The development of Hittite *ḫi*-verbs in –(*ă̆*)*i*– and the ablaut of the *–h_2e-conjugation

Anthony D. Yates
University of California, Los Angeles
adyates@ucla.edu

44th Annual East Coast Indo-European Conference
Munich (Ludwig-Maximilians-Universität München)
20 June 2025

Slides available at: adyates.com/research/

University of California
Los Angeles

Roadmap

- Introduction
- The inflection of –(*ă*)*i*-ablauting *ḫi*-verbs in Hittite
- Previous accounts of Hittite –(*ă*)*i*-ablauting *ḫi*-verbs
- A new analysis of Hittite –(*ă*)*i*-ablauting *ḫi*-verbs
- Conclusions & implications

Hittite –(ă)*i*-ablauting *ḫi*-verbs and the *h_2e*-conjugation

(1) Hittite –(ă)*i*-ablauting *ḫi*-verbs:

a. *p*(ă)*i*– ‘give’
b. *d*(ă)*i*– ‘place’
c. *p*(*a*)*r*(ă)*i*– ‘blow’
d. *š*(ă)*i*– ‘press’
e. *ḫuw*(ă)*i*– ‘move’
f. *išp*(ă)*i*– ‘get satiated’
g. *išḫ*(ă)*i*– ‘bind’
h. *ḫalz*(ă)*i*– ‘call’
i. *m*(ă)*i*– ‘grow’
j. *pidd*(ă)*i*– ‘flee’
k. *tar*(ă)*i*– ‘get tired’
l. *z*(ă)*i*– ‘cross’

- There is broad agreement that the Hittite –(ă)*i*-ablauting *ḫi*-verbs in (1) continue *h_2e*-conjugation **i*-Presents (Jasanoff 1979 et seq.; Kimball 1998; Melchert 2022).
- But there is no consensus about their original ablaut patterns:
  - Mostly root **é*/∅, invariant suffixal *–*i*– (Jasanoff 1979, 2003, 2021)
  - Invariant root *∅, suffixal **ó*/∅ (Kloekhorst 2008, 2014a)
  - Root **ó*/*é*, invariant suffixal *–*i*– (Kimball 1998)
  - Mostly root **ó*/*é*, invariant suffixal *–*i*– (Melchert 2022)

Hittite –(ă̆)*i*-ablauting *ḫi*-verbs and the *$*h_2e$*-conjugation

(1) Hittite –(ă̆)*i*-ablauting *ḫi*-verbs:

a. *p*(ă̆)*i*– ‘give’
b. *d*(ă̆)*i*– ‘place’
c. *p*(*a*)*r*(ă̆)*i*– ‘blow’
d. *š*(ă̆)*i*– ‘press’
e. *ḫuw*(ă̆)*i*– ‘move’
f. *išp*(ă̆)*i*– ‘get satiated’
g. *išḫ*(ă̆)*i*– ‘bind’
h. *ḫalz*(ă̆)*i*– ‘call’
i. *m*(ă̆)*i*– ‘grow’
j. *pidd*(ă̆)*i*– ‘flee’
k. *tar*(ă̆)*i*– ‘get tired’
l. *z*(ă̆)*i*– ‘cross’

- **Goal** — propose a new prosodic analysis of this class:
  - Inherited core of verbs with root **ó/é* ablaut (building on Kimball 1998, Melchert 2022).
  - Develop regularly via sound change (Hittite metaphony).

Roadmap

- Introduction
- The inflection of –(*ă*)*i*-ablauting *ḫi*-verbs in Hittite
- Previous accounts of Hittite –(*ă*)*i*-ablauting *ḫi*-verbs
- A new analysis of Hittite –(*ă*)*i*-ablauting *ḫi*-verbs
- Conclusions & implications

Inflection of Hittite –(ă̆)*i*-ablauting *ḫi*-verbs

(2) Inflection of H *p*(ă̆)*i*– ‘give’:

		SG	PL
NPST	1	***pē-ḫḫe***	*pī-weni*
	2	*pai-tti*	*pi-šteni*
	3	***pāi***	***pi-anzi***
PST	1	*pē-ḫḫun*	*pī-wen*
	2	*pai-tta*	(***[p]ī-šten***)
	3	***pai-š***	***piy-er***

(3) Inflection of H *d*(ă)*i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

- Two main ablaut patterns are observed in Hittite –(ă̆)*i*-ablauting *ḫi*-verbs.[1]
  - Oldest attested inflection of (2) *p*(ă̆)*i*– ‘give’ and (3) *d*(ă̆)*i*– ‘place’ exemplifies these patterns.
  - But most verbs — including *p*(ă̆)*i*– and *d*(ă̆)*i*– — attest a mixture of both patterns in Hittite.

[1] Old Script forms emboldened; parentheses indicate substitution of syncretic 2PL.IMP for 2PL.PST.

Inflection of Hittite –(ă)*i*-ablauting *ḫi*-verbs

(2) Inflection of H *p*(ă)*i*– ‘give’:

		SG	PL
NPST	1	***pē-ḫḫe***	*pī-weni*
	2	*pai-tti*	*pi-šteni*
	3	***pāi***	***pi-anzi***
PST	1	*pē-ḫḫun*	*pī-wen*
	2	*pai-tta*	(**[*p*]*ī-šten***)
	3	***pai-š***	***piy-er***

(3) Inflection of H *d*(ă)*i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

- In the “*p*(ă)*i*-type” pattern in (2):
  - Stem has same basic shape (–ăi– or via regular monophthongization –ē–) in the SG.
  - Stem has a different shape (–ĭ–) in the PL.

Inflection of Hittite –(ă)*i*-ablauting *ḫi*-verbs

(2) Inflection of H *p*(ă)*i*– ‘give’:

		SG	PL
NPST	1	***pē-ḫḫe***	*pī-weni*
	2	*pai-tti*	*pi-šteni*
	3	***pāi***	***pi-anzi***
PST	1	*pē-ḫḫun*	*pī-wen*
	2	*pai-tta*	(**[*p*]*ī-šten***)
	3	***pai-š***	***piy-er***

(3) Inflection of H *d*(ă)*i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

- In the “*d*(ă)*i*-type” pattern in (3):
  - Stem has same basic shape (–ăi– or via regular monophthongization –ē–) in SG and PST.PL.
  - Stem has a different shape (–ĭ–) in the PL.NPST.

Inflection of Hittite –(ă)*i*-ablauting *ḫi*-verbs

(3) Inflection of H *d*(ă)*i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

(4) Inflection of H *ĕpp/app*– ‘take’:

		SG	PL
NPST	1	***ēp-mi***	*app-ueni*
	2	*ēp-ši*	*ap-teni*
	3	***ēp-zi***	***app-anzi***
PST	1	***ēpp-un***	*ēpp-uen*
	2	*ēpta*	*ēp-ten*
	3	***ēpta***	***ēpp-er***

- The “*d*(ă)*i*-type” pattern in (3) aligns with many radical (–*ḫi*- and) –*mi*-verbs, e.g., (4):
  - Stem has same basic shape (–*ĕ*–) in SG and PST.PL
  - Stem has a different shape(–*a*–) in the PL.NPST

Inflection of Hittite –(ă)*i*-ablauting *ḫi*-verbs

(3) Inflection of H *d(ă)i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

(4) Inflection of H *ĕpp/app*– ‘take’:

		SG	PL
NPST	1	***ēp-mi***	*app-ueni*
	2	*ēp-ši*	*ap-teni*
	3	***ēp-zi***	***app-anzi***
PST	1	***ēpp-un***	*ēpp-uen*
	2	*ēpta*	*ēp-ten*
	3	***ēpta***	***ēpp-er***

- The “*d(ă)i*-type” pattern in (3) aligns with many radical (–*ḫi*- and) –*mi*-verbs, e.g., (4):
  - Stem has same basic shape (–*ĕ*–) in SG and PST.PL
  - Stem has a different shape(–*a*–) in the PL.NPST
- Stem ablaut alternations in radical verbs are widely thought to correlate with stress shifts.[1]

[1] See already Hrozný 1917: 169 and in detail Yates 2017: 98–9, 119–24.

Inflection of Hittite –(ă)*i*-ablauting *ḫi*-verbs

(3) Inflection of H *d(ă)i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

(4) Inflection of H *ĕpp/app*– ‘take’:

		SG	PL
NPST	1	***ēp-mi***	*app-ueni*
	2	*ēp-ši*	*ap-teni*
	3	***ēp-zi***	***app-anzi***
PST	1	***ēpp-un***	*ēpp-uen*
	2	*ēpta*	*ēp-ten*
	3	***ēpta***	***ēpp-er***

- The “*d(ă)i*-type” pattern in (3) aligns with many radical (–*ḫi*- and) –*mi*-verbs, e.g., (4):
  - Stem has same basic shape (–*ĕ*–) in SG and PST.PL — i.e., when stressed ([-é-])
  - Stem has a different shape (–*a*–) in the PL.NPST
- Stem ablaut alternations in radical verbs are widely thought to correlate with stress shifts.[1]

[1] See already Hrozný 1917: 169 and in detail Yates 2017: 98–9, 119–24.

Inflection of Hittite –(ă)*i*-ablauting *ḫi*-verbs

(3) Inflection of H *d(ă)i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

(4) Inflection of H *ĕpp/app*– ‘take’:

		SG	PL
NPST	1	***ēp-mi***	*app-ueni*
	2	*ēp-ši*	*ap-teni*
	3	***ēp-zi***	***app-anzi***
PST	1	***ēpp-un***	*ēpp-uen*
	2	*ēpta*	*ēp-ten*
	3	***ēpta***	***ēpp-er***

- The “*d(ă)i*-type” pattern in (3) aligns with many radical (–*ḫi*- and) –*mi*-verbs, e.g., (4):
  - Stem has same basic shape (–*ĕ*–) in SG and PST.PL — i.e., when stressed ([-é-])
  - Stem has a different shape(–*a*–) in the PL.NPST — i.e., when pretonic ([-a-σ́])
- Stem ablaut alternations in radical verbs are widely thought to correlate with stress shifts.[1]

[1] See already Hrozný 1917: 169 and in detail Yates 2017: 98–9, 119–24.

Inflection of Hittite –(ă)*i*-ablauting *ḫi*-verbs

(3) Inflection of H *d(ă)i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

(4) Inflection of H *ĕpp/app*– ‘take’:

		SG	PL
NPST	1	***ēp-mi***	*app-ueni*
	2	*ēp-ši*	*ap-teni*
	3	***ēp-zi***	***app-anzi***
PST	1	***ēpp-un***	*ēpp-uen*
	2	*ēpta*	*ēp-ten*
	3	***ēpta***	***ēpp-er***

- The “*d(ă)i*-type” pattern in (3) is usually analyzed in the same way:[1]
  - Stem has same basic shape (*–ăi–* or *–ĕ–*) in SG and PST.PL when stressed.
  - Stem has a different shape (*–ĭ–*) in the PL.NPST when pretonic:

[1] Thus, e.g., Jasanoff (2003: 99) and Kloekhorst (2006: 113–8), who view PL.NPST as inherited; but also, e.g., Melchert (2022: 111–20), who views it as a Hittite innovation.

Inflection of Hittite –(ă̆)*i*-ablauting *ḫi*-verbs

(3) Inflection of H *d*(ă̆)*i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

(4) Inflection of H *ĕpp/app*– ‘take’:

		SG	PL
NPST	1	***ēp-mi***	*app-ueni*
	2	*ēp-ši*	*ap-teni*
	3	***ēp-zi***	***app-anzi***
PST	1	***ēpp-un***	*ēpp-uen*
	2	*ēpta*	*ēp-ten*
	3	***ēpta***	***ēpp-er***

- The “*d*(ă̆)*i*-type” pattern in (3) is usually analyzed in the same way:
  - Stem has same basic shape (–ă̆*i*– or –ĕ–) in SG and PST.PL when stressed.
  - Stem has a different shape(–ĭ–) in the PL.NPST when pretonic:
    - Ending stress triggers deletion of stem-final /a/.

Inflection of Hittite –(ă̆)*i*-ablauting *ḫi*-verbs

(3) Inflection of H *d*(ă̆)*i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

(4) Inflection of H *ĕpp/app*– ‘take’:

		SG	PL
NPST	1	***ēp-mi***	*app-ueni*
	2	*ēp-ši*	*ap-teni*
	3	***ēp-zi***	***app-anzi***
PST	1	***ēpp-un***	*ēpp-uen*
	2	*ēpta*	*ēp-ten*
	3	***ēpta***	***ēpp-er***

- The “*d*(ă̆)*i*-type” pattern in (3) is usually analyzed in the same way:
  - Stem has same basic shape (–ă̆*i*– or –ĕ–) in SG and PST.PL when stressed.
  - Stem has a different shape(–ĭ–) in the PL.NPST when pretonic:
    - Ending stress triggers deletion of stem-final /a/.
    - Ending stress supported by plene in 2PL.NPST.ACT *zi-štēn*[*i*] ‘you cross’ (KUB 26.87: 11; OH/NS).

Inflection of Hittite –(ă)*i*-ablauting *ḫi*-verbs

(2) Inflection of H *p*(ă)*i*– ‘give’:

		SG	PL
NPST	1	***pē-ḫḫe***	*pī-weni*
	2	*pai-tti*	*pi-šteni*
	3	***pāi***	***pi-anzi***
PST	1	*pē-ḫḫun*	*pī-wen*
	2	*pai-tta*	(**[*p*]*ī-šten***)
	3	***pai-š***	***piy-er***

(5) Inflection of H *k*(*a*)*răp*/*k*(*a*)*rep*– ‘devour’:

		SG	PL
NPST	1		
	2		
	3	***karāp-i***	*karep-anzi*
PST	1		
	2		(*karep-ten*)
	3	*ka≪ri≫rap-aš*	***karēp-er***

- The “*p*(ă)*i*-type” pattern in (2) is rare, though paralleled by the oldest inflection of (5):[1]
  - Root has same basic shape (–ă–) in SG.
  - Root has a different shape (–ĕ–) in the PL.

[1] And a few other *ḫi*-verbs, with a subsequent limited spread from this locus (Melchert 2013).

Inflection of Hittite –(ă)*i*-ablauting *ḫi*-verbs

(2) Inflection of H *p*(ă)*i*– 'give':

		SG	PL
NPST	1	***pē-ḫḫe***	*pī-weni*
	2	*pai-tti*	*pi-šteni*
	3	***pāi***	***pi-anzi***
PST	1	*pē-ḫḫun*	*pī-wen*
	2	*pai-tta*	(***p***]*ī-šten*)
	3	***pai-š***	***piy-er***

(5) Inflection of H *k*(*a*)*răp*/*k*(*a*)*rep*– 'devour':

		SG	PL
NPST	1		
	2		
	3	***karāp-i***	*karep-anzi*
PST	1		
	2		(*karep-ten*)
	3	*ka≪ri≫rap-aš*	***karēp-er***

- **What is the source of the "*p*(ă)*i*-type" pattern?**

The puzzle

(6) Archaic plural forms of –(ă)i-ablauting ḫi-verbs in Hittite:

a. [p]ī-šten ‘give!’ (2PL.IMP.ACT) (IBoT 3.135 rev. 10; OS)[1]

b. pī-weni ‘we give’ (1PL.NPST.ACT) (e.g., KUB 40.76: 7; OH/MS)

c. pī-wen ‘we gave’ (1PL.PST.ACT) (KUB 23.77: 31; MH/MS)

d. parī-wani ‘we blow’ (1PL.NPST.ACT) (KBo 20.37 rev. 6; OS)

- Old(er) Hittite forms in (6) illustrate the crux for previous historical analyses.
- None of these analyses fully explains their prosodic properties — i.e., both (i) the shape of the stem (–ǐ–); and (ii) convergent evidence for root stress:
  - Plene-spelled stem-final –ī– (⇒ long/stressed [-íː-])
  - Reduced –wani ending in (6d).

[1] Reading with Neu (1980: 22), recently verified by Melchert (2022: 113 n. 21) contra Kloekhorst (2014a: 418).

A new proposal

(7) Proposed development of plural forms of –(ă)*i*-ablauting *ḫi*-verbs:

a. **péh₁-i-sten* > H *pī-šten* ([pí:-st:en]) ‘give!’

b. **péh₁-i-weni* >> H *pī-weni* ([pí:-weni]) ‘we give’

c. **péh₁-i-wen* > H *pī-wen* ([pí:-wen]) ‘we gave’

d. **préh₁-i-weni* > H *parī-wani* ([prí:-wani]) ‘we blow’

★ **Proposal:** problematic forms in (7) arise (principally) via regular sound change:

– From inherited forms with stressed **é*-vocalism of the root.

– Via a (partially) new Hittite sound law.

Roadmap

- Introduction
- The inflection of –(*ă*)*i*-ablauting *ḫi*-verbs in Hittite
- Previous accounts of Hittite –(*ă*)*i*-ablauting *ḫi*-verbs
  - Kloekhorst's (2006, 2008, 2014) account
  - Kimball's (1998) account
  - Melchert's (2022) account
  - Jasanoff's (1989, 2003, 2021) account
- A new analysis of Hittite –(*ă*)*i*-ablauting *ḫi*-verbs
- Conclusions & implications

Kloekhorst's account

(8) Development of PL –(ă)*i*-ablauting *ḫi*-verbs per Kloekhorst:

a. **h₁p-i-stén* ⊁ H *pī-šten* ([pí:-stːen]) 'give!'

b. **h₁p-i-wéni* ⊁ H *pī-weni* ([pí:-weni]) 'we give'

c. **h₁p-i-wén* ⊁ H *pī-wen* ([pí:-wen]) 'we gave'

d. **pr̥h₁-í-weni* ⊁ H *parī-wani* ([prí:-wani]) 'we blow'

- Kloekhorst argues all *ḫi*-verbs in –(ă)*i*– are historically derived with an ablauting suffix, stressed *–*ói*– in SG vs. pretonic *–*i*– in PL.[1]
  - ✓ Generates basic stem shape (i.e., non-dipthongal –ĭ̄–) in (8) via pretonic deletion.
  - ✗ Fails to explain plene spelling of stem-final –*ī*– in (8) or reduced –*wani* ending in (8d).

[1] See Kloekhorst 2006, 2008: 148–9, 540–1, 2014: 106–7.

Kloekhorst's account

(9) Revised development of PL –(*ă*)*i*-ablauting *ḫi*-verbs per Kloekhorst:

a. $*h_1p$-*i-stén* >> $*h_1p$-*í-sten* ⊁ H *pī-šten* ([pí:-stːen]) 'give!'

b. $*h_1p$-*i-wéni* >> $*h_1p$-*í-weni* > H *pī-weni* ([pí:-weni]) 'we give'

c. $*h_1p$-*i-wén* >> $*h_1p$-*í-wen* > H *pī-wen* ([pí:-wen]) 'we gave'

d. $*pṛh_1$-*í-weni* >> $*pṛh_1$-*í-weni* > H *parī-wani* ([prí:-wani]) 'we blow'

- Kloekhorst (2014a: 106) thus posits that stress was "retracted…by analogy to the singular."[1]
  - ✓ Phonologically, accounts for plene of stem-final –*ī*– in (9b–d) and reduced –*wani* in (9d).
  - ✗ Still fails to account for plene of stem-final –*ī*– in (9a), since stressed **í* does not lengthen in closed syllables (Melchert 1994: 131–2, Kloekhorst 2014a: 441).

[1] In this specific set of verb forms; for the critique here see already Melchert 2022: 113–4.

Kloekhorst's account

(9) Revised development of PL –(*ă*)*i*-ablauting *ḫi*-verbs per Kloekhorst:

a. **h₁p-i-stén* >> **h₁p-í-sten* ≯ H *pī-šten* ([píː-stːen]) 'give!'

b. **h₁p-i-wéni* >> **h₁p-í-weni* > H *pī-weni* ([píː-weni]) 'we give'

c. **h₁p-i-wén* >> **h₁p-í-wen* > H *pī-wen* ([píː-wen]) 'we gave'

d. **pr̥h₁-í-weni* >> **pr̥h₁-í-weni* > H *parī-wani* ([príː-wani]) 'we blow'

- Kloekhorst (2014a: 106) thus posits that stress was "retracted…by analogy to the singular."[1]
  - ✓ Phonologically, accounts for plene of stem-final –*ī*– in (9b–d) and reduced –*wani* in (9d).
  - ✗ Still fails to account for plene of stem-final –*ī*– in (9a), since stressed **í* does not lengthen in closed syllables (Melchert 1994: 131–2, Kloekhorst 2014a: 441).
  - ✗ Does not plausibly explain stem shape (–*ī̆*–)

[1] In this specific set of verb forms; for the critique here see already Melchert 2022: 113–4.

Kloekhorst's account

(10) Diachronic remodeling of *p(ă)i-* 'give':

Old Hittite		Middle Hittite		
[*p*]*ī-šten* 'give!'	>>	*pai-šten* 'give!'	cf.	*pāi* 'gives'
(IBoT 3.135 rev. 10; OS)		(KUB 23.77: 31; MH/MS)		(e.g., KBo 6.2 i 3; OS)

- Kloekhorst (2014a: 106) thus posits that stress was "retracted…by analogy to the singular."
  - ✓ Phonologically, accounts for plene of stem-final *–ī–* in (8b–d) and reduced *–wani* in (8d).
  - ✗ Still fails to account for plene of stem-final *–ī–* in (9a), since stressed **í* does not lengthen in closed syllables (Melchert 1994: 131–2, Kloekhorst 2014a: 441).
  - ✗ Does not plausibly explain stem shape (*–ǐ–*), since analogical remodeling after SG otherwise always results in introduction of diphthongal *–ăi–* — e.g., (10).

Kimball's account

(11) Development of PL –(ă)*i*-ablauting *ḫi*-verbs per Kimball:

a. **péh*$_1$*-i-sten* > **pé-i-sten* ⊁ H *pī-šten* ([pí:-st:en]) 'give!'

b. **péh*$_1$*-i-weni* > **pé-i-sten* ⊁ H *pī-weni* ([pí:-weni]) 'we give'

c. **péh*$_1$*-i-wen* > **pé-i-wen* ⊁ H *pī-wen* ([pí:-wen]) 'we gave'

d. **préh*$_1$*-i-weni* > **pré-i-weni* ⊁ H *parī-wani* ([prí:-wani]) 'we blow'

- Kimball (1998) proposes *ḫi*-verbs in –(ă)*i*– reflect inherited root-internal ablaut, stressed **ó* in the SG vs. stressed **é* in PL.[1]
  - ✓ Accounts for reduced –*wani* ending in (11d), since stem is stressed.
  - ✗ But root –*ī*– is problematic — no independent evidence that a sequence *–*éh*$_1$*i*– developed differently from *–*éi*–, which yielded [é:] rather than [ˣí:] (Melchert 2022: 116; cf. 1994: 145).

[1] Reconstructions in (11a–c) with Melchert's (2022) root etymology.

Melchert's account

(12) Development of PL –(ă)*i*-ablauting *ḫi*-verbs per Melchert:

a. **péh₁-i-sten* >> **ph₁-i-stén* > **pih₁-stén* > H *pī-šten* ([piː-stːén]) 'give!'

b. **péh₁-i-weni* >> **ph₁-i-wéni* > **pih₁-wéni* > H *pī-weni* ([piː-wéni]) 'we give'

c. **péh₁-i-wen* >> **ph₁-i-wén* > **pih₁-wén* > H *pī-wen* ([piː-wén]) 'we gave'

d. **préh₁i-weni* >> **pr̥h₁i-wéni* >> **prih₁-wéni* ⊁ H *parī-wani* ([príː-wani]) 'we blow'

- Melchert (2022) likewise posits inherited root-internal ablaut in (12) and most other *ḫi*-verbs in –(ă)*i*–, stressed **ó* in the SG vs. stressed **é* in PL, with a subsequent stress shift in the plural from stem to inflectional endings.[1]
  - ✓ Phonologically, generates basic stem shape (i.e., non-diphthongal –*ǐ*–) in (12).

[1] Melchert (2022) also allows for a minority suffixal type with the same ablaut (i.e., **ói ~ *éi*), on which see the discussion of (22) below.

Melchert's account

(12) Development of PL –(ă)*i*-ablauting *ḫi*-verbs per Melchert:

a. **péh₁-i-sten* >> **ph₁-i-stén* > **pih₁-stén* > H *pī-šten* ([piː-stːén]) 'give!'

b. **péh₁-i-weni* >> **ph₁-i-wéni* > **pih₁-wéni* > H *pī-weni* ([piː-wéni]) 'we give'

c. **péh₁-i-wen* >> **ph₁-i-wén* > **pih₁-wén* > H *pī-wen* ([piː-wén]) 'we gave'

d. **préh₁i-weni* >> **pr̥h₁i-wéni* >> **prih₁-wéni* ⊁ H *parī-wani* ([príː-wani]) 'we blow'

- Melchert (2022) likewise posits inherited root-internal ablaut in (12) and most other *ḫi*-verbs in –(ă)*i*–, stressed **ó* in the SG vs. stressed **é* in PL, with a subsequent stress shift in the plural from stem to inflectional endings.
  - ✓ Phonologically, generates basic stem shape (i.e., non-diphthongal –*ĭ*–) in (12).
  - ✓ (Arguably) accounts for plene of stem-final –*ī*– in (12) via "laryngeal metathesis" and compensatory lengthening.[1]

[1] It is questionable whether compensatory lengthening (or monophthongization) yielded long vowels in unstressed syllables in Hittite (see Yates 2017: 89–90).

Melchert's account

(12) Development of PL –(ă)*i*-ablauting *ḫi*-verbs per Melchert:

a. **péh₁-i-sten* >> **ph₁-i-stén* > **pih₁-stén* > H *pī-šten* ([piː-stːén]) 'give!'

b. **péh₁-i-weni* >> **ph₁-i-wéni* > **pih₁-wéni* > H *pī-weni* ([piː-wéni]) 'we give'

c. **péh₁-i-wen* >> **ph₁-i-wén* > **pih₁-wén* > H *pī-wen* ([piː-wén]) 'we gave'

d. **préh₁i-weni* >> **pr̥h₁i-wéni* >> **prih₁-wéni* ⊁ H *parī-wani* ([príː-wani]) 'we blow'

- Melchert (2022) likewise posits inherited root-internal ablaut in (12) and most other *ḫi*-verbs in –(ă)*i*–, stressed **ó* in the SG vs. stressed **é* in PL, with a subsequent stress shift in the plural from stem to inflectional endings.
  - ✗ Fails to accounts for reduced *–wani* ending in (12d), since ending is stressed.
  - ✗ Basic stem shape in (12a) and (12c) (*–ǐ–*) is problematic, since there is no viable analogical model for stress shift to inflectional endings in PL.PST.

Melchert's account

(13)

		1PL.PST	2PL.PST	2PL.IMP	3PL.PST	cf.	PL.NPST
a.	'take'	*ēpp-uen*	*ēp-ten*	*ēp-ten*	***ēpp-er***		***app-anzi***
b.	'be'	*ēšš-uen*	*ēš-ten*	*ēš-ten*	***eš-er***		*aš-anzi*
c.	'eat'	*ed-uwen*		*ēz-ten*	*et-er*		*[a]zzaš-tē[ni]*
d.	'take'	*dā-wen*	*dā-tten*	***dā-tten***	***dā-er***		***da-ttēni***
e.	'die'		*āk-ten*		***ak-er***		***akk-anzi***
f.	'open'	*ḫēš-uen*		*ḫēš-ten*	***ḫēš-er***		***ḫašš-anzi***

- Hittite ablauting verbs are (otherwise) **exceptionlessly** stressed on the stem in the PST.PL.
  - *mi*-verbs like (13a–c).
  - *ḫi*-verbs like (13d–f).

Melchert's account

(13)

		1PL.PST	2PL.PST	2PL.IMP	3PL.PST	cf.	PL.NPST
a.	'take'	*ēpp-uen*	*ēp-ten*	*ēp-ten*	***ēpp-er***		***app-anzi***
b.	'be'	*ēšš-uen*	*ēš-ten*	*ēš-ten*	***eš-er***		*aš-anzi*
c.	'eat'	*ed-uwen*		*ēz-ten*	*et-er*		*[a]zzaš-tē[ni]*
d.	'take'	*dā-wen*	*dā-tten*	***dā-tten***	***dā-er***		***da-ttēni***
e.	'die'		*āk-ten*		***ak-er***		***akk-anzi***
f.	'open'	*ḫēš-uen*		*ḫēš-ten*	***ḫēš-er***		***ḫašš-anzi***

- Hittite ablauting verbs are (otherwise) **exceptionlessly** stressed on the stem in the PST.PL.
  - *mi*-verbs like (13a–c).
  - *ḫi*-verbs like (13d–f).

⇒ Analogical stress shift to inflectional endings in PL.PST of *ḫi*-verbs in –(ă)*i*– would be **irregularizing** — i.e., introduce a novel ablaut pattern in Hittite.

Jasanoff's account

(14) Development of PL –(ă)*i*-ablauting *ḫi*-verbs per Jasanoff:

a. **bʰih₁-stén* > H *pī-šten* ([piː-stːén]) 'give!'

b. **bʰih₁-wéni* > H *pī-weni* ([piː-wéni]) 'we give'

c. **bʰih₁-wén* > H *pī-wen* ([piː-wén]) 'we gave'

d. **pr̥h₁i-wéni* ⊁⊁ H *parī-wani* ([príː-wani]) 'we blow'

- Jasanoff argues *ḫi*-verbs in –(ă)*i*– reflect inherited root-internal ablaut, most with stressed **é* in the SG vs. pretonic ∅ in PL.[1]
  - ✓ Generates basic stem shape (i.e., non-diphthongal –*ĭ*–) in (14) via pretonic deletion.
  - ✓ (Arguably) accounts for plene of stem-final –*ī*– in (14) via compensatory lengthening.

[1] See Jasanoff 1979: 88–9, 2003: 94, 101–3, 2021: 168–9.

Jasanoff's account

(14) Development of PL –(ă)*i*-ablauting *ḫi*-verbs per Jasanoff:

a. **bʰih₁-stén* > H *pī-šten* ([piː-stːén]) 'give!'

b. **bʰih₁-wéni* > H *pī-weni* ([piː-wéni]) 'we give'

c. **bʰih₁-wén* > H *pī-wen* ([piː-wén]) 'we gave'

d. **pr̥h₁i-wéni* ⊁⊁ H *parī-wani* ([príː-wani]) 'we blow'

- Jasanoff argues *ḫi*-verbs in –(ă)*i*– reflect inherited root-internal ablaut, most with stressed **é* in the SG vs. pretonic ∅ in PL.[1]
  - ✗ Fails to accounts for reduced *–wani* ending in (14d), since ending is stressed.

[1] See Jasanoff 1979: 88–9, 2003: 94, 101–3, 2021: 168–9.

Jasanoff's account

(14) Development of PL –(ă)*i*-ablauting *ḫi*-verbs per Jasanoff:

a. **bʰih₁-stén* > H *pī-šten* ([piː-stːén]) 'give!'

b. **bʰih₁-wéni* > H *pī-weni* ([piː-wéni]) 'we give'

c. **bʰih₁-wén* > H *pī-wen* ([piː-wén]) 'we gave'

d. **pr̥h₁i-wéni* ⊁⊁ H *parī-wani* ([príː-wani]) 'we blow'

e. **préh₁-y-ei* ⊁ H *parāi* ([práːi]) 'blows'

- Jasanoff argues *ḫi*-verbs in –(ă)*i*– reflect inherited root-internal ablaut, most with stressed **é* in the SG vs. pretonic ∅ in PL.[1]
  - ✗ Fails to accounts for reduced *–wani* ending in (14d), since ending is stressed.
  - ✗ Fails to account for singular forms with the stem-final diphthong *–ăi–* characteristic of the class — e.g., 3SG in (14e) (cf. Melchert 2022: 111–2).

[1] See Jasanoff 1979: 88–9, 2003: 94, 101–3, 2021: 168–9.

Roadmap

- Introduction
- The inflection of –(ă)*i*-ablauting *ḫi*-verbs in Hittite
- Previous accounts of Hittite –(ă)*i*-ablauting *ḫi*-verbs
- A new analysis of Hittite –(ă)*i*-ablauting *ḫi*-verbs
  - Historical morphology and phonology of Hittite –(ă)*i*-ablauting *ḫi*-verbs
  - Revitalizing a Hittite sound law
  - The diachrony of Hittite –(ă)*i*-ablauting *ḫi*-verbs
- Conclusions & implications

A new analysis and a new(-ish) sound law

(15) Proposed development of plural forms of –(ă)*i*-ablauting *ḫi*-verbs:

a. **péh*$_1$*-i-sten*

b. **péh*$_1$*-i-weni*

c. **péh*$_1$*-i-wen*

d. **préh*$_1$*-i-weni*

- **Proposal:** two ingredients for a new analysis of Hittite –(ă)*i*-ablauting *ḫi*-verbs:

  (i) Inherited root ablaut in (15), stressed **ó* in SG vs. **é* in PL (like Kimball 1998, Melchert 2022).

A new analysis and a new(-ish) sound law

(16)

Hittite metaphony:

**é* > **í* / _____ [−syll, +cont] i

"Stressed **é* is raised to **í* when it precedes a single [+continuant] consonant followed by **i*."

- **Proposal:** two ingredients for a new analysis of Hittite –(ă)*i*-ablauting *ḫi*-verbs:
  - (i) Inherited root ablaut in (15), stressed **ó* in SG vs. **é* in PL (like Kimball 1998, Melchert 2022).
  - (ii) The new(-ish) Hittite sound change in (16).

A new analysis and a new(-ish) sound law

(15) Proposed development of plural forms of –(ă)*i*-ablauting *ḫi*-verbs:

a. **péh₁-i-sten* > *píh₁-i-sten* > H *pī-šten* ([pí:-st:en]) 'give!'

b. **péh₁-i-weni* > *píh₁-i-weni* >> H *pī-weni* ([pí:-weni]) 'we give'

c. **péh₁-i-wen* > *píh₁-i-wen* > H *pī-wen* ([pí:-wen]) 'we gave'

d. **préh₁-i-weni* > *príh₁-i-weni* > H *parī-wani* ([prí:-wani]) 'we blow'

- **Proposal:** two ingredients for a new analysis of Hittite –(ă)*i*-ablauting *ḫi*-verbs:
  - (i) Inherited root ablaut in (15), stressed **ó* in SG vs. **é* in PL (like Kimball 1998, Melchert 2022).
  - (ii) The new(-ish) Hittite sound change in (16).

⇒ Attested Hittite forms (15) develop almost entirely via regular sound change.

Revitalizing a Hittite sound law

(16)

HITTITE METAPHONY:

**é* > **í* / _____ [−syll, +cont] i

"Stressed **é* is raised to **í* when it precedes a single [+continuant] consonant followed by **i*."

- (16) is a more restricted form of an "*i*-umlaut" process proposed by Eichner whereby any **e* was raised to **i* by **i* in a following syllable:[1]
  - Only applies to stressed **é*
  - Only applies to **é* in an open syllable
  - Only applies to **é* when the consonant preceding the trigger is [+continuant] (viz., blocked by nasal and oral stops).

[1] See Eichner (1973: 76, 84 n. 5, 97 n. 70, 1980: 144 n. 65) and the discussions of Melchert (1994: 140–1) and Kloekhorst (2008: 581).

Revitalizing a Hittite sound law

(16)

Hittite metaphony:

**é* > **í* / _____ [−syll, +cont] i

"Stressed **é* is raised to **í* when it precedes a single [+continuant] consonant followed by **i*."

- Restrictions in (16) are typologically plausible:
  - Only stressed vowels undergo height harmony in Servigliano and other Italian dialects (Canalis 2009, i.a.).
  - Low sonority consonants ([−approx]) block vowel harmony in Sant'Oreste and other Italian dialects (Walker 2016, i.a.).
  - Geminate consonants block, e.g., vowel height harmony in Logoori (Odden 2019).

Revitalizing a Hittite sound law

(17) Underapplication of Eichner's "**i*-umlaut" rule:

a. **méĝh₂-i* > H *mekki* 'much' (e.g., KBo 6.2 iv 42; OS)

b. **h₁élt-ih₁* > H *ēlzi* 'scale' (KUB 30.10 rev. 13; MH/MS)

c. **séh₁-l-i-s* > H *šēliš* 'grain pile' (KUB 39.41 ii 14; OH/NS)

d. **h₁és-mi* > H *ēšmi* 'I am' (e.g., KBo 3.55 rev. 11; OH/NS)

e. **h₁ép-ti* > H *ēpzi* 'takes' (e.g., KBo 6.2 i 48; OS)

- These restrictions eliminate virtually all exceptions to Eichner's rule:
  - No umlaut in (17) because **é* is in a closed syllable.

Revitalizing a Hittite sound law

(18) Underapplication of Eichner's "**i*-umlaut" rule:

a.	**mén-ih$_1$*	>	H *mēni*(=*mmet*) '(my) face'	(KBo 3.22 obv. 52; OS)
b.	**mé-mih$_{1/3}$-steni*	>	H *memišteni* 'you speak'	(KUB 23.77: 28; MH/MS)
c.	**h$_1$u-wéni*	>	H *u-mēni* 'we see'	(KBo 30.39 iii 5; OH/MS)
d.	**dh$_3$-téni*	>	H *da-ttēni* 'you take'	(KUB 36.106 obv. 8; OS)
e.	**péd-i*	>	H *pēd-i* 'in place'	(e.g., KBo 6.2 i 17; OS)
f.	**sép-it*	>	H *šeppit* '(type of grain)'	(KUB 34.89 obv. 5; MS)

- These restrictions eliminate virtually all exceptions to Eichner's rule:[1]
  - No umlaut in (17) because **é* is in a closed syllable.
  - No umlaut in (18) because a (a–d) nasal or (e–f) oral stop intervenes.

[1] Direct cases of 'pasture', e.g., ACC.SG H *weši-n* (< **wés-i-m*) are analogical to oblique, e.g., NOM.PL *wesaeš* (< **wés-ey-es*) as per Kimball (1983: 11–3).

Revitalizing a Hittite sound law

(19) HITTITE METAPHONY in 'honey' vs. non-application 'grain':

a.	**mél-it*	>	**míl-it*	>	H *milit* 'honey'	(e.g., KUB 30.36 ii 1; MH/NS)
	**mél-id-os*	>	**míl-id-os*	>>	H *milittaš* 'of honey'	(KBo 48.14 obv. 14; NS)
b.	**sép-it*	>	**sép-it*	>	H *šeppit* '(type of grain)'	(KUB 34.89 obv. 5; MS)
	**sép-id-os*	>	**sép-id-os*	>	H *šeppidaš* 'of (type of grain)'	(e.g., KBo 17.36 iv 5; OS)

- Restricted formulation still captures the *Paradebeispiel* of Eichner's rule:[1]
  - ✓ Predicts regular application (**l* = [+cont]) of Hittite metaphony in 'honey' in (19a).[2]
  - ✓ Correctly predicts non-application (**p* = [−cont]) in structurally identical 'grain' in (19b).

[1] Previous researchers have been willing to (or tempted to) accept Eichner's rule on the strength of 'honey' alone (Kloekhorst 2008: 581; cf. Melchert 1994: 140–1).

[2] With geminate *–tt–* by analogy to adjective *m(a)littu–* 'sweet' per Melchert (1994: 140) and Kimball (1999: 276).

Diachrony of –(ă)*i*-ablauting *ḫi*-verbs — Steps I–II

(20) a. **próh₁-y-ei* > … > H *parāi* ‘blows’
b. **préh₁-i-weni* > **príh₁-i-weni* > H *parī-wani* ‘we blow’

(21) a. **póh₁-i-th₂e* > … > H *pai-tta* ‘you gave’
b. **péh₁-i-sten* > **píh₁-i-sten* > H [*p*]*ī-šten* ‘give!’

(2) Inflection of H *p*(ă)*i*– ‘give’:

		SG	PL
NPST	1	***pē-ḫḫe***	*pī-weni*
	2	*pai-tti*	*pi-šteni*
	3	***pāi***	***pi-anzi***
PST	1	*pē-ḫḫun*	*pī-wen*
	2	*pai-tta*	([***p***]*ī-šten*)
	3	***pai-š***	***piy-er***

- A stepwise diachrony of Hittite –(ă)*i*-ablauting *ḫi*-verbs:
  - (i) Inherited into Hittite with root ablaut — or rarely, suffixal ablaut — stressed **ó* in SG vs. stressed **é* in PL (cf. Melchert 2022).
  - (ii) Core of the class — i.e., root-ablauting verbs with root-final **h₁* like (20–21) — underwent HITTITE METAPHONY in PL, yielding the “*p*(ă)*i*-type” ablaut pattern in (2).

Diachrony of –(ă)*i*-ablauting *ḫi*-verbs — Step III

(22) Remodeling of suffix-ablauting H *ḫalz*(ă)*i*– ‘calls’:

a. *h_2l_st-óy-ei > … >> H *ḫalzāi* ‘calls’

b. *h_2l_st-éi-weni >> *h_2l_st-ī́-weni > H *ḫalzi-wani* ‘we call’

c. *h_2l_st-óy-th$_2$e > … >> H *ḫalzai-tta* ‘you called’

d. *h_2l_st-éy-sten >> *h_2l_st-ī́-sten > H *ḫalzi-šten* ‘call!’

- A stepwise diachrony of Hittite –(ă)*i*-ablauting *ḫi*-verbs:

(iii) In pre-Hittite the few verbs with suffixal ablaut — e.g., (22) — were analogically remodeled after “*p*(ă)*i*-type” pattern (i.e., with –*ī́*– < *–*íh$_1$i*– < *–*éh$_1$i*–).[1]

[1] Lexicalized LÚ *pitteyant*– ‘fugitive’ would have escaped this renewal and may thus preserve a trace of inherited suffixal *–*ei*– (Melchert 2022: 118–9).

Diachrony of –(ă)*i*-ablauting *ḫi*-verbs — Step IV

(23)

a.	**póh₁-y-ei*	>	…	>	*pāi* ‘gives’		
b.	**péh₁-y-enti*	>>	**píh₁-y-enti*	>	H *pīy-anzi* ‘they give’	>>	*pianzi* ‘id.’[1]
c.	**póh₁-i-th₂e*	>	…	>	H *pai-tta* ‘you gave’		
d.	**péh₁-i-sten*	>	**píh₁-i-sten*	>	H [*p*]*ī-šten* ‘give!’	>>	*pai-šten* ‘id.’

- A stepwise diachrony of Hittite –(ă)*i*-ablauting *ḫi*-verbs:

  (iv) Within Hittite –(ă)*i*-ablauting *ḫi*-verbs were (variably) assimilated to the predominant (stress/)ablaut pattern in ablauting radical verbs, yielding the “*d*(ă)*i*-type” pattern.

[1] Ending-stressed *pianzi* likely exists as a variant already in OH; cf. PTCP *piyān* (e.g., KBo 6.2 ii 27; OS).

Diachrony of –(ă)*i*-ablauting *ḫi*-verbs — Step IV

(3) Inflection of H *d*(ă)*i*– ‘place’:

		SG	PL
NPST	1	***tē-ḫḫe***	
	2	*dai-tti*	
	3	***dāi***	***ti-anzi***
PST	1	*te-ḫḫun*	*dai-wen*
	2	*dai-tta*	***dai-šten***
	3	***dai-š***	***day-er***

(4) Inflection of H *ĕpp/app*– ‘take’:

		SG	PL
NPST	1	***ēp-mi***	*app-ueni*
	2	*ēp-ši*	*ap-teni*
	3	***ēp-zi***	***app-anzi***
PST	1	***ēpp-un***	*ēpp-uen*
	2	*ēpta*	*ēp-ten*
	3	***ēpta***	***ēpp-er***

- A stepwise diachrony of Hittite –(ă)*i*-ablauting *ḫi*-verbs:

  (iv) Within Hittite –(ă)*i*-ablauting *ḫi*-verbs were (variably) assimilated to the predominant (stress/)ablaut pattern in ablauting radical verbs, yielding the “*d*(ă)*i*-type” pattern.

  - i.e., rebuilt as in (3) on the dominant model seen, e.g., in (4).

Roadmap

- Introduction
- The inflection of –(*ă*)*i*-ablauting *ḫi*-verbs in Hittite
- Previous accounts of Hittite –(*ă*)*i*-ablauting *ḫi*-verbs
- A new analysis of Hittite –(*ă*)*i*-ablauting *ḫi*-verbs
- Conclusions & implications

Conclusions

(16)

Hittite metaphony:

**é* > **í* / _____ [−syll, +cont] i

"Stressed **é* is raised to **í* when it precedes a single [+continuant] consonant followed by **i*."

★ Hittite underwent the sound change in (16), which applied in at least:[1]

- Core subset of –(*ă*)*i*-ablauting *ḫi*-verbs
- Inherited word for 'honey'

[1] Revising and refining Eichner (1973: 76, 84 n. 5, 97 n. 70, 1980: 144 n. 65).

Conclusions

(21) Historical development of H *p(ă)i–* ‘give’:

a. **póh₁-y-ei* > … > *pāi* ‘gives’

b. **péh₁-i-weni* >> **píh₁-i-weni* >> H *pī-weni* ‘we give’

c. **póh₁-i-th₂e* > … > H *paitta* ‘you gave’

d. **péh₁-i-sten* > **píh₁-i-sten* > H [*p*]*ī-šten* ‘give!’

- ⋆ Hittite underwent the sound change in (16).
- ⋆ *–(ă)i-*ablauting *ḫi*-verbs like (21) reflect inherited ablaut, **ó* in SG vs. **é* in PL, which thus:
  - Provide more evidence for **ó* ~ **é* ablaut in the Proto-Indo-European (PIE) **h₂e*-conjugation.[1]

[1] Thus Jasanoff (1979, 2003: 71, 89, et seq.), Kimball (1998), Melchert (2013, 2015, 2022), Rothstein-Dowden (2022: 136–7), contra Kloekhorst (2012, 2014b), Willi (2018: 255–7), i.a.

Conclusions

(21) Historical development of H *p(ă)i–* ‘give’:

a. **póh₁-y-ei* > … > *pāi* ‘gives’

b. **péh₁-i-weni* >> **píh₁-i-weni* >> H *pī-weni* ‘we give’

c. **póh₁-i-th₂e* > … > H *pai-tta* ‘you gave’

d. **péh₁-i-sten* > **píh₁-i-sten* > H *[p]ī-šten* ‘give!’

- ⋆ Hittite underwent the sound change in (16).
- ⋆ *–(ă)i-*ablauting *ḫi-*verbs like (21) reflect inherited ablaut, **ó* in SG vs. **é* in PL, which thus:
  - Provide more evidence for **ó* ~ **é* ablaut in the Proto-Indo-European (PIE) **h₂e-*conjugation.
  - Provide more evidence **ó* ~ **é* ablaut in PIE **i-*Presents specifically.[1]

[1] Thus Kimball (1998), Melchert (2022), contra Jasanoff (1979: 88–9, 2003: 101–3, 2021: 168–9).

Conclusions

(21) Historical development of H *p(ă)i–* ‘give’:

a.	**póh₁-y-ei*	>	…	>	*pāi* ‘gives’
b.	**péh₁-i-weni*	>>	**píh₁-i-weni*	>>	H *pī-weni* ‘we give’
c.	**póh₁-i-th₂e*	>	…	>	H *pai-tta* ‘you gave’
d.	**péh₁-i-sten*	>	**píh₁-i-sten*	>	H [*p*]*ī-šten* ‘give!’

- ⋆ Hittite underwent the sound change in (16).
- ⋆ *–(ă)i-*ablauting *ḫi*-verbs like (21) reflect inherited ablaut, **ó* in SG vs. **é* in PL, which thus:
  - Provide more evidence for **ó* ~ **é* ablaut in the Proto-Indo-European (PIE) **h₂e*-conjugation.
  - Provide more evidence **ó* ~ **é* ablaut in PIE **i*-Presents specifically.
  - Provide new evidence for symmetrical **ó*~**é* ablaut, SG vs. PL, in PIE **h₂e*-conj. Presents.

Ablaut in *h_2e-Presents vs. Aorists

⇒ Reconstructible contrast between:

- "3:3" root ablaut in PST of *h_2e-conjugation *i-Presents (and other Present types), e.g., (23).
- "5:1" root ablaut in *h_2e-conjugation root Aorists, e.g., (24).[1]

- "5:1" (> "6:0") pattern spread from *h_2e-Aorists to Presents in Hittite, just as in the *m-conjugation.
- But traces of "3:3" survive in Hittite reflexes of *i-Presents.

(23) "3:3" ablaut in PST of *h_2e-Presents:

a.	*póh$_1$-i-h$_2$e	>>	*póh$_1$-i-h$_2$m̥	>	H *pēḫḫun* 'I gave'
b.	*póh$_1$-i-th$_2$e	>	*póh$_1$-i-th$_2$e	>	H *paitta* 'you gave'
c.	*póh$_1$-i-s?	>	*póh$_1$-i-s	>	H *paiš* 'gave'
d.	*péh$_1$-i-me	>>	*péh$_1$-i-wen	>	H *pīwen* 'we gave'
e.	*péh$_1$-i-s?	>>	*péh$_1$-i-sten	>	H ([p]*išten* 'give!)
f.	*péh$_1$-y-r̥s	>>	*péh$_1$-y-er	>	H *piyer* 'they gave'

(24) "5:1" ablaut in *h_2e-Aorists:

a.	*h$_1$ór-h$_2$e	>>	*h$_1$ór-h$_2$m̥	>	H *ārḫḫun* 'I arrived'
b.	*h$_1$ór-th$_2$e	>	*h$_1$ór-th$_2$e	>	H *ārta** 'you arrived'
c.	*h$_1$ór-s?	>	*h$_1$ór-s	>	H *ārša* 'arrived'
d.	*h$_1$ór-me	>>	*h$_1$ór-wen	>	H *aruen* 'we arrived'
e.	*h$_1$ór-s?	>>	*h$_1$ór-ten	>	H (*ārten* 'arrive!')
f.	*h$_1$ér-r̥s	>>	*h$_1$ór-er	>	H *arer* 'they arrived'

[1] See Jasanoff (2013: 108, 2019: 44 n. 63) and Melchert (2013: 142–3, 2015) (cf. Jasanoff 2003: 153).

Thank you!

- Special thanks to the members of the:
  - UCLA PIES Graduate Seminar
  - Indo-European & Modern Linguistic Theory research group
- As well as to:
  - the audience of 325th Annual Meeting of the AOS
  - Craig Melchert, Stephanie Jamison, John Clayton, and Ron Kim

References

Canalis, Stefano. 2009. Post-tonic vowel harmony in some dialects of central Italy: The role of prosodic structure, contrast, and consonants. In *Phonetics and Phonology: Interactions and Interrelations,* edited by Marina Vigário, Sónia Frota, & Maria João Freitas, 247–266. Amsterdam: John Benjamins.

Eichner, Heiner. 1973. Die Etymologie von heth. *meḫur*. *Münchener Studien zur Sprachwissenschaft* 31: 53–107.

———. 1980. Phonetik und Lautgesetze des Hethitischen—ein Weg zur ihrer Entschlüsselung. In *Lautgeschichte und Etymologie,* edited by Manfred Mayrhofer, Martin Peters, & Oskar E. Pfeiffer, 120–165. Wiesbaden: Reichert.

Hrozný, Friedrich. 1917. *Die Sprache der Hethiter.* Leipzig: J.C. Hinrichs.

References

Jasanoff, Jay H. 1979. The Position of the *ḫi*-Conjugation. In *Hethitisch und Indogermanisch: Vergleichende Studien zur historischen Grammatik und zur dialektgeographischen Stellung der indogermanischen Sprachgruppe Altkleinasiens,* edited by Erich Neu & Wolfgang Meid, 79–90. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

———. 2003. *Hittite and the Indo-European Verb.* Oxford / New York: Oxford University Press.

———. 2013. The Tocharian Subjunctive and Preterite in **–a–*. In *Multi Nominis Grammaticus: Studies in Classical and Indo-european linguistics in honor of Alan J. Nussbaum on the occasion of his sixty-fifth birthday,* edited by Adam I. Cooper, Jeremy Rau, & Michael Weiss, 105–120. Ann Arbor / New York: Beech Stave Press.

———. 2019. The sigmatic forms of the Hittite verb. *Indo-European Linguistics* 7: 13–71.

———. 2021. Vedic *dháya–*, *citáya–* and an Indo-Iranian sound law. *Historische Sprachforschung* 134: 166–185.

Kimball, Sara. 1983. Hittite Plene Writing. PhD diss., University of Pennsylvania.

References

Kimball, Sara. 1998. On the Origin of Hittite Verbs of the Type *tēḫḫi, dāi*. In *Mír Curad: Studies in Honor of Calvert Watkins,* edited by Jay H. Jasanoff, H. Craig Melchert, & Lisi Oliver, 335–344. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

————. 1999. *Hittite Historical Phonology.* Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.

Kloekhorst, Alwin. 2006. Hittite *pai-/pi-* 'to give'. *Indogermanische Forschungen* 111: 110–119.

————. 2008. *Etymological Dictionary of the Hittite Inherited Lexicon.* Leiden / Boston: Brill.

————. 2012. Hittite "*ā/e*"-ablauting Verbs. In *The Indo-European Verb: Proceedings of the Conference of the Society for Indo-European Studies, Los Angeles 13-15 September 2010,* edited by H. Craig Melchert, 151–160. Reichert.

————. 2014a. *Accent in Hittite: A Study in Plene Spelling, Consonant Gradation, Clitics, and Metrics.* Wiesbaden: Harrassowitz.

References

Kloekhorst, Alwin. 2014b. Once more on Hittite *ā/e*-ablauting *ḫi*-verbs. *Indogermanische Forschungen* 119: 55–77.

Melchert, H. Craig. 1994. *Anatolian Historical Phonology.* Amsterdam / Atlanta: Rodopi.

———. 2013. Ablaut Patterns in the Hittite *ḫi*-Conjugation. In *Proceedings of the 24th Annual UCLA Indo-European Conference,* edited by Stephanie W. Jamison, H. Craig Melchert, & Brent Vine, 137–150. Bremen: Hempen.

———. 2015. The Tocharian *s*-Preterite. In *Tocharian Texts in Context: International Conference on Tocharian Manuscripts and Silk Road Culture, Vienna, June 25–29, 2013,* edited by Melanie Malzahn, Michaël Peyrot, Hannes Fellner, & Theresa-Susanna Illés, 127–135. Bremen: Hempen.

———. 2022. More on Ablaut Patterns in the *ḫi*-Conjugation. *Indo-European Linguistics* 10: 107–128.

———. 2025. Hittite *šiye/a–*^{mi} ‘to throw, shoot’ vs. *šai–*^{ḫḫi} ‘to impress, seal’. Paper presented at the 44th Annual East Coast Indo-European Conference, Munich, 20 June 2025.

References

Neu, Erich. 1980. *Althethitische Ritualtexte im Umschrift.* Wiesbaden: Harrassowitz.

Odden, David. 2019. Geminate blockage in Logoori harmony with no added machinery. *Loquens* 6 (2): 604/1–12.

Rothstein-Dowden, Zachary. 2022. Dental-aspirate presents in Greek and Indo-European. PhD diss., Harvard University.

Walker, Rachel. 2016. Positional prominence and consonantal interactions in metaphony and post-tonic harmony. In *Approaches to Metaphony in the Languages of Italy,* edited by Francesc Torres-Tamarit, Kathrin Linke, & Marc van Oostendorp, 301–331. Berlin: de Gruyter.

Willi, Andreas. 2018. *The Origins of the Greek Verb.* Cambridge / New York: Cambridge University Press.

Yates, Anthony D. 2017. Lexical Accent in Cupeño, Hittite, and Indo-European. PhD diss., University of California, Los Angeles.

Roadmap

- Appendices
  - On the historical membership of –(*ă*)*i*-ablauting *ḫi*-verbs
  - An alternative reformulation of "*i*-umlaut"

Historical membership of –(ă)*i*-ablauting *ḫi*-verbs

(25) Historical sources of Hittite –(ă)*i*-ablauting *ḫi*-verbs:

ROOT-ABLAUTING		SUFFIX-ABLAUTING	OTHER
REGULAR	IRREGULAR		
išp(ă)*i*–	*m*(ă)*i*–	*ḫalz*(ă)*i*–	*app*(ă)*i*–
par(ă)*i*–	*z*(ă)*i*–	*išḫam*(ă)*i*–	*ar*(ă)*i*–[?]
š(ă)*i*–	*tar*(ă)*i*–[?]	*pidd*(ă)*i*–[?]	
ḫuw(ă)*i*–[?]		*išḫ*(ă)*i*–[?]	
p(ă)*i*–[?]			
d(ă)*i*–[?]			

- Small numbers and high uncertainty, but among –(ă)*i*-ablauting *ḫi*-verbs whose historical source can be determined fairly securely the type with root-internal ablaut predominates.
- Majority of these are built to **h*$_1$-final roots where HITTITE METAPHONY would have applied **regularly**.

Historical membership of –(ă)*i*-ablauting *ḫi*-verbs

(26) Development of H *išp(ă)i*– and its cognates:

a. **spóh₁-i/y–* > H *išpāi* 'becomes satiated' (Bo 4491: 5; OH?/NS)
>> Ved. *sphāyate* 'grows fat'
>> OE *spōwan*, OHG *spuoen* 'thrive'

b. **spéh₁-i/y–* > H *išpišten* 'get satiated!' (KUB 12.18: 6; NS)
>> Lith. *spéju* 'have time to spare', OCS *spějǫ* 'be successful'

(27) Development of H *š(ă)i*– and its cognates:[1]

a. **sóh₁-i/y–* > Hitt. *šāi* 'presses' (KUB 54.85 obv. 10; MS)

b. **séh₁-i/y–* > Hitt. *šiyanzi* (KBo 2.3 iv 8; MH/NS)
>> Lith. *sė́ju* 'sow', OCS *sějǫ* 'sow'
>> Goth. *šaian* 'sow'

- Core group in which *p(ă)i*-type pattern developed regularly include (26–27):
  - NIE developments are parallel to Jasanoff's (2003: 64–72) "*molō*-presents."

[1] It is likely but not assured that the NIE material is cognate (cf. Melchert 2025).

Revitalizing a Hittite sound law — take 2

(28) Non-final **i*-umlaut:
**é* > **í* / _____ [−syll, −long] i σ
"Stressed **é* is raised to **í* when it precedes a single non-geminate consonant followed by **i* in a non-final syllable."

- (28) is a more restricted form of an "*i*-umlaut" process proposed by Eichner whereby any **e* was raised to **i* by **i* in a following syllable:
  - Only applies to stressed **é*
  - Only applies to **é* in an open syllable
  - Only applies to **é* when the trigger is not in a word-final syllable.

Revitalizing a Hittite sound law — take 2

(29) Underapplication of Eichner's "**i*-umlaut" rule:

a. **wés-i-m* > H *weši-n* 'pasture:ACC.SG.C' (KUB 29.29: 8; OS)

b. **mén-ih$_1$* > H *mēni*(=*mmet*) '(my) face' (KBo 3.22 obv. 52; OS)

c. **péd-i* > H *pēd-i* 'in place' (e.g., KBo 6.2 i 17; OS)

d. **h$_1$u-wéni* > H *u-mēni* 'we see' (KBo 30.39 iii 5; OH/MS)

e. **dh$_3$-téni* > H *da-ttēni* 'you take' (KUB 36.106 obv. 8; OS)

- These restrictions eliminate virtually all exceptions to Eichner's rule:[1]
  - No umlaut in (29) because the trigger is in a final syllable.

[1] H *memišteni* 'you speak' (<< **mé-mih$_{1/3}$-stent*) is analogical to 3SG *mēmai* (< **mé-moh$_{1/3}$-ei*); likewise, *memi*(*ya*)*n*– 'word; matter'.

Revitalizing a Hittite sound law — take 2

(30) Underapplication of Eichner's "**i*-umlaut" rule:

a. **mégĥ$_2$-i* > H *mekki* 'much' (e.g., KBo 6.2 iv 42; OS)

b. **h$_1$élt-ih$_1$* > H *ēlzi* 'scale' (KUB 30.10 rev. 13; MH/MS)

c. **h$_1$és-mi* > H *ēšmi* 'I am' (e.g., KBo 3.55 rev. 11; OH/NS)

d. **h$_1$ép-ti* > H *ēpzi* 'takes' (e.g., KBo 6.2 i 48; OS)

- These restrictions eliminate virtually all exceptions to Eichner's rule:
  - No umlaut in (29) because the trigger is in a final syllable.
  - No umlaut in (30) because **é* is in a closed syllable **or** because the trigger is in a final syllable.

Revitalizing a Hittite sound law — take 2

(31) Underapplication of Eichner's "**i*-umlaut" rule:

a. **sép-it* > H *šeppit* '(type of grain)' (KUB 34.89 obv. 5; MS)

b. **sép-id-os* > H *šeppidaš* 'of (type of grain)' (e.g., KBo 17.36 iv 5; OS)

- These restrictions eliminate virtually all exceptions to Eichner's rule:
  - No umlaut in (31a) because the trigger is in a final syllable.
  - No umlaut in (31b) because **é* is in a closed syllable (viz., post-Sturtevant's Law).

Revitalizing a Hittite sound law — take 2

(32) Application of HITTITE METAPHONY in 'honey':

a. **mél-it* > *mél-it* >> H *milit* 'honey' (e.g., KUB 30.36 ii 1; MH/NS)

b. **mél-id-os* > **míl-id-os* >> H *milittaš* 'of honey' (KBo 48.14 obv. 14; NS)

- But this restricted formulation still captures the *Paradebeispiel* of Eichner's rule:
  - Regular application of HITTITE METAPHONY in oblique cases of 'honey', e.g., (32b).
  - Spread of initial *i*-vocalism to direct cases of 'honey' via paradigm leveling, i.e., (32a).