On Hittite Verbal Prosody: Synchronic Evidence for (Non-)Default Accentuation

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§1 Introduction

§1.1 Toward a synchronic approach: Over the last thirty-five years, Anatolian scholarship has greatly advanced our understanding of how the Anatolian languages continue word-level prosodic patterns inherited from Proto-Indo-European (PIE); relatively less attention, however, has been paid to the synchronic principles by which a word's accentuation is determined.

· Understanding how PIE prosodic patterns are continued into Anatolian depends crucially on determining the attested position of the ICTUS in (esp.) Hittite, where the primary diagnostic is plene writing. Toward this end, significant contributions by (e.g) Hart (1980), Carruba (1981), Kimball (1983, 1999), Melchert (1984, 1992, 1994), and most recently Kloekhorst (2008, 2014a).

§1.2 Explaining innovations? This focus on inheritance has led to difficulty in explaining certain cases where Anatolian seems to depart from PIE accentual patterns, the accentual peak (or ICTUS) surfacing in an unexpected position.

§1.3 "Retraction" in Hittite: In a number of (Old) Hittite forms, the ICTUS appears to be "retracted" with respect to its PIE position, falling instead on the leftmost syllable, e.g. (1):

(1)
a. *ḫūnikzi* [χó:nikt͡si] 'batters' < PIE **h₂u-né-g-ti*
b. *nīninkzi* [ní:niŋkt͡si] 'mobilizes' < PIE **ni-né-k-ti*
c. *ḫullizzi* [χú(:)li:it͡si] 'fights' < PIE **h₂wl̥-né-h₁-ti*
d. *zinnizzi* [t͡sí(:)ni:it͡si] 'finishes' < PIE **ti-né-h₁-ti*
e. *dwarnizzi* [twárnit͡si] 'breaks' < PIE **dʰwr̥-né-h₁-ti*
f. *terippzi* [té(:)ript͡si] 'plows' < PIE **trép-ti*
g. *pūnušzi* [pú:nust͡si] 'interrogates' < PIE **pnéuH-s-ti*
h. *teri–* [té(:)ri–] '3' < PIE **trí–*

§1.4 "Retraction" as phonological default: In Yates (2014a), it was argued that these forms owe their innovative accentual pattern to the application of ANATOLIAN DEFAULT ACCENTUATION — stated informally in (2) — and thereby provide diachronic evidence for the synchronic operation of this default phonological principle in (Proto-)Anatolian:

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

· For cogent arguments that diachronic prosodic change may be diagnostic of a principle of default accentuation, see Probert (2006:137–43). Lundquist (2014, 2015) has demonstrated that PIE **–tí–* stems show the same "reversion to default" in the (pre)history of Vedic and Greek. Barber (1997:131) identifies similar phenomena in the history of English.

§1.5 Synchronic evidence for ADA: Primarily diachronic claims remain to be supported with clear synchronic evidence for ADA. Aims are thus:

(i) Show that regular prosodic patterns in Anatolian athematic verbs derive synchronically from the interaction of ADA and the unaccented property of their verbal roots (§2).

(ii) Demonstrate a systematic prosodic contrast between unaccented and accented roots, and assess its implications for Anatolian accentuation, including how ICTUS is determined when multiple accented morphemes are present (§3).

(iii) Discuss the implications of Anatolian synchronic accentuation for PIE (§4).

§2 The operation of ADA

§2.1 Unaccented roots: For (1f) *teripzi* and (1g) *pūnušzi*, Yates (2014a) proposed that unaccentedness is characteristic of Anatolian verbal roots that form simplex athematic verbs according to productive patterns in the *mi*– and *ḫi*-conjugations — thus both */trep–/ and */pneuss–/, which belong to this category.

§2.2 Accentuation of athematic verbs: Productive inflectional patterns in Hittite simplex athematic verbs of the *mi*- and *ḫi*-conjugations involve alternating ICTUS between root (singular) and inflectional endings (plural); these generally accepted surface alternations may be accounted for by the interaction of: (i) unaccented roots; (ii) accented plural endings; (iii) unaccented singular endings; and (iv) ADA.

· In the *mi*-conjugation, Hitt. *ē/a* and *ē/∅* directly continue universally reconstructed PIE **é/∅* ablaut with mobile ICTUS. Following Jasanoff (2003, 2013), **ó/é* ablaut is original in **h₂e*-presents, but per Melchert (2013), Hittite preserves this pattern only exceptionally in roots of the shape **TRe(n)T–*, e.g. *k(a)rāp–/k(a)rēp–*, *ḫ(a)mank–/ḫ(a)mink–* (contra Kloekhorst 2012, 2014b). The productive pattern in Hittite — and very likely, Proto-Anatolian — is *ā/a*, which continues both secondary **ó/∅* ablaut in **h₂e*-presents and **ó/ó* (exc. 3rd pl. **∅*) in **h₂e*-aorists.

§2.3 Accounting for the data: These assumptions will correctly derive ICTUS alternations in "ordinary" Anatolian simplex athematic verbs: ADA assigns root (= leftmost) ICTUS in the singular, while accented inflectional endings receive ICTUS in plural — e.g. (3) vs. (4) in *mi*-verbs; (5) vs. (6) in *ḫi*-verbs:

(3) ***mi*-conjugation strong stem:**

a. PA */gʷen – ti/ → **gʷénti* > Hitt. *kuēnzi* 'kills' (e.g. KBo 6.2 i 3)

b. PA */es – ti/ → **ésti* > Hitt. *ēšzi* 'is' (e.g. KBo 17.74 ii 29)

(4) ***mi*-conjugation weak stem:**

a. PA */gʷen – énti/ → **gʷnénti* > Hitt. *kunanzi* 'they kill' (e.g. KBo 16.71 Ro i 12, 14)

b. PA */es – énti/ → **asénti* > Hitt. *asanzi* 'they are' (e.g. KUB 36.104 iv 7′)

(5) ***ḫi*-conjugation strong stem:**

a. PA */doh – ei/ → **tóh-ei* > Hitt. *dāi* 'takes' (e.g. KBo 6.2 i 8)

b. PA */k̂onk– ei/ → **k̂ónk-ei* > Hitt. *kānki* 'hangs' (KBo 17.2 i 7)

(6) ***ḫi*-conjugation weak stem:**

a. PA */doh – téni/ → **tₔh-téni* > Hitt. *dattēni* 'you (pl.) take' (e.g. KUB 36.106 Vs. 8)

b. PA */k̂onk – énti/ → **k̂n̥k-énti* > Hitt. *kankanzi* 'they hang' (e.g. KBo 17.74 ii 27)

§2.4 Default accent and PA */trep–/, */pneus:–/: If correct, the leftmost ICTUS of the strong stem of PA **térep–* and **púnuss–* follow straightforwardly from the normal application of ADA, i.e. (7):

(7) a. PA */trep -- ti/ → **térepti* > Hitt. *terippzi* 'plows' (VBoT 58 i 30))

b. PA */pneus: -- ti/ → **púnusti* > Hitt. *pūnušzi* 'interrogates' (e.g. KUB 14.15 ii 12 (1s. pret.))

· Hitt. *teripp–* has subsequently generalized the strong stem in the plural, viz. surface [té(ː)rip:–] became treated as new underlying /térip:–/; per Melchert (2013:140), the original (post-epenthesis) pattern was **térepti* : **tr̥p-énti* (*pace* Kloekhorst 2012, 2014b). The same may hold for *pūnušš–* in view of 3rd pl. *pūnuššanzi* (KBo 20.5 iii 7; OH/OS). In (7), it is trivially assumed that epenthesis is a synchronic phenomenon in PA; the ICTUS of the output forms would be identical if the epenthetic vowel had become underlying.

§2.5 Mechanical or motivated? While the forms in (3–7) are consistent with the assumptions stated in §2.2, it remains to be demonstrated that **unaccented roots** — and not some other feature — are the crucial factor in determining their accentual patterns.

§2.6 A prosodic contrast: If unaccentedness is decisive, the "ordinary" accentual patterns in (3–6) might be expected to contrast synchronically with the prosodic behavior of *mi*- and *ḫi*-verbs based on **accented** roots; typologically, this type of contrast is paralleled in Cupeño (Takic, Uto-Aztecan), where minimal pairs illustrate the opposition between (8) unaccented roots and (9) accented roots:

(8) **Unaccented roots in Cupeño:**

a. /max - qá/ → *max-qá* 'giving' ('give' + PRES.SING)

b. /wən - qá/ → *wən-qá* 'put (it)' ('put' + PRES.SING)

(9) **Accented roots in Cupeño:**

a. /ʔáyu - qá/ → *ʔáyu-qa* '(he) wants' ('want' + PRES.SING.)

b. /míyax – qá/ → *míya-qa* '(it) happens' ('be' + PRES.SING.)

· In Cupeño, accented and unaccented roots are systematically opposed (Alderete 2001a,b; cf. Hill 2005). Accented roots always receive primary stress (i.e. ICTUS) on the accented syllable, whereas in unaccented roots, stress is determined by a complex interaction between the lexically-specified properties of morphemes and phonological principles. In the absence of accented morphemes, Cupeño (like Anatolian) has default leftmost stress, e.g. /max - əm/ → *máx-əm* 'Give!'.

§2.7 A synchronic contrast: Such a synchronic contrast is in fact apparent in a small set of Hittite verbs exhibiting fixed root ICTUS in the plural, e.g. (10) (cf. (3–6)):

(10) a. *wekanzi* [wé(ː)gant͡si] : *wek–* 'demand' (KBo 19.133 6)

b. *ārranzi* [áːrrant͡si] : *arr–* 'wash' (KUB 9.28 iv 8 / KBo 11.45 iv 19)

c. *ānšanzi* [áːnsant͡si] : *ans–* 'wipe' (KBo 23.23 Vs. 77 / KBo 19.163 i 23; iv 4)

§2.8 A minimal difference? Within Anatolian, the verbs in (10) with fixed ICTUS are morphologically identical to the verbs in (3–6) with mobile ICTUS; it may be hypothesized, then, that these synchronic prosodic contrasts should be ascribed to differences in the accentual status of their verbal roots (cf. §3).

· Provided that their surface allomorphy can be derived as in §2.3 and §3.3, both (3–6) and (10) are ordinary *mi-* and *ḫi*-verbs.

§3 The prosody of (un)accented verbal roots in Anatolian

§3.1 A systematic contrast: Hittite imperfectives in *–škē–* and *–nt–* participles standardly bear ICTUS on the derivational suffix, e.g. (11–12); however, the same verbal roots whose derivatives bear "exceptional" fixed root ICTUS in their plural forms in (10) also exhibit fixed root ICTUS in these morphological categories, i.e. (13–14):

(11) **Hittite *–ške–* presents:**

a. *daškēmi* [təskːéːmi] : *dā–* 'take' (KBo 17.3 iv 10)

b. *akkuškēwani* [əkːuskːéːwəni] : *eku–* 'drink' (KUB 36.110 Rs 7)

c. *zikkēt* [t͡sikːéːt] : *dai–* 'place' (KBo 22.2 Vs 3)

(12) **Hittite *–nt–* participles:**

a. *ašānt–* [əsáːnt–] : *es–* 'be' (e.g. KUB 21.5 iii 36)

b. *arānt–* [əráːnt–] : *ar–* 'arrive' (e.g. KBo 21.22 Vs 15)

c. *lagānt–* [ləgáːnt–] : *lag–* 'incline; fall' (KUB 33.68 ii 4)

(13) **"Exceptional" Hittite *–ške–* presents:**

a. *wekiškizzi* [wé(ː)gisk͡it͡si] (KBo 10.5 iii 4*)

b. *āršikitta* [áːrsikitta] / *ārreškizzi* [áːrrisk͡it͡si] (KUB 9.28 iv 8 / KBo 11.45 iv 19)

c. *ānšikizzi* [áːnsik͡it͡si] / *ānaškizzi* [áːnskizzi] (KBo 23.23 Vs. 77 / KBo 19.163 i 23; iv 4)

(14) **"Exceptional" Hittite *–nt–* participles:**

a. *wekantan* [wé(ː)gantan] (KUB 4.3 Vs 16)

b. *ārranza* [áːrrant͡s] (KBo 21.57 iii 8)

c. *ānšanza* [áːnsant͡s] (KBo 16.97 Vs. 35)

· Significantly, note that both archaic and renewed iterative-inchoative stems in (13b–13c) show initial ICTUS, which suggests that the principles operative in determining their ICTUS remain stable in Hittite. On the accentuation and vocalism of *–škē–* "imperfectives" (Melchert 1998), see Yoshida (2010:386–7); it is generally assumed that this accentual pattern continues the PIE situation, i.e. *–sḱé–* (e.g. Fortson 2010:98–9). The Anatolian *–nt–* participle and its development are discussed in Melchert (1994:146–7). For the phonology of (11b) and (synchronically renewed) (11c), see Kavitskaya (2001).

§3.2 Accented roots: This systematic contrast across morphological categories is most plausibly explained as the result of differences in the accentual status of their verbal roots — specifically, that the "exceptional" roots in (10) and (13–14) are underlyingly **accented**, i.e. /wé(ː)g–/ 'demand', /árr–/ 'wash', /áns–/ 'wipe' vs. (e.g.) /kʷen–/ 'kill', /es–/ 'be', /kaːnkː–/ 'hang'.

§3.3 Implementing the contrast: The prosodic contrast in Hittite between derivatives of accented and unaccented roots would thus be a consequence of different underlying structure — e.g. fixed (15) /wé(ː)g–/ vs. mobile (16):

(15)	a.	/wé(ː)g – ánzi/	→	*wekanzi* [wé(ː)gant͡si] 'they demand'	(KBo 19.133 6)
	b.	/wé(ː)g – ské – zi/	→	*wekiškizzi* [wé(ː)giskit͡si] 'demands'	(KBo 10.5 iii 4*)
	c.	/wé(ː)g – áːnt – an/	→	*wekantan* [wé(ː)gantan] 'demanded'	(KUB 4.3 Vs 16)
(16)	a.	/es – ánzi/	→	*ašanzi* [əsántsi] 'they are'	(e.g. KUB 36.104 iv 7′)
	b.	/ep – ské – t/	→	*appišket* [əpːiské(ː)t] 'took'	(KBo 4.14 iii 26)
	c.	/es – áːnt – s /	→	*ašānza* [əsáːnt͡s] 'being'	(e.g. KBo 21.5 iii 36)

· On deriving *a*-vocalism in (16), see Yates (2014b).

§3.4 Consequences for Hittite accentuation: Two implications of this analysis for synchronic ICTUS assignment in Hittite:

§3.4.1 Leftmost wins? The consistent leftmost ICTUS observed in (15) suggests a principle according to which, when multiple accented morphemes combine, the leftmost surfaces with the ICTUS, i.e. (17):

(17) If a word has one or more underlyingly accented morphemes, the leftmost accented syllable bears the ICTUS.

· In a constraint-based approach, it may be assumed that ADA is driven by an alignment constraint such as LEFTMOST: "The ICTUS must be aligned with the left edge of a prosodic word." This approach in fact makes an empirical prediction in the case of multiple accent resolution, viz. that the ICTUS will fall on the leftmost accented syllable. This prediction is consonant with the observed "leftmost wins" pattern in complex derivation.

§3.4.2 Establishing ADA: While ADA does not apply to accented roots as in (18a), it must be responsible for ICTUS assignment in the strong stem of unaccented verbal roots, which contain no accented morpheme. The derivation in (18b) thus establishes ADA as part of the synchronic grammar of Hittite.

(18)	a.	Hitt. /wé(ː)g – zi /	→	*wēkzi* [wéːkt͡si] 'demands'		(e.g. KUB 29.1 i 27; 32.137 ii 13, 14)
	b.	Hitt. /es – zi/	→	*ēšzi* [éːst͡si] 'is'	(via ADA)	(e.g. KBo 17.74 ii 29)

§4 Diachronic and comparative aspects of Anatolian accentuation

§4.1 Reconstructing PA accentuation: If the Hittite pattern of multiple accent resolution in (17) can be reconstructed for PA, it will yield — in conjunction with (2) ADA — the general principle in (19) for synchronic ICTUS assignment in (Proto-)Anatolian:

(19) ANATOLIAN ACCENTUATION PRINCIPLE (AAP):
If a word has no underlyingly accented morpheme, the leftmost syllable bears the ICTUS. If a word has one or more underlyingly accented morphemes, the leftmost accented syllable bears the ICTUS.

· Per Yates (2014a), ICTUS "retraction" phenomena driven by ADA are reconstructible for PA, hence the phonological principle itself. While the reconstruction of (17) for PA seems likely on the basis of Hittite alone, it remains to be confirmed by identifiable effects in the other Anatolian languages.

§4.2 AAP in the Hittite verbal system: As shown in §§2–3, the AAP accounts for the systematic prosodic differences exhibited by accented and unaccented roots across several verbal categories (simplex weak stem; imperfective; participle).

§4.3 (Un)accented roots — how? If regular ICTUS alternations in *mi-* and *ḫi*-conjugations are a consequence of root unaccentedness, then the vast majority of roots must be unaccented, and accented roots rare — how did this situation arise? For a possible answer, see the Appendix (§5).

§4.4 AAP in comparative perspective: The AAP finds very close parallel in Vedic, where Kiparsky (e.g. 2010, forthcoming) has argued that ICTUS assignment is governed by the BAP in (20):

(20) BASIC ACCENTUATION PRINCIPLE (BAP):
If a word has more than one inherently accented syllable, the leftmost of these gets the ICTUS. If a word has no inherently accented syllable, the leftmost syllable gets the ICTUS.

(based on Kiparsky and Halle (1977:209) and Kiparsky (2010:6))

§4.5 Implications for PIE accentuation: This shared prosodic feature of Anatolian and Vedic is unlikely to be due to chance; rather, it must reflect inheritance from PIE, where ICTUS assignment was governed by similar principles. A new question then arises: what are the properties of the **inputs** to the PIE grammar that yield reconstructed prosodic patterns?

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§5 Appendix — On the development of accented roots

§5.1 Whence accentedness? Insight into development of synchronically accented roots may be offered by Hitt. /wé(ː)g–/. Following Kümmel (1998) and Melchert (2014), there are no "Narten roots," only "Narten formations" — i.e. a derived morphological category — which according to Sandell (2014) reflect underlying reduplicated forms. This category must ultimately be the source of Hitt. *wēk–* (cf. Melchert 2014; *pace* Kloekhorst 2008, 2014a).

· Per Melchert (2014), PIE **wek̂–* is fundamentally atelic, naturally forming the root present directly continued in Ved. *vā́ṣṭi/uśmási* 'wish'; Hitt. *wēk–* reflects the derived imperfective with inceptive (or Anfangsterminativ) sense. Building upon and extending earlier proposals (esp. Schumacher 2005), Sandell (2014) contends that the characteristic long vowel of this class is derived via compensatory lengthening of the */e/ vowel of the reduplicant — i.e. */Té - TT - ti/ → **TéT-ti* — when syllabification of the root-initial segment is blocked by high-ranking phonotactic constraints governing licit onsets (cf. Byrd 2010; Sandell and Byrd 2014) and OCP-*σ* (Zukoff 2014).

§5.2 "Narten presents" in PIE and PA: It is standardly held that "Narten presents" had **é/é* inflection (cf. Narten 1968). Sandell (2014) has suggested that **ReT–* roots had uniform paradigmatic **é*. Whatever is original, the invariant lenited velar of Hitt. *wēk–* directly reflects only PA **é*.

· By Sandell's (2014) analysis, compensatory lengthening of the reduplicant would occur even in the pre-vocalic 3rd pl., since syllabification of the root-initial segment of **ReT–* roots would be blocked by OCP-*σ* and the SSP (Clements 1990).

§5.3 Reanalysis in PA: When "Narten derivation" was lost in (pre-)PA, this category would have been formally distinguished from athematic root presents only by its distinctive prosodic patterns; at this stage, these patterns may have been preserved by **restructuring** — surface **wēĝ–* was reanalyzed as underlying */wéːĝ–/, viz. with lexicalization of accentual properties and vowel length.

§5.4 The diachrony of PIE **wēk̂–*: The historical development of Hitt. *wēk–* may thus be schematized as in (21); neither the rules of the grammar nor surface forms (modulo sound change) are altered, only the properties of the inputs to the grammar:

(21) $\mathscr{G}_1 \ldots > \mathscr{G}_2 \ldots > \mathscr{G}_3$

a. $\mathscr{G}_1$: PIE */wé – wk̂ – mi/ → **wék̂mi*
b. $\mathscr{G}_2$: PA **wéĝmi* ← */wéːĝ – mi/
c. $\mathscr{G}_3$: Hitt. /wé(ː)g – mi/ → *wēkmi* (KBo 3.38 Vs. 32.34; KUB 34.53 Rs 8)

· On restructuring in phonological change generally, see Kiparsky (1982); for recent work on the selection of surface forms as new underlying representations, cf. Albright (2002, 2008).

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