# Left But Not Leftmost? Interactions between Epenthesis and Ictus Assignment in Anatolian[*]

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## 1. Introduction

The Hittite forms in (1) are united by two prehistoric phonological developments: (i) an epenthetic vowel has emerged in the word-initial obstruent-sonorant cluster reconstructed for Proto-Indo-European (PIE); and (ii) this new epenthetic vowel hosts the word's single surface accentual peak (or ICTUS),[1] which, from a PIE perspective, should fall on the peninitial syllable:[2]

(1) a. *pūnuššun* [pó:nus:on] 'I interrogated' < *\*pn(é)u(H)-s-m̥*
   b. *terippzi* [té(:)rip:t͡si] 'plows' < *\*trép-ti*
   c. *teri-* [té(:)ri-] 'three' < *\*trí-*

This "retraction"—viz., historical leftward shift—of the ictus has been treated in detail by Melchert (2013b:178–9), who proposes that the epenthetic vowel has "attracted" the ictus in these words; according to his rule, "a prehistoric anaptyctic vowel to the left of the original accent regularly drew the accent [= ictus] and was thereby lengthened in an open syllable, while a post-tonic anaptyctic vowel remained unaccented [= non-ictic]."

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[1] Here I follow Kiparsky (e.g., 2010) in distinguishing between ACCENT, an underlying property of morphemes, and ICTUS, a word's single surface prosodic prominence (which may be realized phonetically as stress, high pitch, etc.). This distinction is applied to Anatolian by Yates (2015).

[2] See *LIV*²:489, 650 on (1a) and (1b), and on (1c) Kloekhorst 2008:872–3 with references. More recently, Kloekhorst (2012:157–9; 2014:64–5) has proposed alternative analyses of (1b) and (1c); these proposals are untenable for reasons discussed by Melchert (2013a:139–40) and in detail by Yates (2015). In phonetic notation, I employ [h], [χ], and [ʁ] for the Anatolian reflexes of PIE *$h_1$, $h_2$, and *$h_3$, respectively (cf. Kümmel 2007:227–36), [y] for IPA [j], and acute accent [´] to mark ictus. A dagger (†) indicates a word that is not directly attested but whose existence is implied by inflectionally or derivationally related forms. Italics always denote surface forms; underlying forms are enclosed in slant brackets (/ /).

Still more recently, however, Yates (2015) has contended that the forms in (1) bear ictus on the epenthetic vowel not because it is epenthetic, but rather because it is the leftmost syllabic nucleus in the word, and is consequently assigned ictus by ANATOLIAN DEFAULT ACCENTUATION, as stated in (2):

(2)  ANATOLIAN DEFAULT ACCENTUATION (ADA):
    If a word has no underlyingly accented morpheme, the leftmost syllable bears the ictus.

This default phonological principle is held responsible for a broader pattern of "retraction" in Proto-Anatolian (PA) that includes such morphologically disparate forms as inherited nasal-infix and *-sk̂é/ó- presents (e.g., Pal. *šūnat* 'filled', Hitt. *ḫūnikzi* 'batters'; *ḫūškeši* 'you wait'), all of which are characterized by a historically unexpected leftmost ictus.

It is the primary aim of this paper to adjudicate between these two competing explanations, which are therefore evaluated in terms of their explanatory power as well as their typological plausibility. The first of these concerns is taken up in §2, which examines additional Hittite data including, crucially, instances in which an epenthetic vowel appears to surface in a non-initial (historically) pretonic syllable, as well as previously neglected evidence for epenthesis into word-initial complex clusters (cf. Melchert forthcoming). Section 3 assesses the two hypotheses from a typological perspective, investigating, in particular, the cross-linguistic support for a causal connection between epenthesis and "attraction" of ictus. These two sections demonstrate that the "attraction" hypothesis encounters objections on empirical and typological grounds. Consequently, §4 argues that the leftmost ictus of the forms in (1) is better explained as the result of an interaction between epenthesis and ADA (Yates 2015). A brief appendix (§5) revisits the problematic accentuation of the "ethnicon" suffix *-ūm(e)n-*; a potential explanation is developed in the wider context of a previously neglected pattern of prosodic change in certain Anatolian derivational suffixes.

## 2. Epenthesis and ictus retraction: The Hittite evidence (re)considered

An important testing ground for the connection between epenthesis and ictus "retraction" posited by Melchert (2013b) are cases in which the epenthetic vowel surfaces in a non-initial (historically) pretonic syllable. Under these conditions, the "attraction" hypothesis makes an empirical prediction—viz., that the epenthetic vowel will bear the ictus. In contrast, Yates' (2015) account makes no such prediction; the ictus is expected to remain stably in its inherited position, or else undergo "retraction" to the leftmost syllable (via ADA). Thus if unambiguous

cases of word-medial "attraction" could be identified, they would provide com-
pelling evidence for Melchert's rule.

Oettinger (1982:170–2) and Melchert (2013b:180) have adduced several Hitt-
ite examples alleged to exhibit this development; these examples are presented in
(3) along with their hypothesized pre-forms:

(3)  a.  *pišēn(a)*- [pisé:n(a)-] 'man; male' < PIE *pes-nó-
     b.  *paršēna*- [parsé:na-] 'hip; cheek' < PIE *pers-nó/éh₂(-)
     c.  *-eš(šn)*- [-eš(:n)-] '(-*š*/*n*- "heteroclite" suffix)' < PIE *-s-n-´
     d.  *-ūm(e)n*- [-ó:m(e)n-] '("ethnicon" suffix)' < PIE *-mén-

In §§2.1–2.4, these forms are critically assessed—in particular, with respect to
the evidence they are held to provide for epenthesis-conditioned ictus "retrac-
tion." Section 2.5 then considers some counter-examples to the rule as a syn-
chronic process and as a historical development.

**2.1.** Of the examples in (3), most easily dispensed with is (3a) *pišēn(a)*-, whose
consistent singleton -*š*- is unexpected if really from an intervocalic *-*sn*- cluster,
since *s* normally undergoes gemination in this environment (cf. Melchert 1994:
175 with refs.). In addition, the putative epenthetic vowel is absent in the genitive
singular [*p*]*išnāš* (KBo 17.1+ iv 6; OH/OS) despite the fact that the nominative
and genitive should have been identical in a thematic formation. These issues
recommend the alternative analysis of Zucha (1988:53–4) and Carruba (1993),
who derive the attested forms from an ablauting *n*-stem *pes-én/*pes-n-´ (cf.
Melchert 2013b:178–9 n.11).

**2.2.** The pre-form assumed for (3b) *paršēna*- may similarly be disputed. In par-
ticular, the only apparent motivation for the oxytone ictus reconstructed by
Oettinger (1982) is that epenthesis will then trigger the "attraction" rule. Note,
too, that this accentual pattern is directly contradicted by its closest etymological
comparanda, Hom. Gk. πτέρνη (e.g., *Il.* 22.367) and Ved. *párṣṇi*- (RV I.162.17b),
both with initial ictus.[3] The derivation from*pr̥s-éno*- hypothesized by Melchert
(1994:175) offers a more straightforward account, though morphologically it
lacks comparative support.

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3    Lat. *perna*, YAv. *pāšnā*-, and PGmc. **fers-nō* (Goth. *fairzna*, OHG *fersana*, etc.) are all likely
     cognates (see, e.g., Mayrhofer, *EWA* II:127–8), but provide no additional information about
     the position of the ictus in PIE. Kloekhorst's (2008:641–4) separation on semantic grounds of
     ⁽⁾*paršna*- '(a body part)', which he views as cognate with the other IE words for 'heel', from
     (putatively unrelated) *paršēna*- does not seem adequately motivated.

**2.3.** A still more serious objection to (3b) applies equally to both (3a) and the quite complicated case of (3c), where Melchert (2013b) proposes ictus "attraction" as an explanation for the problematic *e*-vocalism (beside predominantly *i*-vocalism) found in a small subset of Hittite *-š/n*- "heteroclite" stems, e.g., (4):

(4) a.   *takš-eš(š-n)*- 'assemblage'
    b.   *ḫaddar-eš(š-n-)ḫattari-eš(š-n-)* '(road) fork; intersection'
    c.   *at-eš(š-n-)* 'axe, hatchet'

He suggests that some of these forms may have developed in the weak stem via leftward "attraction" of ictus to a newly emergent epenthetic vowel, i.e., *-T-s-n-´ > *-T-és-n-* (where *T* = non-coronal obstruent), with subsequent analogical leveling to the strong cases in the paradigm.[4]

This approach encounters several difficulties. First, there are no Hittite forms exhibiting *e*-vocalism that would have been directly generated by this phonological process; thus it must be assumed that this vocalism spread analogically to these forms from an unattested core of non-coronal obstruent-final stems where the conditions for epenthesis and ictus "attraction" were met. Much more significant, however, is the question of whether epenthesis is really expected in this phonological environment at all.

Epenthesis in Hittite is primarily sonority-driven (cf. Kavitskaya 2001). Syllable margins that violate the cross-linguistically well-established SONORITY SEQUENCING PRINCIPLE (SSP) (Clements 1990)—viz., falling sonority onsets or rising sonority codas—are repaired by the insertion of an epenthetic vowel. The repair of SSP-violating codas is evident in the Hittite forms in (5), where (5a) and (5b) clearly show the historical effects of epenthesis, while (5c) and (5d) confirm its continued synchronic operation in Hittite:[5]

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4   By Melchert's (2013b) account, (historical) members of this morphological category with paradigmatic *-iš*(-) would have leveled the vocalism in the opposite direction, viz., from strong to weak cases. There is no synchronic evidence for ictic alternations among *-š/n*- "heteroclites."

5   Phonological repair in onsets is discussed in §2.5. For this reconstruction of (5a), see Oettinger forthcoming, and for (5b) Melchert (2010). Both proposals are discussed in detail by Yates (2014), who suggests that epenthesis in these forms may have occurred already at the Proto-Anatolian stage. Epenthesis in (5cd) was observed already by Oettinger (1979:41) (cf. Melchert 1994:174; 2013b:178). Example (5d) confirms the synchronic status of the process, with productive (non-original) *-i*- vs. older *taruppiyaḫḫaš* with coloring of the epenthetic vowel (see n.13).

(5)  a.   *nēpiš* [né:pis] 'sky; heaven' < PIE *nĕbʰ-s*
     b.   *āiš* [á:(y)is] 'mouth' < PIE *h₁óh₁-s*
     c.   *akkiš* [á(:)k:is]'knew' ← /ak-s/
     d.   *taruppiyaḫḫiš* [t(a)rup:iyá(:)χ:is] 'gathered' ← /tarupiyaH-s/

From (5) it is clear that the syllabification ˣ[Ts.] is phonotactically illicit in Hitt-ite, and that rising-sonority codas are typically repaired by epenthesis. There can be no doubt, then, that epenthesis would have occurred in the strong stem of some -*š*/*n*- "heteroclites"; however, motivating epenthesis in the weak stem of these formations also requires ruling out the possibility that the sibilant and nasal might be parsed into the onset of the following syllable, i.e., [T.sn].

Since sibilants are generally less sonorous than nasals,[6] a complex onset [.sn] is well-formed by the SSP,[7] and more importantly, there is direct Hittite evidence for this syllabification: Hitt. *paḫḫ(a)šnu-* 'protect', derived via suffixation of "transitivizing" -*nu*- (< *-*n(e)u*-) to *paḫḫ(a)š*- 'id.' (< PIE *peh₂-s-*),[8] is spelled *pa-aḫ-ḫa-aš-nu°*, *pa-aḫ-ša-nu°*, and even *pa-aḫ-ḫa-aš-ša-nu°* — e.g., (6):

(6)  a.   3rd pl. impv. *pa-aḫ-ḫa-aš-nu-an-du* 'let them protect'
          (KBo 21.22.39; OH/MS)

     b.   2nd pl. impv. *pa-aḫ-ša-nu-ut-te-en* 'protect!'
          (KBo 7.14 obv. 13; OH/OS)

     c.   1st s. impv. *pa-aḫ-ḫa-aš-ša-nu-ut* 'let me protect'
          (KUB 29.1 I 16; OH/NS)

These spelling alternations can only reflect the variable use of orthographic "dummy" vowels to render a consonant cluster (viz., no real epenthetic vowel), and so point to a phonetic interpretation [paχ:.snu-] with sibilant and nasal form-ing the onset of the second syllable.

A consequence of these findings is that epenthesis is phonologically unex-pected in the weak stem of Hittite -*š*/*n*- "heteroclites"; thus, however the prob-lematic *e*-vocalism in this handful of forms is to be explained, it cannot be due to epenthesis and ictus "attraction" (pace Melchert 2013b). A potential alternative

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6   This assumption is encoded into the "universal" sonority hierarchy assumed by, e.g., Blevins (1995:211), and consistent with recent hypotheses about PIE sonority and syllabification; see Byrd (2015:47–51) and Cooper (2014:4–7) for discussion.

7   On the different treatment of *[.sm], see §2.5 below.

8   For this reconstruction, see *LIV²*:460 (cf. Kloekhorst 2008:612–3). The transitivizing function of -*nu*- is discussed by Luraghi (2012).

account may begin with a different subset of the members of this class, which, as observed by Rieken (1999:387) and Melchert (2013b:175), includes deverbative (e.g., (4ab) above), denominative (*dandukis-* ⇐ *danduki-* 'mortal'), and deradical formations (e.g., (4c) above). While some of the last type would have undergone epenthesis in the strong case forms—e.g., (7) below (per Melchert 2013b:178)—which yielded *i*-vocalism (whence leveling to the oblique cases), *e*-vocalism may have been original in others like (4c) *ateš(šn)–* 'axe, hatchet', which Rieken (1999:192–3) has derived from*ad^h-és-*.[9]

(7)     Hitt. ^GIŠ*ḫat(t)alkiš(n)-* 'hawthorn' ⇐ °*alkiš* 'branching plant; small tree' (< PIE *h₁elg-s*)

It is possible, then, that the origin of *e*-vocalism evident in some Hittite *-š/n-* "heteroclites" is to be found in examples such as (4c) and has from there spread analogically to other members of this class.

**2.4.** The last form alleged to support a causal connection between epenthesis and ictus "attraction" is (2d) *-ūm(e)n-*, a derivational suffix that functions to mark ethnic origin or appurtenance, e.g., (8):

(8)  a.   ^[U]RU*Ša-lam-pu-u-me-né-e*[*š*] 'men of Salampa'
         (KBo 16.71+ii obv. 6; OH/OS)

     b.   ^URU*Za-al-pu-u-ma-aš* 'man of Zalpa'
         (KBo 3.27 obv. 28; OH/NS)

     c.   ^LÚ*ḫé-eš-tu-u-um-ni* 'man of the bone-house (^É*ḫištā-*)'
         (KUB 58.50 iv 14; OH/NS)

The forms in (8) are sufficient to establish at least two relevant synchronic generalizations: (i) the suffix contains a long *-ū-* [óː] vowel that consistently bears ictus; and (ii) the suffix productively attaches to thematic stems, replacing the stem-final *a*-vowel.

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9    Followed by Melchert (2013b:175), who however takes the membership of *ateš(šn)-* in this class as secondary. Yet if "hysterokinetic" accentual mobility were preserved in this noun going into Hittite (per Rieken 1999:192–3), it would have had *e*-vocalism in the nom./acc. singular (i.e., *-ēs#/-eš#*) and *i*-vocalism in the weak cases (via raising of pretonic *e* to [i]; cf. Melchert 1994:137–9). The weak case forms would thus have been identical to those of root formations subject to epenthesis in the nom./acc. singular, i.e., *-iš(n)-*, as well as denominal formations from *i*-stems; this formal identity may have provided the touchstone for interparadigmatic analogy, and potential remaking of original nom./acc. singulars in *-iš# as -eš#*.

But beyond these observations, the picture becomes far less clear. The data in (8) only partially illustrates this suffix's complex allomorphy, which is very difficult to interpret both synchronically and diachronically. Oettinger (1982, 2003) provides the most comprehensive assessment of *-ūm(e)n-*, arguing that the oldest Hittite textual evidence supports a paradigm with nom.sg. *-ūmaš*, nom.pl. *-ūmeneš*, and oblique stem *-ūmn-*, and, furthermore, that these Hittite vowel alternations point to original *$n$-stem inflection with *$e/\varnothing$ ablaut and mobile ictus, thus either *-*mén*-/-*mn*-´ or *-*wén*-/-*un*-´ (via labial dissimilation; cf. Melchert 1994:127–8).[10] If his analysis is correct, then the Hittite elimination of mobile ictus in favor of fixed ictus on the (historically) pre-suffixal *-ū-* [ó:] would appear to be a case of historical "retraction."

This prospect raises the question of the origin of this pre-suffixal vowel. One possibility is that it is the result of resegmentation, perhaps from an original core of secondary derivatives to *$u$-stems, i.e., *-*u-mén-* > Pre-Hitt. *-*umén-* (> Hitt. *-ūmen-*). Though the historical ictus shift to the first syllable of the suffix (with consequent vowel lengthening) is not easily explicable, a potential parallel is found in the Anatolian "complex Caland" derivatives in *-ī/ūro-* —e.g., (9)— whose suffix-initial ictus must be an Anatolian innovation (regardless of the original situation):[11]

(9) a. Hitt. *išnūra-* [isnó:ra-] 'kneading-tray'[12]
    b. Pal. *tašūra-* [tasú:ra-] 'sacrificial table'
    c. Pal. *ḫasīra-* [χasí:ra-] 'dagger' (see Vine apud Melchert 2007:257 n.12)

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10 Oettinger (2003:146–7) advocates *-*mén-* against his earlier proposal of *-*wén-* (Oettinger 1982) and, in addition, explains the phonologically unexpected nominative singular *-ūmaš*, whence still further analogical *-uman-* (contra Rieken 2004:288–92).

11 Apropos of the unexpected ictus of the forms in (9), Melchert (2013a:58) remarks: "[H]owever we are to account for the fact, Anatolian consistently accents the first vowel of the suffix in 'complex' *$ro$-stems." As for the original accentual status of this type, while forms like Ved. *rudhirá-* 'red' are often taken as evidence that PIE had the same accentual pattern (i.e., *-*i/uró-*) just as in primary Caland formations with *-*ró-* (e.g., Gk. ἐρυθρός), Probert (2006: 286–8) has presented compelling arguments that PIE had ictus on the root in this type, which may suggest that these suffixes were underlyingly unaccented (i.e., */-u(-)ro-/). In either case, the Anatolian situation represents an innovation.

12 On the lowering of *$u$ to Hitt. [o] before [r], see Rieken 2005:540–2 (cf. Kloekhorst 2008:55–6). Note, however, that it must be an inner-Hittite development, as the morphologically identical Palaic form in (9b)—spelled *ta-šu-ú-ra°* — has not undergone this lowering.

An (arguably) more significant objection to this analysis is that it fails to explain the [o]-vowel quality of this -*u*- element, since the expected unconditioned outcome of an inherited *\*u/ú* vowel is [u/ú:] in Hittite. This problem recommends the alternative hypothesis of Oettinger (2003:147), who argues that the vowel is epenthetic, apparently conditioned by suffixation of *\*-men-* to stems with final *\*-CC-* clusters. Since it is now clear that Hittite epenthesis yields mid-vowels—unconditioned [e] (e.g., Hitt. *teripp-* [té(:)rip:-] 'plows'< PIE *\*trép-ti*) and [o] in labial environments (e.g., Hitt. *pūnušš-* [pó:nuš:-] 'interrogates' < PIE *\*pn(é)u(H)-s-*)[13]—Oettinger's approach has the distinct advantage of explaining the [o]-vocalism of the *-ūm(e)n-* suffix and, if correct, could be attributed to Melchert's (2013b) leftward ictus "attraction" rule, with Oettinger (2003:147 n.11).

Yet once again, motivating epenthesis in this suffix is somewhat problematic. Oettinger (2003:147) cites all three examples in (9) as epenthesis environments, e.g., (9a) *\*Salamp-ménes > Salamp*[ó:]*menes*, whence the (reanalyzed) suffix would have spread to new formations where the conditions for epenthesis (i.e., stem-final *\*-CC-*) were not met, e.g., URU*Kātapūmeneš* (KBo 20.3 ii 6′). Yet as already observed, the examples in (9) appear to be derived synchronically from *a*-stems (i.e., URU*Salampa-*, URU*Zalpa-*, and É*ḫištā-*) rather than from athematic bases, with replacement of the thematic vowel by the *-ūm(e)n-* suffix. The origin of the epenthetic vowel must therefore be found elsewhere.

The only likely example of athematic derivation with this inherited *\*-mén-* suffix is Hitt. †*ḫaršuman-* 'headwater(s)', attested only in oblique plural case forms as *ḫaršum(ma)naš* (cf. Puhvel 1991:199–200), probably from a Pre-Hitt. *\*ḫarš-mén-* 'pertaining to the head' with the same derivational base †*ḫarš-* as in the -*r/n*-stem Hitt. *ḫaršar/ḫaršn-* 'head' (cf. Melchert 1983:11). In the absence of Hittite evidence for a complex onset ˣ[.mn], epenthesis in the weak stem

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13  Positing that the Hittite epenthetic vowel is fundamentally the mid-vowel [e] unifies several phenomena already observed by Melchert (1994:174–5) and Kavitskaya (2001): (i) like etymological *\*e*, it is raised to [i] in post-tonic closed syllables and all pretonic syllables (cf. n.9); (ii) again like *\*e*, it can be "colored" by adjacent *\*h₂/₃* (> Hitt. *(ḫ)ḫ*); and (iii) it is also realized in labial environments as [u/o], likely with the same conditioned vowel height contrast as [e/i] (cf. Yates 2014). While Kavitskaya limits the labial "coloring" effect to labiovelars, the epenthesis in *\*#sm-* clusters discussed in §2.5 provides additional evidence that other [+labial] segments may condition this development. For extensive discussion of *teripp-* and *pūnušš-*, see Yates 2015.

*ḫarš-mn-´ seems virtually assured.[14] The epenthetic vowel would "attract" the ictus, resulting in a new alternation *-mén-/-úmn-, and subsequent analogic generalization of the *ú of the weak stem would yield the attested Hittite suffix with (original) strong stem -ūmen- and weak stem -ūmn-. The suffix must then have been extracted from this lexical item—and, presumably, others like it—and re-purposed as a productive means of derivation from thematic a-stems.

Despite these complications, the fact remains that epenthesis explains the [o]-vocalism of the suffix-initial vowel and can be motivated by independently established phonotactic constraints (at least within a limited domain); the epenthesis account is therefore to be preferred to existing alternatives on phonological grounds. It must be acknowledged, then, that even if none of the other alleged examples in (3) withstand scrutiny (cf. §§2.1–2.3), the development of Hitt. -ūm(e)n- indeed appears to support the connection between word-medial epenthesis and leftward ictus "attraction" posited by Melchert (2013b).[15]

**2.5.** However, empirical considerations require that whatever support the -ūm(e)n- suffix provides for the "attraction" rule must be weighed against any counter-examples, and in fact, there is a non-trivial body of evidence against leftward "attraction" of the ictus to an epenthetic vowel as either a synchronic phonological rule or a historical development.

Highly relevant synchronic evidence comes from the productive Hittite class of verbal formations derived with the imperfective suffix -ške- (< PIE *-sḱé-). This type is a frequent site for sonority-driven epenthesis: the SSP blocks the falling sonority onset ×[.sk], leaving only the possibility of parsing the sibilant into the coda of the preceding syllable; but this configuration is also ruled out by the SSP if the stem-final segment is an obstruent (other than /s/), as it would yield a rising sonority coda (cf. §2.3). Examples of epenthesis in -ške- imperfectives are presented in (10):[16]

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14  Word-medial *[.mn] onsets were problematic already in PIE, where they were subject to reduction to *[.m] or *[.n] in accordance with the so-called "Asno Gesetz" (Schmidt 1895:87–91); see the discussion of Byrd (2015:18, 72, 130). Anatolian is thus innovative only in its preference for epenthesis instead of deletion (cf. Yates 2014) when the deleted consonant was (trivially) restored on the basis of the strong stem.

15  But see §5 below for a potential alternative explanation of the ictus shift in Hitt. -ūm(e)n-.

16  On epenthesis in (10), see Kavitskaya (2001:282, 288), whose derivation of Hitt. zikke- 'place' from the laryngeal-less root /d-/ ensures that it is a synchronic Hittite creation beside archaic zaške- (cf. older taršikke- vs. renewed tarniške-/tarnaške-). The raising of *é to *í (> Hitt. [íː]) in auslaut is discussed by Melchert (1994:185).

(10)  a.  *azzikkī* [ətsːikːíː] 'eats' (impfv.) ← /ed-ské-∅/
     b.  *zikkēt* [tsikːéːt] 'places' (impfv.) ← /d-ské-t/
     c.  *akkuškēwani* [əkːuskːéːwəni] 'drinks' (impfv.) ← /egw-ské-wéni/

As evident in (10), the ictus consistently surfaces on the derivational suffix—never the epenthetic vowel to its left—in this class, which thus systematically violates the "attraction" rule.

Since imperfectives like (10) may be generated by Hittite speakers at any time, they provide strong evidence against the synchronic operation of the "attraction" rule in Hittite; yet while that should cast doubt on its status at an earlier stage of the language, these forms do not strictly militate against the "prehistoric" version of the rule explicitly formulated by Melchert (2013b:178–9). In this respect, however, a different set of examples is problematic, viz., words with inherited word-initial *#sm-* clusters. The (mixed) development of these clusters has recently been treated by Melchert (forthcoming), who identifies two possible outcomes: (i) preservation, e.g., (11a); and (ii) *u*-epenthesis, e.g., (11b):[17]

(11)  a.  *ša/e-me-en-zi* [smé(ː)ntsi] 'withdraws' < \*smén-ti
     b.  *šum-mi-it-ta-an-t/d°* [sumːitːántː-] < \*smit-ént-

Significantly, the epenthetic -*u*- vowel in (11b) shows no indication of bearing the ictus despite being to the left of its historical position, nor do the other forms discussed by Melchert. These cases thus constitute real counter-examples to leftward ictus "attraction" qua historical process.

## 3. Epenthesis and ictus "retraction" in cross-linguistic perspective

Section 2 assessed the evidence for a relationship between ictus "retraction" and epenthesis in those cases where the hypotheses of Yates (2015) and Melchert (2013b) make different predictions. The result was somewhat mixed: Yates' theory offers no explanation for "retraction" in the -*ūm(e)n*- suffix, but much of the other evidence held to support Melchert's "attraction" rule cannot be maintained,

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17  On these forms, see Melchert forthcoming with references to earlier literature. Given the well-formedness of (rising sonority) [.sn] onsets (cf. §2.3), epenthesis in [.sm] onsets cannot be driven by the SSP in the strict sense; however, many languages further require a minimum sonority distance between segments in a complex onset (see, e.g., Steriade 1982:218–23, 328–33 on Ancient Greek and Sanskrit), and since PIE *m* may have been less sonorous than *n* (cf. Cooper 2014:317–20), the variable epenthesis observed in Hittite may reflect an inherited feature. Melchert (loc. cit.) also discusses the sporadic Hittite outcome of *#sp-* as *šupp-*, examples of which similarly do not show ictus "attraction."

and in addition, there are synchronic and diachronic exceptions to its operation. Since neither is wholly unproblematic, this section approaches these theories from a typological perspective, attempting to determine whether there are cross-linguistic parallels for the proposed developments, and thereby evaluating each in terms of its phonological plausibility and naturalness.

When evaluated in this respect, the "attraction" rule encounters certain problems. According to this rule, epenthesis triggers a shift of the ictus to a (historically) pretonic epenthetic vowel, thereby suggesting that this vowel is preferentially assigned ictus. Yet rather than affording them this privileged status, languages of the world are essentially uniform in treating epenthetic vowels as dispreferred syllabic hosts of prosodic prominence; cross-linguistically, they are often "invisible" to phonological processes such as ictus assignment, and even when they are not ignored, they tend to repel the ictus (cf. Hall 2006:396; 2011: 1586).

One such language is Lebanese Arabic (LA), where the ictus is restricted to the final three syllables (as in Ancient Greek), and within this domain, its position generally determined by the following (ordered) rules: (i) if a final syllable is superheavy (*VCC#* or *V:C#*), it receives the ictus; (ii) if not, a heavy penult (*VC.* or *V:.*) receives the ictus; (iii) otherwise, the ictus falls on the antepenult. These three basic principles are illustrated respectively in (12abc):[18]

(12)  a.    LA [mak.ta.báat] 'libraries'
      b.    LA [mak.táb.ti] 'my library
      c.    LA [mák.ta.be] 'library'

Yet these principles interact opaquely with epenthesis, effectively ignoring the presence of epenthetic vowels in ictus assignment, e.g., (13):[19]

(13)  a.    LA /fihim-na/ → [fi.hím.na] 'he understood us'
      b.    LA /fihm-na/ → [fí.him.na] 'our understanding'
      c.    LA /katab-it/ → [ká.ta.bit] 'she wrote'
      d.    LA /katab-t/ → [ka.tá.bit] 'I wrote'

On the surface (13ab) and (13cd) are segmentally identical, but differ in the position of the ictus, which in (13a) and (13c) conforms to the principles outlined above, but is incorrectly predicted by these same principles in (13b) and (13d). In

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18   Examples in (12) are from Haddad (1984:19), who provides extensive references to metrical analyses of these patterns (op. cit., 21–2).

19   Examples in (13)–(14) are from Hall (2011:1586), whose analysis is followed here.

the latter, epenthesis disrupts ictus assignment, which appears to be sensitive to—and is predictable on the basis of—underlying structure alone. In contrast, the "invisibility" of epenthetic vowels is a non-issue for (13a) and (13c), since these forms contain only underlying vowels.

In general, then, ictus-bearing epenthetic vowels are avoided in Lebanese Arabic even when they are situated in a phonologically optimal position, but that does not mean they cannot bear ictus categorically. There is, in fact, a special case in which an epenthetic vowel regularly bears ictus, viz., when it is inserted into an underlying /CCCC/ sequence, e.g., (14).

(14)      LA /katab-t-l-ha/ → [ka.tab.tíl.ha] 'I wrote to her'

In this special case, transparency between epenthesis and ictus assignment is restored; the heavy penult receives the ictus by what appear to be normal phonological principles.

Very similar patterns can be observed in Selayarese (Malayo-Polynesian) and Mohawk (Iroquoian), both languages that have consistent penultimate ictus as in (15a) and (15c), but allow the ictus to fall on the antepenult when epenthesis occurs, e.g., (15b) and (15d):[20]

(15)  a.   S. /sahala/ → [sa.há.la] 'sea cucumber'
      b.   S. /sahal/ → [sá.ha.la] 'profit'
      c.   M. /k-atirut-haʔ/ → [ka.ti.rút.haʔ] 'I pull it'
      d.   M. /te-k-rik-s/ → [té.ke.riks] 'I put them together'

Yet just as in Lebanese Arabic, while ictus-bearing epenthetic vowels are strongly avoided in both Selayarese and Mohawk, there are exceptional circumstances under which the ictus falls on an epenthetic vowel. Significantly, however, only epenthetic vowels in penultimate syllables can be ictus-bearing; this distribution is almost certainly the consequence of the ictus surfacing in the phonologically optimal—or default—position when it cannot be assigned to any underlying vowel due to other (dominant) phonotactic constraints.[21]

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20   The Selayarese and Mohawk examples in (15ab) and (15cd) are from Broselow (2000:312) and Michelson (1989:39, 44), respectively. Per Broselow's (2000:316–9) analysis, epenthetic vowels in Selayarese are prefentially excluded from the stress domain (a trochaic disyllabic foot). Thus ictus does not fall even on the penultimate lexical /a/ vowel in (15b).

21   On the relationship between epenthesis and ictus assignment in Mohawk and Selayarese, see Michelson (1989:40–52) and Broselow (2000).

With respect to the relationship between epenthesis and ictus assignment, these languages appear to represent the typologically unmarked situation: ictus-bearing epenthetic vowels are avoided, and when they do bear ictus, it is not by virtue of being epenthetic but because they occupy the unmarked (or default) position as determined by language-specific phonological principles. A causal connection between epenthesis and ictus "attraction" therefore runs contrary to typology, and I have been unable to identify any direct parallel for such a rule.[22]

In contrast, the proposal of Yates (2015) shows certain similarities to the cases of exceptional ictus assignment discussed above. By this account, the leftmost syllable of a prosodic word is the default position for the ictus, which is regularly assigned to this syllable by (2) ADA in the absence of underlyingly accented morphemes. This inherited pattern of ictus assignment is disrupted in the Hittite forms in (1) by the emergence of an epenthetic vowel, which receives ictus as a consequence of occupying this phonologically preferred position just as certain Selayarese and Mohawk epenthetic vowels do when they occupy the penultimate syllable.

Also typologically sound is the principle argued to explain the diachronic leftward ictic shift in these Hittite forms. Edge-oriented phonological default principles like ADA are a regular feature of lexical interface systems, and, more specifically, a leftmost default pattern is reflected in such diverse languages as Thompson Salish (Interior Salishan; cf. Revithiadou 1999) and Cupeño (Takic, Uto-Aztecan; cf. Alderete 2001), and within Indo-European it is likely to be operative in Vedic Sanskrit, Lithuanian, Russian, and Ancient Greek (in modified form) (cf. Kiparsky and Halle 1977, Kiparsky 2010). Moreover, the diachronic tendency for words to adopt the language's default phonological pattern has been established for Ancient Greek by Probert (2006:289–94), who has demonstrated its effects in forms historically derived with inherited thematic adjectival suffixes (e.g., -ρό-, -vó-), and Lundquist (2014) has identified the same pattern within the attested history of Vedic Sanskrit in -ti- (< PIE *-tí-) abstract nouns (e.g., RV matí- 'thought' vs. ŚB máti-). The Anatolian forms showing ictus "retraction" to the leftmost syllable would simply provide further evidence for this phenomenon.

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22  While it should not be excluded that such a parallel exists, it is very likely to be rare—and like other typologically rare features (such as PIE final voicing, which is reconstructable on the basis of Hittite and Old Latin; cf. Melchert 1994:85), should be posited cautiously and only on the basis of incontrovertible supporting evidence.

## 4. The interaction of epenthesis and ictus assignment in Anatolian

In §§2–3 two potential explanations for the historical leftward ictus shift in the Hittite forms in (1) were considered. Each of these mechanisms was previously held to be independently necessary in the grammar—the rule of Melchert (2013b) to account for examples like (3) in which a historically pretonic word-medial epenthetic vowel appears to have "attracted" the ictus, and Yates' (2015) principle of default ictus assignment (i.e., (2) ADA) to motivate prosodic change in a set of verbal formations reconstructed for PIE with non-initial ictus that have not undergone epenthesis, but nevertheless have innovated leftmost ictus.

Section 2 demonstrated that, of the examples in (3) claimed to exhibit "attraction" of ictus to a word-medial epenthetic vowel, only the problematic *-ūm(e)n-* suffix can be maintained, and in addition, that there are both historical and synchronic Hittite counter-examples to the rule's operation. Still further concerns were raised in §3, where it was shown that an "attraction" rule of this kind is—at the very least—a typologically rare phenomenon, as ictus-bearing epenthetic vowels are cross-linguistically dispreferred. These empirical and typological issues call into question the status of the rule, and, specifically, whether or not it is responsible for the innovative accentuation of *-ūm(e)n-* (for a potential alternative, see the Appendix in §5). Regardless of the answer, it is clear that ADA, which does not incorrectly predict "retraction" and has typological parallels in both IE and non-IE languages, is the likeliest cause of the historically unexpected leftmost ictus in Hittite (1a) *pūnuššun*, (1b) *teripzi*, and (1c) *teri-*. Consequently, these forms constitute evidence for the operation of ADA in the prehistory of Hittite and, in turn, the reconstruction of this principle for PIE (cf. Yates 2015).

## 5. Appendix: Hitt. *-ūm(e)n-* and a new "retraction" pattern

The ADA offers no explanation for ictus "retraction" in the *-ūmen-* suffix, which could be attributed to Melchert's (2013b) rule in the absence of a viable alternative. Yet a possible way forward has been suggested already in §2.4, where it was observed that the Anatolian disyllabic suffixes *-ūro-* and *-īro-* in (9)—which surely reflect old "complex Caland" derivatives—also unexpectedly bear ictus on the first syllable of the suffix (cf. n.11). These forms cannot owe their innovative accentual pattern to epenthesis; thus just as, e.g., the Anatolian nasal-infix verbs mentioned in §1 and §4 provide evidence for ADA that is entirely independent from the forms in (1), the suffix-initial ictus of *-ūro-* and *-īro-* derivatives seem to show an (as yet unexplained) tendency for disyllabic suffixes to develop suffix-initial ictus in Anatolian.

Closer consideration suggests that this tendency may have broader effects. In fact, it appears to be possible to state a phonological generalization that holds for (pre-)Hittite, viz., that there are no disyllabic derivational suffixes accented on the second syllable. Rieken's (2008) convincing derivation of the Hittite suffixes -ēl, -īl, and -ūl is conditioned by suffix-initial ictus (i.e., *-V́lo-),[23] and in forms derived with the productive Hittite "agentive" suffix -āla- (e.g., $^{LÚ}$arzanāla- 'tavern-keeper' < arzana- 'tavern'; KBo 20.16 Vs. 16–18) the ictus similarly falls quite consistently on the suffix-initial syllable.[24] The same holds for derived -ēššar/-ēššn- and -ātar/-ānn- abstract nouns.[25] While the attested accentual pattern is likely to be original in a subset of these cases, it is very unlikely to be so in all of them; once again, then, there seems to be a pattern whereby Anatolian disyllabic suffixes innovate suffix-initial ictus.

The nature of the process or processes—likely phonological, perhaps in part analogical—responsible for introducing these prosodic developments merits its own independent investigation. For the present, however, it seems more plausible to attribute the innovative initial ictus of the Hitt. -ūm(e)n- suffix to the systemic effects of this mechanism—whatever its precise nature—than to posit a "retraction" rule to account for this single case.

## References

Alderete, John D. 2001. Root-Controlled Accent in Cupeño. *Natural Language and Linguistic Theory* 19(3).455–502.

Blevins, Juliette. 1995. The Syllable in Phonological Theory. In John A. Goldsmith (ed.), *The Handbook of Phonological Theory*, 206–44. Oxford and Cambridge, MA: Blackwell.

Broselow, Ellen. 2000. Stress, Epenthesis, and Segment Transformation in Selayarese Loans. In *Proceedings of the 25th Annual Meeting of the Berkeley Linguistics Society*, 311–25.

Byrd, Andrew M. 2015. *The Indo-European Syllable*. Leiden and Boston: Brill.

Carruba, Onofrio. 1993. Der Stamm *pisen-/pisn-* 'vir' im Hethitischen. *Indogermanische Forschungen* 98.92–97.

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23  Probert's (2006:225–6, 236–7, 285) assessment of the Vedic and Ancient Greek evidence—(e.g.) Ved. *bahulá–* 'thick, broad'; Gk. ἀγκύλος 'crooked' (via Wheeler's Law)—leads her to conclude that "complex" *-lo- formations originally had suffix-final ictus (i.e., *-uló-, *-iló-), which in Anatolian must have undergone "retraction."

24  I owe this observation to Craig Melchert (p.c.).

25  On these suffixes, see Rieken 1999:385, 402–4 (cf. Melchert 2013b:182).

Clements, George N. 1990. The Role of the Sonority Cycle in Core Syllabification. In John Kingston and Mary E. Beckman (eds.), *Papers in Laboratory Phonology I: Between the Grammar and Physics of Speech*, 282–333. Cambridge and New York: Cambridge University Press.

Cooper, Adam I. 2014. *Reconciling Indo-European Syllabification*. Leiden and Boston: Brill.

*EWA* = Manfred Mayrhofer. 1986–2001. *Etymologisches Wörterbuch des Altindoarischen* I–III. Heidelberg: Winter.

Haddad, Ghassan F. 1984. Problems and Issues in the Phonology of Lebanese Arabic. Ph.D. diss., University of Illinois at Urbana-Champaign.

Hall, Nancy. 2006. Cross-linguistic Patterns of Vowel Intrusion. *Phonology* 23(3).387–429.

———. 2011. Vowel Epenthesis. In Marc Van Oostendorp, Colin J. Ewen, Elizabeth Hume, and Keren Rice (eds.), *The Blackwell Companion to Phonology*, 1576–96. Oxford and Malden, MA: Wiley-Blackwell.

Kavitskaya, Darya. 2001. Hittite Vowel Epenthesis and the Sonority Hierarchy. *Diachronica* 18(2).267–99.

Kiparsky, Paul. 2010. Compositional vs. Paradigmatic Approaches to Accent and Ablaut. In Stephanie W. Jamison, H. Craig Melchert, and Brent Vine (eds.), *Proceedings of the 21st Annual UCLA Indo-European Conference, Los Angeles, October 30–31, 2009*, 137–81. Bremen: Hempen.

Kiparsky, Paul, and Morris Halle. 1977. Towards a Reconstruction of the Indo-European Accent. In Larry Hyman (ed.), *Studies in Stress and Accent*, 209–38. Los Angeles: University of Southern California Press.

Kloekhorst, Alwin. 2008. *Etymological Dictionary of the Hittite Inherited Lexicon*. Leiden and Boston: Brill.

———. 2012. The Phonological Interpretation of Plene and Non-plene Spelled *e* in Hittite. In Benedicte N. Whitehead, Thomas Olander, Birgit A. Olsen, and Jens E. Rasmussen (eds.), *The Sound of Indo-European: Phonetics, Phonemics and Morphophonemics*, 243–62. Copenhagen: Museum Tusculanum Press.

———. 2014. Once More on Hittite *ā*/*e*-ablauting *ḫi*-verbs. *Indogermanische Forschungen* 119.55–77.

Kümmel, Martin. 2007. *Konsonantenwandel: Bausteine zu einer Typologie des Lautwandels und ihre Konsequenzen für die vergleichende Rekonstruktion*. Wiesbaden: Reichert.

*LIV*² = Helmut Rix and M. Kümmel (eds.). 2001. *Lexikon der indogermanischen Verben: Die Wurzeln und ihre Primärstammbildungen*². Wiesbaden: Reichert.

Lundquist, Jesse. 2014. Vedic *-tí-* Abstracts and the Reconstruction of Proterokinetic *-tí-Stems in PIE. Paper presented at the 26th Annual UCLA Indo-European Conference, Los Angeles, 24–25 October 2014.

Luraghi, Silvia. 2012. Basic Valency Orientation and the Middle Voice in Hittite. *Studies in Language* 36(1).1–32.

Melchert, H. Craig. 1983. A 'New' PIE *men Suffix. *Die Sprache* 29.1–26.

———. 1994. *Anatolian Historical Phonology*. Amsterdam and Atlanta: Rodopi.

———. 2007. PIE *h₂esp- 'to cut'. In Alan J. Nussbaum (ed.), *Verba Docenti: Studies in Historical and Indo-European Linguistics Presented to Jay. H. Jasanoff by Students, Colleagues, and Friends*, 253–8. Ann Arbor and New York: Beech Stave.

———. 2010. The Word for 'mouth' in Hittite and Proto-Indo-European. *International Journal of Diachronic Linguistics and Linguistic Reconstruction* 7.55–63.

———. 2013a. Ablaut Patterns in the Hittite ḫi-Conjugation. In Stephanie W. Jamison, H. Craig Melchert, and Brent Vine (eds.), *Proceedings of the 24th Annual UCLA Indo-European Conference, Los Angeles, 26–27 October 2012*, 137–50. Bremen: Hempen.

———. 2013b. Hittite "Heteroclite" s-Stems. In Adam I. Cooper, Jeremy Rau, and Michael Weiss (eds.), *Multi Nominis Grammaticus: Studies in Classical and Indo-European Linguistics in Honor of Alan J. Nussbaum on the Occasion of His Sixty-fifth Birthday*, 175–84. Ann Arbor and New York: Beech Stave Press.

———. Forthcoming. Initial *sp- in Hittite and *šipand-* 'to libate'. (MS. at http://www.linguistics.ucla.edu/people/Melchert/sipant-.pdf).

Michelson, Karin. 1989. Invisibility: Vowels without a Timing Slot in Mohawk. In Donna B. Gerdts and Karin Michelson (eds.), *Theoretical Perspectives on Native American Languages*, 38–69. Albany: State University of New York Press.

Oettinger, Norbert. 1979. Die Stammbildung des hethitischen Verbums. Nürnberg: Carl.

———. 1982. Reste von e-Hochstufe im Formans hethitischer n-Stämme einschließlich des 'umna' Suffixes. In Erich Neu (ed.), *Investigationes philologicae et comparativae: Gedenkschrift für Heinz Kronasser*, 162–77. Wiesbaden: Harrassowitz.

———. 2003. Zum Ablaut von n-Stämmen im Anatolischen und der Brechung ē > ya. In Eva Tichy, Dagmar S. Wodtko, and Britta Irslinger (eds.), *Indogermanisches Nomen: Derivation, Flexion und Ablaut. Akten der Arbeitstagung der Indogermanischen Gesellschaft, Freiburg, 19 bis. 22. September 2001*, 141–52. Bremen: Hempen.

———. Forthcoming. Die Wechsel ∅/n und i/n im Rahmen der indogermanischen Heteroklisie. In *Akten der XIV. Fachtagung der Indogermanischen Gesellschaft, Copenhagen, 17–22 September 2012*. Wiesbaden: Reichert.

Probert, Philomen. 2006. *Ancient Greek Accentuation: Synchronic Patterns, Frequency Effects, and Prehistory*. Oxford and New York: Oxford University Press.

Puhvel, Jaan. 1991. *Hittite Etymological Dictionary* III: *Words Beginning with H*. Berlin and New York: Mouton de Gruyter.

Revithiadou, Anthoula. 1999. Headmost Accent Wins: Head Dominance and Ideal Prosodic Form in Lexical Accent Systems. Ph.D. diss., Leiden University.

Rieken, Elisabeth. 1999. *Untersuchungen zur nominalen Stammbildung des Hethitischen*. Wiesbaden: Harrassowitz.

———. 2004. Reste von *e*-Hochstufe im Formans hethitischer *n*-Stämme? In James Clackson and Birgit A. Olsen (eds.), *Indo-European Word Formation: Proceedings of the Conference Held at the University of Copenhagen 20th–22nd 2000*, 283–94. Copenhagen: Museum Tusculanum Press.

———. 2005. Zur Wiedergabe von hethitisch /o/. In Gerhard Meiser and Olav Hackstein (eds.), *Sprachkontakt und Sprachwandel: Akten der XI. Fachtagung der Indogermanischen Gesellschaft, Halle an der Saale, 17. bis 23. September 2000*, 537–49. Wiesbaden: Reichert.

———. 2008. The Origin of the *-l* Genitive and the History of the Stems in *-īl-* and *-ūl-* in Hittite. In Karlene Jones-Bley, Martin E. Huld, Angela Della Volpe, and Miriam R. Dexter (eds.), *Proceedings of the 19th Annual UCLA Indo-European Conference, Los Angeles, November 3–4, 2007*, 239–56. Washington, DC: Institute for the Study of Man.

Schmidt, Johannes. 1895. *Kritik der Sonantentheorie*. Weimar: Hermann Böhlaus Nachfolger.

Steriade, Donca. 1982. Greek Prosodies and the Nature of Syllabification. Ph.D. diss., Massachusetts Institute of Technology.

Yates, Anthony D. 2014. Acrostatic Neuter *\*s*-Stems and Sonority-driven Epenthesis in Proto-Anatolian. Paper presented at the 33rd Annual East Coast Indo-European Conference, Blacksburg, VA, 6–8 June 2014.

———. 2015. Anatolian Default Accentuation and Its Diachronic Consequences. *Indo-European Linguistics* 3.1–43.

Zucha, Ivo. 1988. The Nominal Stem Types in Hittite. Ph.D. diss., Oxford University.