is no other support (Jasanoff 2003: 95), it is more economical to derive *piddāi, pittianzi* 'runs'

15 I remind readers that at this point the singular of the root *ḫi*-conjugation would have looked like *ār-ḫi, ār-ti, ār-i* for stems ending in a consonant and *dā-ḫḫi, dā-tti, dā-i* for the few in a vowel.

16 He excepts only *mai-* 'to grow' (2006b: 114[7]), because of Hitt. *mayant-* 'grown man, adult'. This is correct, since the root is **meh$_2$-* 'to grow (big)' (Yakubovich 2010: 483–485 and *passim*), but *mayant-* is not a participle, but an extension of *maya-* 'idem' < **moh$_2$y-o-* with the "individualizing" suffix. Contra Starke (1985: 354), the attested word is indubitably Hittite, not Luvian, though a Luvian cognate existed. Kloekhorst's revised reconstruction for the verb and the noun (2008: 540 & 542) is a step backward.

< **pth$_{1/2}$-ói-ei, *pth$_{1/2}$-y-énti* (Kloekhorst 2008: 656, but with a false reading of the first vowel). The consistent zero grade of the root suggests that *ḫalzi-* 'to call' continues **h$_2$l̥t-ói-ei, *h$_2$l̥t-y-énti* (Kloekhorst 2008: 277), with the assibilation generalized from the latter.[17] Finally, *išḫamāi, išḫamianzi* 'sings' is most plausibly derived from **sh$_2$m-óy-ei, *sh$_2$m-y-énti* (Kloekhorst 2008: 394) to a base **sh$_2$-om-* 'song' (arguably from its locative singular **sh$_2$ém-i*), on which see Pinault 2001: 261–262.[18] The *o*-grade strong stem in these verbs produces all allomorphs of the attested Hittite by established sound laws.[19]

However, there are grave problems with trying to extend this model to all verbs of the class. Per the compelling derivation of *zai-* 'to cross' < **k/ḱyeh$_2$-* 'to divide, separate' (Puhvel 2017: 358 and Rieken 2019: 314), an ablauting suffix would suppose **k/ḱih$_2$-óy-ei, *k/ḱih$_2$-y-énti*. The very irregular result of the strong stem would have been leveled after the weak, but the latter could only have led to Hittite †*kīyanzi*, and there is then no possible source for the necessary assibilation of the initial stop. One must with Rieken reconstruct **k/ḱyVh$_2$-y-ei, *k/ḱih$_2$-y-énti*, which directly yields attested *zāi* and provides the source for leveled *zī-* in the weak stem.[20]

None of the etymologies presented for *pai-* 'to give' is satisfactory. The account in terms of a univerbated stem that I defended (Melchert 1984: 32 & 162, 1989: 44–45) has long since been refuted on multiple grounds and needs no further discussion here (the remarks of Kloekhorst 2006b: 110–113 suffice). Kloekhorst's own derivation (2006b: 116–118) is reasonable but hardly compelling semantically. The insurmountable problem is formal: **h$_1$p-óy-ei, *h$_1$p-y-énti* produces *pāi, pianzi* without difficulty, but it cannot possibly explain imperative second plural [*p*]*í-i-iš-te-en* (IBoT 3.135 Vo 10, OH/OS)[21] or present first plural *pí-i-u-e-ni* (KBo 16.27 i 14, MH/MS) and preterite first plural *pí-i-u-en* (KUB 34.50:5, OH/NS). Since the productive pattern in *ḫi*-verbs in *-i-* is to

17 There is no reason to doubt the etymology, for which see Puhvel (1991: 63) after Juret and Kloekhorst, pace Jasanoff (2003: 95[10]).

18 Whether this and other forms of 'song' belong ultimately also to the root **seh$_2$-* 'to bind' may be left open, but that the Hittite verb is unrelated to Skt. *sā́man-* and is without a root etymology (Jasanoff 2003: 95 with note 10) defies common sense.

19 For the distribution of the allomorphs *Cai-* and *Ce-* see Kimball (1994), especially 26–27.

20 I assume *zī-* with expected compensatory lengthening on the strength of the transitive *zīnu-* 'to make cross' (NB *zīnuškezzi* in KBo 6.2 ii 30, OH/OS), which has replaced the synchronically aberrant result of **k/ḱih$_2$-i-néu-*. For another example of a long vowel from unaccented tautosyllabic **-iH-* cf. *kīnā*(*i*)- 'to sift, sort' < **k/ḱih$_2$-n-éh$_2$-ye/o- *k/ḱih$_2$-nó-* (with Rieken 2019: 314).

21 Contra Kloekhorst (2014a: 418), the online photo shows clearly that there is no space between the partial sign *pí* and the following *iš*, so a reading [...*p*]*í i-iš-te-en* is excluded.

have full grade in these paradigmatic cells, the given forms of *pai-* 'to give' with zero grade of the root cannot be anything but archaisms (with the preterite first plural analogical to the present; see further below).[22] The only way to account for the length of the zero-grade vowel is to suppose a root **Peh$_1$-* and a paradigm **PVh$_1$-y-ei, *Ph$_1$-y-énti*, whose weak stem before consonantal endings underwent the well-established "laryngeal metathesis" between consonants: **Ph$_1$i-wén(i)* and **Ph$_1$i-s-tén* > **Pih$_1$ -wén(i)* and **Pih$_1$-s-tén*, leading directly to the attested OH forms.[23]

Evidence for a root **Peh$_1$(i)-* with suitable semantics from outside Anatolian has been cited: German *feil* '(fit) for sale' and its West Germanic cognates and TochB *pito* 'sale; cost, price'. For the meaning one need only cite the use of /pi:ya-/ 'to give' in Iron Age Luvian for 'to sell'. However, neither comparandum can be regarded as more than a mere possibility. Heidermanns (1993: 185–187) takes West Germanic **failja-* in the sense 'for sale' as merely a variant of **failja-* 'loyal; sure, secure', secondarily influenced by **fala-* 'for sale'. At least mildly awkward for this account is that the latter is securely attested only in North Germanic, and existence of a homonymous **failja-* to a root **peh$_1$(i)-* beside his tentative derivation of the other from **peh$_2$(i)-* 'to protect' cannot be excluded. However, the entire evidence for **failja-* 'for sale' is sparse, and as per Heidermanns the morphology is anything but straightforward. In sum, the West Germanic comparanda hardly constitute serious support for a **peh$_1$(i)-* 'to give'.

TochB *pito* faces its own problems. It has been repeatedly analyzed as a Middle Iranian loanword, specifically from a pre-Khotanese **paiϑa-* < virtual **peh$_1$i-to-* attested in Khotanese *pīha-* 'price' (Adams 2013: 412 with refs.). However, the alleged Ossetic cognate *fedun/fidyn* 'to pay' (Cheung 2002: 189) is better derived from Old Iranian **pati-dā-* (Kim 2022: 70–71, after Abaev): cf. Vedic *prati-dā-* 'to give back' and Middle Persian *p'tdhšny* [pātdahišn], *p'd'š(y)n* [pādāšin] 'to recompense'. The status of the preform **paiϑa-* is thus arguable, and alternative accounts of Khotanese *pīha-* are not lacking. A Khotanese loanword remains possible, but a connection with a root **peh$_1$(i)-* is quite uncertain.[24]

22 That the zero grade of these forms is analogical to *uppi-* (Jasanoff 2019: 33) is not credible. Jasanoff concedes in his note 45 that the *long* vowel likely reflects the zero grade of a root in **-eh$_1$-*.

23 The root is **Peh$_1$-*, not †*bhyeh$_1$-* (Jasanoff 2003: 94), which is refuted by the Hittite strong stem and Istanuvian *pāiu* 'let give!' (Sasseville 2020: 409–410). Both Luvian (Sasseville 2020: 405–414) and Hittite (see below) routinely create *ḫi*-verbs in *-(i)ya^i*. In neither would an original **pyeḫḫi, *pyaitti, *pyāi* have been remade with a strong stem *pai-*, but merely renewed after the third plural **pyanti* (or in Luvian rather its new shape *pīyanti*).

24 The TochB *o*-stem is no obstacle. See Peyrot (2016) for strong arguments that TochB *yolo*

It thus seems worthwhile to present in brief a possible analysis of TochB *pito* 'sale; price, cost' as a native word based a root **Peh₁i-* 'to give (in exchange for)'. Contrary to the handbook presentations, available evidence for the word consists of nom. and obl. sg. *pito* and perl. *pitosa*. All alleged forms of a stem †*pitai-* belong rather to *ṣīto* 'messenger' (see Ogihara 2013: 206–209 and Pinault 2017: 138–145). Both instances of gen. sg. *pittantse* belong to *pit* 'bile': PK AS 2C a2 and THT 497 a7 (see CEToM). Alleged incomplete gen. sg. †*pīta*[*ntse*] in THT 94 b2 is rather imperative second singular to *yät*$^{(ā)}$- 'to be decorated' (Malzahn 2010: 792). With due caution we may and should presently treat *pito* as a masculine *o*-stem. Tocharian B historical morphology and phonology permit a preform **Pih₁-téh₂*(*-s*) 'the thing given (in exchange)'—for the seller 'thing sold, sale', for the buyer 'price, cost'—derived from a *to*-adjective **Pih₁-tó-* 'given'.[25] For the secondary endocentric "individualizing" and substantivizing suffix **-eh₂* in Anatolian, see Melchert 2014: 261–262 following Hajnal 1994: 151–152.[26] One may object that most examples of such substantives have an active sense and refer to persons, typically masculine. It is clear, however, that these features are not inherent to the suffix: cf. Hitt. deverbative *arnuwala-* < *arnu-* 'to (re)move' meaning 'deportee' and CLuv. *pap*(*p*)*ašāla-* (*a*-stem with Ilya Yakubovich, p. c.) 'esophagus, gullet'. The passive resultative sense of *pito* would in any case be inherited from the base adjective. A prehistoric sequence **Pih₁t-* would yield attested TochB *pito* by either the view expressed by Malzahn (2010: 2) or that of Hackstein (1995: 17–19 & 1998: 219–220), et al. It seems likely that at least nonfinal **eh₂* yields TochB *o* (Pinault 2008: 486 & 518–519). Whether absolute final **-eh₂* would as well is an open question (cf. Pinault 2008: 486 vs. Kim 2018: 105 under 6.3). Since we cannot determine whether Tocharian would have added **-s* in such an endocentric type, the latter issue is not decisive. For present purposes it suffices to say that while such an account of TochB *pito* seems viable, it is no more than a hypothesis.

We must then rely on Hittite-internal arguments. The suggestion of Kloekhorst (2014a: 478–479) that the plene spellings in *pí-i-* reflect a retraction of the accent onto the stem vowel after the strong stem is entirely unmotivated: based

'bad, evil' (adjective and noun) is an Old Turkish loanword via Khotanese *yola* 'falsehood'.

25 For another substantive likely derived from a *to*-adjective, but via accent retraction and "neo-full grade," cf. TochA/B *ñkät/ñakte* 'god', on which see Barnes (2013: 42–51; however, Hitt. *ḫenk-* 'to proffer' < *ḫaink-* cannot belong to the root **h₂nek̑-*).

26 The arguments of Nussbaum cited there for a widespread pattern of such endocentric secondary suffixes alongside exocentric ones that form abstract and result nouns are now in part published in Nussbaum (2022: 215–220). Fellner & Grestenberger (2016) have argued for the same suffix in compounds of the type of Lat. *agricola* and Grk. βαθυδίνης.

on other levelings after the strong stem we would expect †*paiweni* and †*paišten* just as we find for *dai-* 'to put': *daitteni* and *taišten/dāišten*.[27] In any case, his account is phonologically impossible for OH/OS [*p*]*í-i-iš-te-en*, since accented high vowels are never lengthened in closed syllables in Hittite (Melchert 1994: 131–132). In particular, nominative singular commune *ku-iš* 'who' occurs with high frequency in absolute clause-initial position when in information or contrastive focus, where there can be no doubt that it is accented. I therefore assert that the plene spellings in the initial syllables of [*p*]*í-i-iš-te-en*, *pí-i-u-e-ni* and (by analogy) *pí-i-u-en* must reflect **pih$_1$-* with laryngeal metathesis.

There may be a third example where the preconsonantal weak stem excludes a stem with a suffix **-oi-, *-i-*: *pa-ri-i-wa-ni* 'we blow' (KBo 20.37 Vo 6, OH/OS). Kimball (1998: 340), noting the ending *-wani*, tentatively suggests that this form continues **préh$_1$i-weni*, with accented *e*-grade root, but the assumption that in Old Hittite a secondary accented diphthong **é_i* resulted in [i:] is dubious, as is my own alternative of adjustment of a synchronically aberrant **parēwani* to *parīwani*. As Kimball herself concedes, it may well continue instead a metathesized present first plural **prih$_1$-weni* < **prh$_1$i-weni* (the non-syllabic **r* would be due to the strong stem **préh$_1$-i-*). The account of Kloekhorst (2014a: 478) in terms of leveling of stem accent after the strong stem of the singular cannot be excluded, but why should it have occurred only in this verb? While the account of *-wani*/*-tani* < unaccented **-weni/teni* (Melchert 1994: 138 after Cowgill) is fundamentally correct, not all attested examples can be explained in this fashion: see the valid rejection of the archaic status of *ēdwani* 'we eat' by Kloekhorst (2008: 262), against Melchert. The example *ḫalziwani* 'we call' in KUB 17.21 iv 11 (MH/MS) is surely a real form, but it cannot be old. We must concede that the first and second plural endings with *a*-vocalism spread beyond their original conditioned environment, and spellings like *e-du-wa-a-ni* (KUB 29.1 i 15, OH/NS) raise doubts that it was any longer constrained by the accent. In sum, the hapax *pa-ri-i-wa-ni* is too fraught to serve as the basis for any conclusions about the ablaut and accent patterns of the *ḫi*-verbs in *-i-*. But even if we discount this example, the two preceding are not derivable from suffixal **-ói-, *-i-*.

It is also striking that the secondary stem *ḫalziya-* 'to call', which does continue suffixal **-ói-, *-i-*, is never spelled with plene (12× in NH texts). Likewise *išḫiya-* 'to bind', as well as the present third plural and participle on which it is based, is spelled without exception as *iš-ḫi-ya-* (more than a dozen times), while in contrast the secondary stem *pí-i-ya-* 'to give', which can only be based

27 I must emphasize that root zero grade in the preterite plural *pí-i-u-en* and other *ḫi*-verbs in *-i-* is analogical to the present plural (see Melchert 2014: 142 & 147 and implicitly already Kloekhorst 2012: 155).

ultimately on the pre-consonantal allomorph *pí-i-* of OH/OS [*p*]*í-i-iš-te-en* and MH/MS *pí-i-u-e-ni*, is attested with plene of the *-i-*: *pí-i-ya-u-e-ni* (6 ×), *pí-i-ya-an-zi* (2×), *pí-i-ya-u-wa-an-zi* (2×).[28] It is no surprise that the present third plural is overwhelmingly *pí-an-zi*, which is the entirely regular result of **ph₁-y-énti* (as in all other attested exemplars of the type). Nor that in the likewise secondary preterite first plural we find only *pí-ya-u-en* (per above, since zero grade was not original in the preterite first plural, we have only one example of *pí-i-u-en*). What is remarkable is that there are any examples of *pí-i-ya-* at all. It cannot be coincidence that it is solely the verb 'to give' for which we have direct OH/OS evidence for the preconsonantal zero grade *pí-i-* source in the finite paradigm *and* the resulting secondary "thematized" stem *pí-i-ya-* with plene (*zi-i-nu-* 'to cause to cross' obviously is only indirect testimony).[29]

A further problem for the **-oi-, *-i-* ablaut in roots of the shape **C(C)eh₁-* lies in the Nuclear Indo-European reflexes of the type. Jasanoff (2003) did not opt for a strong stem with *e*-grade for no reason: cognates elsewhere present ample evidence for **-eh₁i-* (see Jasanoff 2003: 94–95 & 100–101). If one accepts that these did originate in *ḫi*-conjugation verbs in *-i-*, it is hard to explain them starting solely from an ablauting suffix **-ói-, *-i-*.

Kimball (1998: 343) reconstructs original acrostatic *ó/é* ablaut, illustrated with **dhóh₁-y-ei*, **dhéh₁-y-r̥* (sic!) 'put', as in the root *ḫi*-verbs, and assumes large-scale prehistoric renewal of the weak stem by zero grade (as in nouns). There are two problems with her presentation: first, she wrongly assumes (1998: 339) Proto-Anatolian compensatory lengthening in a sequence **-oh₁i- > -ōi-* and denies a synchronic contrast of short and long diphthongs. But no compensatory lengthening would be expected in a heterosyllabic sequence **-o.h₁i*, and as first pointed out by Warren Cowgill (p. c. ca. 1985), the Old Hittite spellings *da-it-ti* and *da-i* confirm that there was none. This error is, however, harmless: Kimball's strong stem **-óh₁i-* gives the correct outcome, just as Kloekhorst's and Oettinger's **-ói-* does. The second and quite serious difficulty is that her only evidence for a weak stem in **-éh₁i-* is extremely thin. We have already discussed the less than compelling case of *parīwani*. The value of the MH/MS imperative

28 Contexts assure that we are dealing with 'to give', not *pe/iya-* 'to send'. For *parā pīyaweni* as 'we (will) hand over' see imperative second singular *parā pāi* in KBo 5.4 Ro 36 9.

29 I agree with the reviewer that eventually the base plural paradigm *pīweni, pīšteni*, p(i)yanzi* was likely also leveled to **piweni, pišteni, p(i)yanzi*. This certainly happened in the second plural, but could not have happened until the secondary *pí-i-ya-* had been created. Influence of the type of CLuwian *pí-i-ya-* is not credible, because we would then expect to find some examples with a long vowel also in at least a few other *ḫi*-verbs in *-i-*, including those from suffix **-ói-/i-*. Hittite speakers had no knowledge that the class has multiple sources.

second plural *iš-pí-it-ten* is even weaker: yes, it can be read as *iš-pé-et-ten*, but in the absence of an unambiguous spelling **iš-pé-e-et-ten* one must consider /ispitten/ with the well-established zero grade of the weak stem in this class more likely.

I have argued (Melchert 2013) for original **ó/é* ablaut in root *ḫi*-verbs (against the contrary view of Kloekhorst 2012 & 2014b) and have now pointed out above cases where a suffix **-oi-/-i-* is unsatisfactory for at least some of the *ḫi*-verbs in *-i-*. I have also argued against Jasanoff's **é*/zero ablaut schema. I would like very much to adopt Kimball's reconstruction, which addresses all the cited problems with those two accounts. The question is: can one find any credible trace of the putative original weak stem in **-eh$_1$-*?

I believe that such evidence is furnished by the Hittite verb *piddai-* 'to run, flee'. Contra Kloekhorst (2008: 656) this reading is assured by the present third plural ~~*pí-it-ti-an-zi* at KBo 44.142 Ro 5~~, as seen by Puhvel (2013: 98). For reasons given above, this is most plausibly reconstructed with the suffix **-ói-*, **-i-* added to the zero grade of a root **peth$_{1/2}$-*: **pth$_{1/2}$-ói-ei*, **pth$_{1/2}$-y-énti*. The verbal inflection shows almost exclusively a regular weak stem *pitti-*, but one should acknowledge *pít-t*[*e*]*-an-zi* (IBoT 1.36 ii 17; MH/MS) and the verbal noun *pít-te-ya-u-wa-ar* (KUB 36.75 iii 15; OH/MS). More crucially, the lexicalized participle ^{LÚ}*pitte*(*y*)*ant-* 'fugitive' is spelled predominantly *pít-te-*(*ya*)*-an-t*° (16× of 20×) and the adverb is spelled *pít-te-an-ti-li* in KUB 37.223 d 2 (OH/OS). Reconstruction of a separate non-participle **ptH-ei-ent-* (Kloekhorst 2008: 657) is totally ad hoc. The alleged parallel †*mh$_2$-ey-ent-* 'adult male' does not exist. As discussed above (note 16), Hittite ^{LÚ}*mayant-* is an extended form of *maya-*. Preservation of the more archaic form in a lexicalization that was no longer part of the synchronic paradigm is, of course, another instance of Kuryłowicz's so-called "fourth law of analogy." A law it is not, but the frequency of the phenomenon is not in doubt.

We may thus assume an original **pth$_{1/2}$-óy-ei*, **pth$_{1/2}$-éy-n̥ti* giving in the first instance **pittāi*, **pittēanzi*. Sporadic hiatus-filling *-y-* is regular (compare *nēa* 'turns' > *nēya* and other examples). Preservation of the irregular *e*-vocalism prevails in the lexicalized participle, but it is mostly analogically eliminated in the verbal paradigm after other verbs with innovative zero grade. One problem: why is the *-e-* consistently *short* (never spelled plene)? Plene spellings are mostly optional, and the OH/OS example *pít-te-an-ti-li* in KUB 37.223 d 2 occurs in a text that also has *ne-a* for 'turns' (ibid. a 2). But if the vowel were long /e:/, it is not credible that there would be no plene spellings in more than a dozen examples, mostly MS. I suggest that the answer is that once the word was lexicalized as a noun 'fugitive' and was no longer the participle of the verbal paradigm ('fled, fleeing'), it became subject to the default initial accentuation

rule cited earlier (see Yates 2015: *passim*), leading to shortening of the secondarily unaccented /e:/. Note that the present third singular is attested twice as expected as *píd-da-a-i* (KBo 20.12 i 1 and KBo 17.43 i 16, both OH/OS).

There is one last issue to be addressed: if the *ḫi*-verbs in *-i-* had original acrostatic **ó/é* ablaut like root *ḫi*-verbs, why is there no trace anywhere in Nuclear Indo-European of the *o*-grade? The latter is robustly attested in reshaped reflexes of the root type. My response is that nothing requires that the one class follow the pattern of the other in this regard. Already in Hittite itself there is ample evidence for the strong stem being replaced by a "thematized" variant of the weak in the *ḫi*-verbs in *-i-*: this is very prevalent in the preterite third plural, where the original strong stem is mostly replaced by the weak after the present (see Melchert 2013: 147). But there is also considerable reshaping of the singular: *ḫi*-conjugation forms of *ḫūwai-* 'to move; flee' occur with some frequency through Hattusili III, but we also find *ḫu-u-ya-zi* (KUB 14.3 iii 51, Hattusili III);[30] *ḫalzai-* 'to call' shows *ḫalziyatti*, *ḫalziyat* (by context preterite second singular) beside the ambiguous *ḫalzi*(*a*)*ḫḫi* and *ḫalzi*(*a*)*ḫḫun*; for *išḫai-* 'to bind' beside older present third singular *išḫāi* we find *išḫiyazzi*, *išḫiyanun, išḫiyat*, beside ambiguous *išḫi*(*a*)*ḫḫun*; *išpai-* 'to become satiated' is sparsely attested, but we find imperative second singular *išpiya* beside older *išpāi*; the state of affairs of *šai-* 'to press, seal' is muddled by confusion with the original *mi*-verb *šiye/a-* 'to throw, cast', but in the first sense older imperative second singular *šāi* stands beside *šiyanun*; for *tarai-* 'to become exhausted, exhaust oneself' older *darāi* and *taraiš* give way in New Hittite to *dariyaḫḫun* and eventually *dariyanun* and *dariyat*.

The reasons for spreading of the stem in *-*(*i*)*ya-* are not far to seek: the weak forms, most prominently the present third plural in *-*(*i*)*yanzi* and participle in *-*(*i*)*yant-*, were homophonous with the matching forms of the very expansive class of Hittite *mi*-verbs in *-ye/a-*.[31] The point of all this is that the situation was not so different in Nuclear Indo-European. While root *ḫi*-verbs

30 As an anonymous reviewer correctly objects, the stem shape of *ḫūiyanun* in Mursili II's Annals and *ḫūiyaši* in Hattusili III's Autobiography argues that they are rather modeled after the Luwian stem *ḫuiya-* and cannot be attributed to a Hittite-internal development.

31 I concede the point of an anonymous reviewer that the previous elimination in Luwian of the type **-Cai, -C*(*i*)*yanti* in favor of *-C*(*i*)*yai, -C*(*i*)*yanti* may have helped lead to reshaping of the former pattern in NH, but influence of the latter Luwian class appears most explicitly in the (modest) spread of *-C*(*i*)*yaizzi, -Ciyanzi* from Luwian loanwords (*ḫantiyaizzi* 'favors') to native Hittite (*waggariyaizzi* 'rebels'). One might therefore expect a few more instances such as *šiyair* 'they sealed' (2×) for regular *ši*(*y*)*ēr* to the *ḫi*-verb *šai-*. I know of no examples of *-C*(*i*)*yaizzi* or *-C*(*i*)*yait* from *ḫi*-verbs in *-i-* in NH compositions.

became thematized in NIE with mostly either **o* or zero-grade root vocalism (see Jasanoff 2003: 64–90), the *ḫi*-verbs in *-i-* would have been remodeled after **-ye/o-* presents with thematic inflection, prominent among which were denominal stems in **-e-ye/o-* and iterative-causatives in **-eye/o-*. Under these circumstances I do not find it incredible that the weak stem in **-eh₁-y-* won out in reflexes of the *ḫi*-verbs in *-i-*, naturally alongside the innovative zero grade allomorph. For anyone who questions the survival of the *e*-grade weak stem in NIE in the face of its near-total disappearance in Hittite, I emphasize that one must not project even Old Hittite back into PIE: it becomes ever clearer that Old Hittite has undergone many innovations even from Proto-Anatolian.

To sum up: only **o*-grade in the strong stem of *ḫi*-verbs in *-i-* can account for the phonology of the attested Hittite paradigms. While some individual verbs likely do reflect zero-grade roots with an ablauting **-ói-/-i-* suffix, evidence from laryngeal metathesis argues that the large class of roots in **C(C)eh₁/₂-* continues paradigms with *o*-grade in the *root* in the strong stem. While most attested paradigms, like root *ḫi*-verbs and the corresponding type of acrostatic nouns, show innovative **ó/*zero ablaut, the lexicalized participle *pitteant-* of *pittai-* 'to run, flee' preserves a trace of the original acrostatic ablaut **ó/é*, whose *e*-grade allomorph also has reflexes in the thematized *ḫi*-verbs in *-i-* of Nuclear Indo-European.[32]

Appendix

Just how the allomorph *-Cu-* before endings with initial *-w-* arose in all verbs of both the *mi-* and *ḫi*-conjugation verbs that attest it remains a complex issue. At least the core of such stems reflects sequences of **(C)CH-wV-*, making it likely that the *-Cu-* originates due to syllabification issues. No published account known to me is now viable as formulated: Bernabé 1983: 40–42 (assimilation of **CHw* > **Cww* > **Cuw*), Melchert 1984: 25 & 1994: 57 (a "Sievers-Lindeman" effect by which **#CwVC#* > **#CuwVC#* and word-medially at least some sequences **-CCwV-* > **-CCuwV-*), Eichner 1988: 137 (assuming a syllabic allophone **[ə] of

32 Against my misunderstanding of 2015, the account of Jasanoff (2003: 101–105) of the first short vowel of the Sanskrit *dháyati* type is as compatible with a first-person singular in **-óh₁-i-h₂e(i)* as with one with root *e*-vocalism. However, the point is probably irrelevant. As an anonymous reviewer has reminded me, Jasanoff (2021) has now presented a far superior account of the origin of the *dháyati* type that does not rely on an allomorph originating in just the first singular having been generalized to the entire paradigm.

laryngeals colored to [u] before **w*), Kloekhorst 2010: 15 (direct development of **CHuV* > /ComV/).

A regular phonological assimilation of **CHw* > **Cww* is now precluded by the compelling demonstration by Kloekhorst (2006a: 97–100) that already in Common Anatolian at the latest a sequence **h₂w* had become a *unitary* labiodorsal fricative [χʷ],[33] attested not only in the name of the Storm-god reflected in Lycian *Trqqas* = CLuvian *Tarḫwanza* < **tr̥h₂-wént-s*, but crucially for the issue at hand also in the Hittite verb *tarḫu-/taruḫ(ḫ)-* 'to overcome', whose spellings and morphophonology show that it is a stem /tarχʷ-/, entirely parallel to *e-ku-/e-uk-* 'to drink' (/ekʷ-/).[34] Compare also *šanḫw-* 'to roast' (Kloekhorst 2008: 719–720 with refs.).[35] The account of Eichner is improbable absent any compelling evidence for direct syllabification of PIE "laryngeals" in Anatolian, all the more so given the likelihood that they are uvular (and thus oral) fricatives in the second-millennium languages (cf. Weiss 2016 and Kloekhorst 2018). I fully agree with Kloekhorst (2008: 29–31) that synchronically Hittite [w] and [j] are almost surely mere allophones of the vowels /u/ and /i/. However, against his claim, the direct syllabification of a sequence (*)/CHuV/ can only have been (*)[CHwV]. The only viable source of [Cu/omV] in Hittite is a sequence [Cu/owV].

The question becomes: how can one best explain the origin of such a sequence in the relevant preforms of the shape **(C)CH-wV-*? The "Sievers-Lindeman" account of Melchert cited above cannot be entirely excluded, but the absence of any proven such effects in Anatolian outside the *-Cu-* allomorphs being examined seriously reduces its viability. The cases where syllabification problems seem undeniable are the present first plural of *dā-* 'to take', where the preform would have been **dh₃wéni* and—once the syllabic liquids had become **Vr/l*—the first plurals **tarnh₂wén(i)* 'we let go', **dwarnh₁wén(i)* 'we break/broke', and **h₂ʷolnh₁-wén(i)* 'we defeat(ed)'.[36] The initial stop-fricative

33 For reasons discussed in Weiss (2016) and Kloekhorst (2018) I treat the phoneme as a labialized uvular, but all that is crucial for present purposes is that it is a *unitary* labialized dorsal fricative.

34 This includes the feature that in the present and preterite first plural we find *tar-uḫ-ḫu-u-e-ni* and *tar-ḫu-u-en*, just like *a-ku-e-ni* and *e-ku-e-en*, which can only reflect [tarχweni] and [tarχwen] < /tarχʷwen(i)/, in which the labial element of the labiodorsal is absorbed by the [w] of the ending. A sequence /tarχwwen(i)/ could lead only to [tarχuwen(i)] and †*tarḫumen(i)*.

35 While a certain example for a PIE stem in **-Rh₃w-* is lacking, the example of CLuvian *tatarḫ-* 'to break' (sic!) < **terh₃-* with preserved *-rḫ-* (Kloekhorst 2008: 838–839) argues that the result would likewise be a labialized uvular fricative.

36 Or already assimilated **h₂ʷollh₁-wén(i)*. The labialized /χʷ/ (see above) prevented the

in */'dχ/ʁueni/ would not have been a possible surface onset. If we make the unprovable but reasonable assumption that in pre-Hittite the underlying form was as given (with /u/, as argued above for attested Hittite),[37] we may suppose that the first step in resolving this problem was to keep the /u/ as syllabic [u] and to insert a hiatus-filling [w], producing *[dχ/ʁu.'wen].[38] In initial *['dχ/ʁu-] the fricative was deleted between stop and vowel, just as in the present third plural *danzi* < **dh₃-énti* and other forms of the paradigm with vowel-initial endings.

In **tarnh₂wén(i)*, **dwarnh₁wén(i)*, and **h₂ʷolnh₁wén(i)* syllabification before the [w] would certainly not have been possible, with three consonants in the preceding coda. However, syllabification before the respective laryngeals might also have been problematic. Adiego (2022) has argued that PIE prohibited syllable codas consisting of two sonorants, as does Standard Classical Latin (2022: 5), and correctly indicates that this reflects "the need for a greater contrast of sonority between the two segments following the nucleus" (2022: 6).[39] As Adiego properly emphasizes, such a prohibition is by no means universal (cf. Standard English 'film', 'kiln', 'farm', 'yarn'). To my knowledge, however, it applies in attested Hittite. If pre-Hittite had the same constraint as PIE and attested Hittite, only a syllabification between the nasal and laryngeal would have been possible.

Once again, if we suppose that the pre-Hittite underlying form had /u/, a */tarnχuen(i)/ could have maintained /u/ as syllabic and led to *[tar.nχo.'wen(i)], where again loss of the [χ] would have been regular before vowel (cf. *tarnanzi* < **tarnχanzi* above).[40] The dissimilation rule produced attested *tar-*

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usual lowering of the result of the syllabic **l̥* to *al*, leading to the new "/o/" spelled when possible with ⟨u⟩ in Hittite, which in turn led to deletion of the labial element of the preceding consonant: cf. Hitt. *u-ur-ki-* 'track, trail' /'o:rki-/ < **wr̥gi-*.

37 While the phonemic status of the bilabial and palatal glides in PIE is debated, there is no doubt that the vast majority of occurrences can be treated as allophones of */i/ and */u/: see, e.g., Fritz (2000: 77–78 with refs.). Cooper (2015: 187) takes the high vowels and matching glides as allophones, but assumes that it is the non-syllabic glides that are underlying. However, the reasons for this may no longer have held at the relevant pre-Hittite stage.

38 Compare imperative third plural *ḫar-ga-nu-(wa)-an-du* 'let them destroy', far more likely representing [χark.nu.'(w)antu] than [χark.'nwantu] with an onset [nw]. For the same development prehistorically cf. present third plural *ú-wa-an-zi* [u.wants̪i] 'they come' < **eu-h₁y-enti* via intermediate **u_anzi* and present third singular *kap-pu-u-ez-zi* [kap:u.wets̪:i] 'takes account of' < **ko(m)-puyeti*, etc. (Melchert 1984: 42).

39 On the general principle of "Minimal Sonority Distance" (MSD) in onsets see Zec (2007: 189 with refs.), but it also applies to codas (Steriade 1982: 218–223).

40 Attentive readers may ask how sequences of **h₂/₃w* (or respectively /χw/) still existed, given the already Common Anatolian change of **h₂w* to a unitary /χʷ/ cited above. I point

numeni.[41] Original **su-n-h_3-wén(i)* could have been syllabified *[sun.ˈχwen(i)], so it may be merely analogical to *tarnumeni* (see below), but if the relative chronology led to an intermediate */sunnuen(i)/ based on *šunnanzi*, the unacceptability of a coda [nn] would have led to [sun.nu.wen(i)] and [sun.nu.men(i)].

I certainly do not insist that this is the only possible account, but it depends solely on features established for attested Hittite. All other instances of *-CumV-* in *ḫi*-verbs of the *šuḫḫa-* class ending in two consonants may be analogical. This clearly applies to *pēda-* 'to carry (off)' and *uda-* 'to bring', prehistorically transparent univerbations with **-dh_3-*, after *tumēni* 'we take'. The stems *ārra-* 'to wash', *arrirra-* 'to scrape', *šanna-* 'to conceal', *šarra-* 'to divide', and *wašta-* 'to sin', which clearly belong to the same class in later Hittite, may be analogical to *tarna-*.[42] We are left only with the *mi*-verb *wete/a-* 'to build', ostensibly < **wé-dh(e)h_1-* (e.g., Kloekhorst 2008: 1010, despite the uncertain status of the first element).[43] We predictably have no parallels to tell us what the outcome of **wédhh$_1$weni* with a stop plus first laryngeal plus **w* might have been. If the pre-Hittite phonological realization was for the sake of argument */ued?/huen(i)/, we cannot exclude that an onset [?/hw] was impermissible, leading to *[wed.?/hu(w)en(i)] as in the cases above and attested *wedumēni*. The alternative of an analogy *d(u)warnanzi/zinnanzi* : *d(u)warnu-*

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out that for pre-Hittite speakers the **h_2w* in **t(e)rh_2w-* and **s(e)nh_2w-* was morpheme-internal and present throughout the paradigm. Nothing prevented these from being treated like **eg^{w}h-*. However, had speakers syllabified a first plural in **-(C)RH-wen(i)* as **-(C)R.Hweni* early enough to lead to *[-(C)R.χ^{w}en(i)], this would have produced a very aberrant and isolated allomorph in the first plurals (and relevant non-finite forms), even if at that point the laryngeal (/χ/) was still present in some paradigm cells. I therefore seriously doubt that such a change took place across a transparent morpheme boundary between stem and inflectional ending.

41 The presence of the preceding uvular would have lowered the *[u] to the new "[o]" in the realizations of */tarnχuen(i)/ (see Kloekhorst 2008: 51 et al.). This would not have happened in the other two cases with **h_1*. Whether regular [tarnomen(i)] was adjusted to [tarnumen(i)] after the others and verbal stems in /-nu-/ cannot be determined.

42 The stems *ārra-*, *šarra-*, and *wašta-* are clearly original *ḫi*-root presents (see Kloekhorst 2008: 197, 728 and 986). For *šanna-* see note 2, while *arrirra-* is likely sound-symbolic. We have too little evidence for *ard-* 'to saw' to determine its inflection. Existence of a stem **ardu-* (e.g., Kloekhorst 2008: 211) depends on a quite uncertain restoration, but cannot be disproven.

43 Despite the tendentious treatment by Hoffner & Melchert (2008: 198), it is extremely arguable whether *pēḫute/a-* 'to lead (there)' and *uwate/a-* 'to lead here', which take almost exclusively self-locomoting direct objects, are univerbations with the root **dheh$_1$-*. If they are, they present the same issues as *wete/a-*. If not, their forms in *-Cum-* are surely analogical to it.

*meni**/*zinnu*(*m*)*meni* :: *wedanzi* : x is weakened by the discrepancy in the vocalism of the singulars (*-nizzi* vs. *-tezzi*), but remains viable.

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