How to talk about dragon-slaying in Hittite

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233rd Annual Meeting of the American Oriental Society
Los Angeles, CA
11 March 2023

UCLA

Dragon-slaying in Hittite and Indo-European

(1) KBo 26.65+ rev. iii 52´–55´ (trans. Hoffner 1998:64):

nu=kan karūiliya URUDU *ardāla*
[*par*]*ā tiyandu nepiš tekann=a kuēz arḫa kuērer*
[*nu=ka*]*n* d *Ullukummin* NA4 ŠU.U-*zin* GÌR.MEŠ GAM-*an arḫa ardu*[*meni*]
[d *K*]*umarbiš kuin* DINGIR.MEŠ-*naš* IGI-*a*[*nd*]*a* [*tarp*]*a*[*n*]*allin š*[*al*]*l*[*anut*]

'Let them bring forth the primeval copper cutting tool with which they cut apart heaven and earth. We will cut off Ullikummi, the *kunkunuzzi*, under his feet, him whom Kumarbi raised against the gods as a supplanter [of the St-G].'

- Verbs 'cut' and 'kill' feature prominently in two Hittite myths in which the Storm-god defeats a monstrous adversary:
  - "Song of Ullikummi" (CTH 345.I; Güterbock 1951, 1952) in (1).

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(2) KUB 17.5 obv. i 17´–18´ (trans. Hoffner 1998:12):

^{d}IM-*aš wet nu=kan* ^{MUŠ} *illuy*[(*ankan*)]
kuenta DINGIR.MEŠ-*š=a katti=šši ešer*

'The Storm God came and killed the serpent, and the gods were with him.'

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  - "Myth of Illuyanka" (CTH 321; Beckman 1982) in (2).

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áhann áhim ánu apás tatarda

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‘kill’ and ‘cut’ in Hittite and PIE

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a.	Hitt.	*kuēnzi*	=	Ved.	*hánti*
		‘kills’			‘kills’
b.	Hitt.	*kunanzi*	=	Ved.	*ghnánti*
		‘they kill’			‘they kill’

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(5)	a.	Hitt.	*kuērta*	=	Ved.	*kár*	<	PIE	**k^{w}ér-t*
			‘cut’			‘made’			‘cut’
	b.	Hitt.	*kurante*[*š*]	=	Ved.	*krántas*	<	PIE	**k^{w}r-ónt-es*
			‘cut (by)’			‘making’			‘cutting’

- Two famous PIE word equations in (4), proposed by Hrozný (1919:73) and now universally accepted.
- Two less famous PIE equations in (5), which show the same type of root ablaut alternation (cf. *LIV*^{2}: 391–2).

How did the Hittites say ‘kill’ and ‘cut’?

(6)

a.	Hitt.	*kuēnzi*	~	*kunanzi*
		‘kills’		‘they kill’
b.	Hitt.	*kuērta*	~	*kurante*[š]
		‘cut’		‘cut (by)’

- Focus of today’s talk — root vocalism of ‘kill’ and ‘cut’ in Hittite:

  - **How should the weak root allomorphs in (6) be interpreted phonologically?**

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	b.	Hitt.	*kuērta* ‘cut’	~	*kurante*[š] ‘cut (by)’		Ved. *kr-ánt-as*

- Focus of today’s talk — root vocalism of ‘kill’ and ‘cut’ in Hittite:
  - **How should the weak root allomorphs in (6) be interpreted phonologically?**
- Per standard view (Kimball 1999:266–7, Kloekhorst 2014:667–8) as historically expected consonant clusters: [kʷn-], [kʷr-]

Interpreting ambiguous spellings

(7)

a.	⟨*ku-na-an-zi*⟩	‘they kill’
	⟨*ku-na-an-za*⟩	‘killed (by)’
	⟨*ku-na-an-du*⟩	‘let them kill’
	⟨*ku-na-a-an-na*⟩	‘to kill’
b.	⟨*ku-ra-an-zi*⟩	‘they cut’
	⟨*ku-ra-a-an*⟩	‘cut (by)’
	⟨*ku-ra-an-du*⟩	‘let them cut’
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- Weak allomorphs of ‘kill’ and ‘cut’ are consistently spelled as in (7), ⟨*ku-nV-*⟩ and ⟨*ku-rV-*⟩, which are ambiguous — KU can represent:

(8) a. [k^{w}] b. [ku] c. [ko] d. [k^{w}u] e. [k^{w}o]

Interpreting ambiguous spellings

(9)

		[kʷ]	[k]	
a.	⟨*ku-na-an-zi*⟩	[kʷn-ántsi]	—	CLUSTER
		[kʷon-ántsi]	[kon-ántsi]	ROOT [o]
		[kʷun-ántsi]	[kun-ántsi]	ROOT [u]
b.	⟨*ku-ra-an-zi*⟩	[kʷr-ántsi]	—	CLUSTER
		[kʷor-ántsi]	[kor-ántsi]	ROOT [o]
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  - **Proposal:** [kʷun-] and [kʷor-] (likeliest but no probative evidence).

Roadmap

§1 Introduction

§2 Phonology of *kur–* ‘cut’ and *kun–* ‘kill’ — evidence for a root vowel

- Imperfectives of ‘cut’
- Reduplication of ‘cut’
- Reduplication of ‘kill’

§3 Diachrony of *kur–* ‘cut’ and *kun–* ‘kill’

§4 Conclusions

Imperfectives of ‘kill’ and ‘cut’ in Hittite

(10) a. PIE *pr̥k-ské-ti > Ved. *pr̥cháti* ‘asks’, Lat. *poscit* ‘demands’

b. PIE *g^{w}m̥-ské > Ved. *gácha* ‘go!’, Gk. βάσκε ‘come!’

- PIE had a verbal suffix *–ske/o–, which becomes highly productive in Hittite, used to form imperfective stems.
- In PIE *–ske/o-stems regularly had zero-grade of the root and suffixal stress (cf. *LIV*^{2}: 209–10, 490–1) — e.g., (10a–b).

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c. PIE *gʷʰn̥-ské-ti > Hitt. ⟨*ku-wa-as-ke-ez-zi*⟩ ‘kills’
[kʷa-skːéː-t͡si] (KUB 33.66 iii 2; OH/MS)

d. PIE *kʷr̥-ské-ti > Hitt. ⟨*ku-wa-ar-aš-ke-ez-zi*⟩ ‘cuts’
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- In PIE *–ské/o-stems regularly had zero-grade of the root and suffixal stress (cf. *LIV*²: 209–10, 490–1) — e.g., (10a–b).
- Oldest Hittite imperfectives of ‘kill’ and ‘cut’ in (10c–d) reflect same pattern.

Renewed imperfective of ‘cut’

(11)	a.	⟨*ku-ra-aš-kán-zi*⟩	‘they cut’	(Bo 3640 iii 9–10; NS)
	b.	⟨*kur-aš-ke-mi*⟩	‘I cut’	(KBo 24.3 i 14; MS)
	c.	⟨*kur-aš-ke-ez-zi*⟩	‘cuts’	(KUB 53.11 ii 4; MS)

- But also attested for ‘cut’ are “younger formations built on the synchronic weak ste[m] *kur*–” like (11) (cf. Kloekhorst (2007:455 n. 1)).

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  - Neither quadripartite nor falling sonority onsets are otherwise attested.

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⇒ **Root in (11) must contain a real vowel** [o]**.**

Reduplicated imperfectives of ‘cut’

(12)

	IPFV	⇒	RED IPFV
a.	⟨*ku-wa-ar-aš-ke-ez-zi*⟩		⟨*ku-wa-ku-wa-ar<-aš>-ke-mi*⟩
	(KBo 24.3 i 7)		(KBo 11.11 i 5)
b.	⟨*ku-ra-aš-kán-zi*⟩		⟨*ku-uk-ku-ra-aš-kán-zi*⟩
	(KUB 53.11 ii 4)		(KBo 6.3 iv 56)

- Reduplication further supports interpreting *kur–* as [k^wor-].
- Both (15a) older and (15b) renewed imperfectives of ‘cut’ attest reduplicated stems, which show differing reduplicant shapes.

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  - Older (12a) copies root *a*-vowel of its base.

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⇒ **Root in (12b) must contain a real vowel [o].**

Reduplicated ‘kill’ and *kunkunuzzi*

(13) KUB 17.7 + KUB 33.93+ i 31–32 (trans. Hoffner 1998:62):

[*ku-e*] *n-ta=wa-r=a-an=kán ku-w*[*a-at-qa*]
[^{NA_4} *ku*] *-un-ku-n*[*u-zi-iš* *am-me-el* LÚ*-an* ^{d}U*-an na-ak-k*] *i-in* LUGAL*-un*

‘(Hebat said:) “Perhaps the *kunkunuzzi* has killed him,
[my husband the Storm-god, the migh]ty king.”’

- Hittite noun *kunkunuzzi*– ‘(type of) rock’ occurs primarily in Song of Ullikummi as epithet of eponymous stone monster — e.g., (13).

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- Connection between *kunkunuzzi*– and Hitt. *ku(e)n*– ‘kill’ accepted since Carruthers 1933(cf. Puhvel 1997:251–4, Kloekhorst 2008:494).

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  ⇒ Poetic passage in (13) — likely two verse lines — contains a *figura etymologica*.

Reduplicated ‘kill’ and *kunkunuzzi*

(14) a. *kuruzzi*– ‘cutting-tool’ ⇐ *kuer*– ‘cut’

b. *išpanduzzi*– ‘libation vessel’ ⇐ *išpand*– ‘libate’

- Standard morphological analysis of Hitt. *kunkunuzzi*–:
  - “tool”-suffix –*uzzi* (Hoffner and Melchert 2008:61) — cf. (14):

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- Standard morphological analysis of Hitt. *kunkunuzzi–*:
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  - Verbal stem *kunkun–** in (15), derived from Hitt. *ku(e)n–* ‘kill’ by full root reduplication (see Dempsey 2015:314–7).

Reduplicated ‘kill’ and *kunkunuzzi*

(15) RED *kunkun–** ⇐ *kun–* ‘kill’

- Stem-initial sequence /k^{w}n-/ in (15) is phonotactically impossible:

Reduplicated ‘kill’ and *kunkunuzzi*

(15)		RED	*kunkun–**	⇐	*kun–* ‘kill’
	a.	✘	[kʷn̩-kʷn-]		[kʷn-]

- Stem-initial sequence /kʷn-/ in (15) is phonotactically impossible:
  - Hittite lacks syllabic sonorants.

Reduplicated ‘kill’ and *kunkunuzzi*

(15)

	RED	*kunkun–**	⇐	*kun–* ‘kill’
a.	✘	[kʷn̩-kʷn-]		[kʷn-]
b.	✘	[kʷn-kʷn-]		[kʷn-]

- Stem-initial sequence /kʷn-/ in (15) is phonotactically impossible:
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b.	✘	[kʷn-kʷn-]		[kʷn-]
c.	✔	[kʷun-kʷun-]		[kʷun-]

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⇒ **Reduplicant must contain a real vowel ([u]/[o]), copied from root.**

Interim summary — phonology of ‘cut’ and ‘kill’

(16) a. PIE **k^{w}r-ónt-es* >(>) Hitt. ⟨*ku-ra-an-te-e*[*š*]⟩ ‘cut (by)’
[k^{w}or-á:nt-es] cf. Ved. *kr-ánt-as*

b. PIE **g^{wh}n-énti* >(>) Hitt. ⟨*ku-na-an-zi*⟩ ‘they kill’
[k^{w}un-ántsi] cf. Ved. *ghn-ánti*

- Established thus far:
  - Weak allomorphs of Hittite verbs ‘cut’ (*kur*–) and ‘kill’ (*kun*–) were likely pronounced with root-internal *u*-vowel.
  - A phonological change occurred between Hittite and PIE (cf. Vedic cognates (16)).

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  - A phonological change occurred between Hittite and PIE (cf. Vedic cognates (16)).
- **When and how did this change occur?**

Roadmap II

§1 Introduction

§2 Phonology of *kur–* 'cut' and *kun–* 'kill' — evidence for a root vowel

§3 Diachrony of *kur–* 'cut' and *kun–* 'kill'

- Weak root vocalism in Proto-Anatolian — evidence from Luwian
- Weak root vocalism via morphophonological analogy

§4 Conclusions

Luwian ‘cut’ and chronology of weak root vocalism

(17)	a.	1SG	HLuw.	⟨*kwa/i+ra/i-ha*⟩ [kʷáːr-χːa]	‘I cut’	(MARAŞ 4 §13)
	b.	3SG	CLuw.	⟨*ku-wa-ar-ti*⟩ ⟨*ku-wa-al-ti*⟩ [kʷáːr-ti]	‘cuts’	(KUB 35.48 iii 19) (KUB 35.48 iii 18)
	c.	INF	CLuw.	⟨*ku-ú-ru-na*⟩ [kʷúːruna]	‘to cut’	(KUB 25.38: 11)

- Luwian attests exact cognate of Hittite ‘cut’ in (17).
- Plene spelling in (17c) points to a real (and stressed/long) root vowel.

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(17)	a.	1SG	HLuw.	⟨*kwa/i+ra/i-ha*⟩ [kʷáːr-χːa]	‘I cut’	(MARAŞ 4 §13)
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	c.	INF	CLuw.	⟨*ku-ú-ru-na*⟩ [kʷúːruna]	‘to cut’	(KUB 25.38: 11)
	d.	C.DAT/ LOC.SG	CLuw.	⟨*ku-ú-ra-am-mi*⟩ [kʷúːr(a)mːiː]	‘cutting’	(KUB 35.55: 6)

- Luwian attests exact cognate of Hittite ‘cut’ in (17).
- Plene spelling in (17c) points to a real (and stressed/long) root vowel.
- Error unlikely, since deverbal noun in (17d) also exhibits plene.

Luwian ‘cut’ and chronology of weak root vocalism

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cf. CLuw. ⟨*ku-ú-ru-na*⟩ ‘to cut’
[k^{w}ú꞉ɾuna]

b. PIE **g^{wh}n-énti* >(>) Hitt. ⟨*ku-na-an-zi*⟩ ‘they kill’
[k^{w}un-ánt͡si]

- Agreement between Luwian and Hittite w.r.t weak root-internal vowel suggests it developed already in Proto-Anatolian (PA).

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    - Epenthesis
    - Intraparadigmatic leveling of pre-*C* **k^{w}r̥–*, **g^{w}n̥–*

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- Agreement between Luwian and Hittite w.r.t weak root-internal vowel suggests it developed already in Proto-Anatolian (PA).
  - **How did this change occur?**
    - Epenthesis (✘; see Appendix I)
    - Intraparadigmatic leveling of pre-*C* **k^{w}r̥–*, **g^{w}n̥–* (✘; see Appendix II)

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- Agreement between Luwian and Hittite w.r.t weak root-internal vowel suggests it developed already in Proto-Anatolian (PA).
  - **How did this change occur?**
    - Epenthesis (✘; see Appendix I)
    - Intraparadigmatic leveling of pre-*C* **kʷr̥–*, **gʷn̥–* (✘; see Appendix II)
    - Morphophonological analogy (↓)

Innovative root vocalism in Anatolian radical *mi*-verbs

(19) *PIE *m-conjugation radical verbs in Anatolian and IE*:

a.	PIE	**h₁és-ti*	>	Ved. *ásti*, Osc. **est**, Goth. *ist*
		'is'	>	Hitt. *ēšzi* ([éːs-]), CLuw. *āšti* ([áːs-])
b.	PIE	**gʷʰén-ti*	>	Ved. *hánti*
		'kills'	>	Hitt. *kuēnzi* ([kʷéːn-])
c.	PIE	**h₁s-éntu*	>	Ved. *s-ántu* (cf. Osc. **sent**, Goth. *sind* 'are')
		'let them be'	⊁	Hitt. *ašandu*, CLuw. *ašandu*, Pal. *ašandu* ([as-])
d.	PIE	**gʷʰn-éntu*	>	Ved. *ghn-ántu*
		'let them kill'	⊁	Hitt. *kunandu* ([kʷun-])

- Emergence of a weak root vowel in 'kill' (and 'cut') in Anatolian is paralleled by 'be' and other verbs of same morphological type.
  - 'be' in (19c) exhibits [a] in Anatolian vs. ∅ in PIE.
  - 'kill' in (19d) exhibits [u] in Anatolian vs. ∅ in PIE.

Weak [a]-vocalism in Anatolian radical *mi*-verbs

(20)	PIE		PA		HITTITE		VEDIC
a.	*[səs-énti]	>	*[səs-énti]	>	*šašanzi*	‘they sleep’	cf. *sas-ántu*
b.	*[h_1s-énti]	>>	*[h_1əs-énti]	>	*ašanzi*	‘they are’	cf. *s-ánti*
c.	*[h_1s-éntu]	>>	*[h_1əs-éntu]	>	*ašandu*	‘let them be’	cf. *s-ántu*
d.	*[h_1s-ónt-]	>>	*[h_1əs-ónt-]	>	*ašant–*	‘being’	cf. *s-ánt–*

- Per Melchert (1994:66) weak vocalism of ‘be’ (etc.) in (32b–d) is analogical to ‘sleep’ in (32a) “and other *TeT* roots,” which had a reduced vowel already in PIE (“already PIE **T_eT*”; cf. Yates 2014).

Weak root vocalism by morphophonological analogy

(21)	PIE		PA		HITTITE	
a.	*[səs-énti]	>	*[səs-énti]	>	*šašanzi*	‘they sleep’
b.	*[h_1s-énti]	>>	*[h_1əs-énti]	>	*ašanzi*	‘they are’
c.	*[g^{wh}n-énti]]	>>	*[g^{wh}ən-énti]	>	*kunanzi*	‘they kill’
d.	*[k^wr-ónt-es]	>>	*[k^wər-ónt-es]	>	*kurante*[š]	‘cut (by)’

- **Proposal:** Reduced vowel (*[ə]) spread analogically to all PA radical *mi*-verbs of shape **CeC*.
  - Thus to **h_1eT*-shaped roots like ‘be’ in (21b) (Melchert 1994; Yates 2014).
  - Also to *TeR*-shaped roots like ‘kill’ and ‘cut’ in (21c–d).

Weak root vocalism by morphophonological analogy

(21)	PIE		PA		HITTITE	
a.	*[səs-énti]	>	*[səs-énti]	>	*šašanzi*	‘they sleep’
b.	*[h_1s-énti]	>>	*[h_1əs-énti]	>	*ašanzi*	‘they are’
c.	*[g^{wh}n-énti]]	>>	*[g^{wh}ən-énti]	>	*kunanzi*	‘they kill’
d.	*[k^wr-ónt-es]	>>	*[k^wər-ónt-es]	>	*kurante*[š]	‘cut (by)’
e.	*[tr-énti]	>>	*[tər-énti]	>	*taranzi*	‘they say’
f.	*[mr-éntu]	>>	*[mər-éntu]	>	*marandu*	‘let them disappear’

- **Proposal:** Reduced vowel (*[ə]) spread analogically to all PA radical *mi*-verbs of shape **CeC*.
  - Thus to **h_1eT*-shaped roots like ‘be’ in (21b) (Melchert 1994; Yates 2014).
  - Also to *TeR*-shaped roots like ‘kill’ and ‘cut’ in (21c–d).
  - Likewise to ‘say’ and ‘disappear’ in (21e–f). (see Appendix IV)

Weak root vocalism by morphophonological analogy

(21)	PIE		PA		HITTITE	
a.	*[səs-énti]	>	*[səs-énti]	>	*šašanzi*	‘they sleep’
b.	*[h_1s-énti]	>>	*[h_1əs-énti]	>	*ašanzi*	‘they are’
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d.	*[k^wr-ónt-es]	>>	*[k^wər-ónt-es]	>	*kurante*[š]	‘cut (by)’
e.	*[tr-énti]	>>	*[tər-énti]	>	*taranzi*	‘they say’
f.	*[mr-éntu]	>>	*[mər-éntu]	>	*marandu*	‘let them disappear’

- **Proposal:** Reduced vowel (*[ə]) spread analogically to all PA radical *mi*-verbs of shape **CeC*.
- Innovative *[ə] then rounded to *[u] by adjacent labiovelar:
  - *[u] > Hitt. [u], e.g., in ‘kill’ in (21c).
  - *[u] > Hitt. [o] / ___ r, e.g., in ‘cut’ (21d).

Weak root vocalism by morphophonological analogy

(22)

a.	PA	*[wód-r̩]	>	Hitt. *wātar* ([wáːt-ar]) ‘water’
b.	PA	*[tər-énti]	>	Hitt. *taranzi* ([tar-ántsi]) ‘they say’
c.	PA	*[páχʷ-r̩]	>	Hitt. *paḫḫur* ([páχʷː-or]) ‘fire’
d.	PA	*[kʷər-énti]	>	Hitt.*kuranzi* ([kʷor-ántsi]) ‘they cut’

- Inherited syllabic sonorants exhibit same conditioned rounding.
  - Inherited *[r̩] and innovative *[ər] generally yield Hitt. [ar], e.g., (22a–b).
  - But *[r̩] and *[ər] adjacent to labialized *C* yields Hitt. [or], e.g., (22c–d).

Roadmap III

Phonological conclusions

(23) a. PIE *k^{w}r-ónt-es >(>) Hitt. ⟨*ku-ra-an-te-e*[š]⟩ ‘cut (by)’
[k^{w}or-á:nt-es]

cf. CLuw. ⟨*ku-ú-ru-na*⟩ ‘to cut’
[k^{w}ú:ɾuna]

b. PIE *g^{wh}n-énti >(>) Hitt. ⟨*ku-na-an-zi*⟩ ‘they kill’
[k^{w}un-ántsi]

- Principal findings:
  - Weak allomorphs of Hittite ‘cut’ and ‘kill’ contain an ahistorical root vowel, likely pronounced [k^{w}or-] and [k^{w}un-].
  - Root vowel was very likely present already in PA.
  - Vowel probably developed by morphophonological analogy (< PA *[ə]).

How to talk about dragon-slaying in Hittite

(24) KUB 17.7 + KUB 33.93+ i 31–32:

[*ku-e*] *n-ta=wa-r=a-an=kán ku-w*[*a-at-qa*] / [^{NA_4} *ku*] *-un-ku-n*[*u-zi-iš*]

[k^w . . . k^w . . . k^wu . . . k^wu . u . . .]

'The *kunkunuzzi* could've killed him'

- Poetic line in (24) from Song of Ullikummi would contain not just a *figura etymologica*, but also alliteration:
  - Consonance
  - Assonance
- See Francia 2018 for alliteration as a structuring device in Hittite poetry (Watkins 1995 for the IE background).

Thank you!

- Special thanks to the members of the:
  - Indo-European & Modern Linguistic Theory research group
  - UCLA Indo-European Studies Graduate Seminar
- And to audiences at:
  - Cornell University
  - Ludwig-Maximilians-Universität München
- As well as to Craig Melchert, Ron Kim, Jesse Lundquist, and Ryan Sandell.

★ *This project was supported by a research fellowship from the Alexander von Humboldt Foundation* (`https://www.humboldt-foundation.de/`).

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*[kʷR-] to Anatolian [kʷVR-] via epenthesis?

(A1)

	PRE-PA		HITTITE	
a.	*h_1g^{wh}-$s\hat{k}$é-weni	>	[akʷː-uskːéː-wani]	‘we drink’
			⟨*ak-ku-uš-ke-e-wa-ni*⟩	
			(KUB 36.110 ref. 7; OH/OS)	
b.	*pnéuh_xs-m̥	>	[póːnusː-on]	‘I interrogated’
			⟨*pu-u-nu-uš-šu-un*⟩	
			(KUB 14.15 ii 12; NH/NS)	

- One possible explanation is epenthesis (cf. Patri 2019:163).
- Epenthesis generally produces front vowels in Hittite ([i] or [e]), but there is also evidence for epenthetic *u*-vowels ([u] or [o]) adjacent to labial obstruents (Kavitskaya 2001; cf. Yates 2015, 2016).

*[kʷR-] to Anatolian [kʷVR-] via epenthesis?

(A2)

	PIE root		Hittite	
a.	*$g^h reb^h$–	>	[kré:per]	‘they devoured’
			⟨*ka-re-e-pé-er*⟩	
			(KUB 14.1 obv. 11; MH/MS)	
b.	*$\hat{g}$*rei*–	>	[krá:i͡ts]	‘flood’
			⟨*ka-ra-i-iz*⟩	
			(KUB 34.10: 10; OH/NS)	
c.	*$\hat{g}neh_3$–	>	[kné:s:-er]	‘they recognized’
			⟨*ga-né-eš-še-er*⟩	
			(KBo 22.2 obv. 18; OH/OS)	

- But word-initial onsets most similar to ‘cut’ and ‘kill’ show no evidence for epenthesis in Hittite.

*[kʷR-] to Anatolian [kʷVR-] via epenthesis?

(A3)	I-A Luwian			Hittite	
a.	[runtiyas]	‘Stag-god’	cf.	[krá:war]	‘horn’
	⟨(DEUS)*ru-ti-ya-sá*⟩			⟨*ka-ra-a-wa-ar*⟩	
	(MARAŞ 1 §6)			(e.g., KUB 31.4 + KBo 3.41 obv. 15; OH/NS)	
b.	[ruwan]	‘formerly’	cf.	[krú:]	‘id.’
	⟨*rú-wa/i-na*⟩			⟨*ka-ru-ú*⟩	
	(KARATEPE 1 §33 (Hu.))			(e.g., KBo 17.74 ii 29; OH/OS)	

- And **#KrV–* is preserved into Luwian, where **K* is then deleted in word-initial cluster (cf. Melchert 1994:256, Oettinger 2017):

*[kʷR-] to Anatolian [kʷVR-] via epenthesis?

(A3)	I-A Luwian		Hittite	
a.	[runtiyas]	‘Stag-god’ cf.	[krá:war]	‘horn’
	⟨(DEUS)*ru-ti-ya-sá*⟩		⟨*ka-ra-a-wa-ar*⟩	
	(MARAŞ 1 §6)		(e.g., KUB 31.4 + KBo 3.41 obv. 15; OH/NS)	
b.	[ruwan]	‘formerly’ cf.	[krú:]	‘id.’
	⟨*rú-wa/i-na*⟩		⟨*ka-ru-ú*⟩	
	(KARATEPE 1 §33 (Hu.))		(e.g., KBo 17.74 ii 29; OH/OS)	

- And **#KrV–* is preserved into Luwian, where **K* is then deleted in word-initial cluster (cf. Melchert 1994:256, Oettinger 2017):
  - ⇒ Epenthesis in PA is unmotivated, cannot explain PIE *[kʷR-] > [kʷVR-] in Anatolian languages.

*[kʷR-] to Anatolian [kʷVR-] via leveling?

(A4)

	PRE-PA		HITTITE		
1PL	*k^{w} r̥-*wéni*	>	⟨*ku-ur-ú-e-ni*⟩*	[kʷor-wéːni]*	‘we cut’
2PL	*g^{wh} n̥-*téni*	>	⟨*ku-un-te(-e)-ni*⟩*	[kʷun-tːéːni]*	‘y’all kill’

- Another possible explanation is intraparadigmatic paradigm leveling.
- Weak stem forms *kun*– [kʷon-] and *kur*– [kʷor-] are historically expected in 1/2PL.NPST.ACT before stressed consonant-initial suffixes.
- [kʷun-] and [kʷor-] could thus in principle be analogically generalized from 1/2PL.NPST.ACT in (A4).

*[kʷR-] to Anatolian [kʷVR-] via leveling?

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	PRE-PA		HITTITE		
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- But neither ‘kill’ nor ‘cut’ attests a 1/2PL.NPST.ACT form with the expected weak root allomorph.

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(A5)

NPST.ACT	*kunanzi*	‘they kill	*kuranzi*	‘they cut’
IMP.ACT	*kunandu*	‘let them kill	*kurandu*	‘let them cut’

- But neither ‘kill’ nor ‘cut’ attests a 1/2PL.NPST.ACT form with the expected weak root allomorph.
  - Only attested finite forms with weak *kun–* and *kur–* are 3PL in (A5).

*[kʷR-] to Anatolian [kʷVR-] via leveling?

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	PRE-PA		HITTITE		
1PL	*k^{w} r̥-*wéni*	>	⟨*ku-ur-ú-e-ni*⟩*	[kʷor-wéːni]*	‘we cut’
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(A5)

NPST.ACT	*kunanzi*	‘they kill	*kuranzi*	‘they cut’
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⇒ Paradigm leveling from 1/2PL.NPST.ACT does not plausibly account for weak stems *kun*– ([kʷun-]) and *kur*– ([kʷor-]) attested in 3PL.NPST.ACT and other prevocalic contexts.

- Paradigm leveling from 1/2PL (as distinct from 3PL) is unknown in Hittite and runs counter to cross-linguistic preference for 3rd as base.
- Exceptional leveling from 1/2PL.NPST.ACT due to frequency (or “salience”) is especially unlikely in view of absence of attested forms.

Distribution of *kueR–* and *kuR–* in Hittite

(A6)

a. ⟨*ku-e-en-zi*⟩ ‘kills’
[kʷéːn-t͡si]
(kill-3SG.NPST.ACT)
cf. Ved. *hánti*
(e.g., KBo 6.2 i 3; OH/OS)

b. ⟨*ku-e-en-ta*⟩ ‘killed’
[kʷéːn-ta]
(kill-3SG.PST.ACT)
cf. Ved. *hán*
(e.g., KUB 36.100 obv. 14; OH/OS)

c. ⟨*ku-e-er-ta*⟩ ‘cut’
[kʷéːr-ta]
(cut-3SG.PST.ACT)
cf. Ved. *kár*
(KUB 44.4 + KBo 13.241 rev. 28; NS)

- Root allomorphs of ‘kill’ and ‘cut’ are in complementary distribution:
  - *kuĕn–* and *kuĕr–* when synchronically stressed.
- Plene spelling marks long vowel, which indicates word stress (matching historical stress).

Distribution of *kueR–* and *kuR–* in Hittite

(A7)	a.	⟨*ku-na-a-tar*⟩ *kun-*[á꞉tar] (kill-NML:N.NOM/ACC.SG)	‘killing’	(KUB 19.4 obv. 7; NH/NS)
	b.	⟨*ku-na-a-an-na*⟩ *kun-*[á꞉n꞉a] (kill-INF)	‘to kill’	(KBo 10.7 ii 17; OH/NS)
	c.	⟨$^{\text{TÚG}}$*ku-re-e-eš-šar*⟩ *kur-*[é꞉s꞉ar] (cut-NML:N.NOM/ACC.SG)	‘piece of cloth’	(KUB 12.63 rev. 25; OH/MS)
	d.	⟨*ku-ra-a-an*⟩ *kur-*[á꞉n] (cut-PTCP:N.NOM/ACC.SG)	‘cut (by)’	(e.g., KBo 35.207 obv. 6; MH/MS) cf. Ved. *kr-ánt–*

- Root allomorphs of ‘kill’ and ‘cut’ are in complementary distribution:
  - *kuĕn–* and *kuĕr–* when synchronically stressed.
  - *kun–* and *kur–* before synchronically stressed vowel-initial suffixes.

Weak [a]-vocalism in ‘say’ and ‘disappear’

(A8)

	STRONG/STRESSED		WEAK/PRETONIC	
a.	⟨*te-re-er*⟩	‘they said’	⟨*ta-ra-an-zi*⟩	‘they say’
	[téːrer]		[t(a)r-ántsi]	
b.	⟨*me-e-er-tu*⟩	‘let him	⟨*ma-ra-an-du*⟩	‘let them
	[méːr-tːu]	disappear’	[m(a)r-ántsi]	disappear’

- In Hittite ‘say’ (suppletive PL of *te–* < PIE **$d^h eh_1$–*) and ‘disappear’ show root alternations between (orthographic) *ĕ* and *a*.

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b.	⟨*me-e-er-tu*⟩ [méːr-tːu]	‘let him disappear’	⟨*ma-ra-an-du*⟩ [m(a)r-ántsi]	‘let them disappear’

- In Hittite ‘say’ (suppletive PL of *te–* < PIE **$d^h eh_1$–*) and ‘disappear’ show root alternations between (orthographic) *ĕ* and *a*.
- *a*-vowel is orthographic per Kloekhorst (2008:120):

> “[I]t is quite clear that the *–a–* as written in the weak stem is not phonologically real: *ta-ra-an-zi* ‘they speak’ reflects **tr-énti* and therefore must represent phonological /tránt^{s}i/; *ma-ra-an-du* ‘they must disappear’ < **mr-éntu* must be phonologically interpreted as /mrántu/.”

Weak [a]-vocalism in ‘say’

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	[téːrer]		[tar-ántsi]	
b.	⟨*me-e-er-tu*⟩	‘let him	⟨*ma-ra-an-du*⟩	‘let them
	[méːr-tːu]	disappear’	[mar-ántsi]	disappear’

(A9) a. PIE **tri–* > PA **téri–* > Hitt. *teri–* ‘three’
CLuw. *tarriyanalli–* ‘third-in-command’

b. PIE **trép-ti* > PA **térep-ti* > Hitt. *teripzi* ‘plows’

- But if ‘speak’ had an initial cluster (*[#tre]), it should have undergone PA epenthesis like (A9) (cf. Melchert 2013b:139–40, Yates 2015:154–5).

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- But if ‘speak’ had an initial cluster (*[#tre]), it should have undergone PA epenthesis like (A9) (cf. Melchert 2013b:139–40, Yates 2015:154–5).
  - ✓ Non-epenthesis in ‘speak’ explained by PA extension of [ə] into these roots, yielding Hitt. [a].

Weak [a]-vocalism in ‘authorize’

(A10)	a.	Lyc.	*martti*	‘authorizes’	(e.g., TL 109: 4)
	b.	Lyc.	*mara*	‘laws’	(e.g., TL 45b: 4)
	c.	Lyc.	*maraza–*	‘judge’	(TL 44c: 4)

- Lycian attests a radical verb *mar–* ‘authorize’ (only 3SG.NPST.ACT) beside a set of nominal derivatives.

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- Per Kimball (2017:215) (A10) reflects the generalized weak stem of PIE root **(s)mer–* (cf. Gk. ἔμμορε ‘earned a share’, Lat. *mereō* ‘deserve’).
- Generalized weak stem explained straightforwardly if 3PL.NPST.ACT developed [ə] in PA.
  - cf. Lyc. *apptte* ‘took’ (<< weak PL.NPST PA *[h_1əp-ˊ]; cf. Hitt. *appanzi*)

Development of *[ə] in Anatolian

(A11)	a.	PA	*´–*weni*	>	Hitt. *akkuškēwani*	‘we drink’
				>	Pal. *ḫapariwani*	‘we hand over’
	b.	PA	*´–*teni*	>	Hitt. *paittani*	‘we go’
	c.	PA	*=*te*	>	Hitt. =*tta*	‘(to/for) you’
	d.	PA	*=*pe*	>	Pal. =*ppa*	(TOP)

- PIE/PA **e* was subject to reduction in Anatolian in other unstressed contexts.
- Hittite and Palaic show [a] (via *[ə]?) as reflex of **e* in (A11a–b) post-tonic open syllables and in (A11c–d) word-final unstressed syllables.

Development of *[ə] in Anatolian

(A12)	a.	PA	*tó-k^we*	>	Hitt. *takku*	'if'
	b.	PA	*=k^we*		Hitt. =*kku*	'and, even'?
					Pal. =*ku*	'and'?

- But in word-final unstressed syllables after *k^w* reduced *e* ([ə]?) yields a rounded vowel ([u]/[o]) in Hittite and Palaic.

  ⇒ (A11–12) support development in Hittite radical *mi*-verbs of PA *[ə] to [a], but [o] after labiovelars in 'kill' and 'cut'.

Development of PIE/PA *$\underset{\circ}{R}$ in Anatolian

(A13)

a. PA *[dwr̥-n-h$_1$-énti] > Hitt. ⟨*du-wa-ar-na-an-zi*⟩ ‘they break’
[twarn-ánt͡si]

b. PA *[kʷər-sḱé-ti] > Hitt. ⟨*ku-wa-ar-aš-ke-ez-zi*⟩ ‘they cut’
[kʷar-skːéː-t͡si]

c. PA *[gʷən-sḱé-ti] > Hitt. ⟨*ku-wa-as-ke-ez-zi*⟩ ‘they kill’
[kʷa-skéː-t͡si]

- In labiovelar-adjacent contexts, both inherited syllabic sonorants and innovative PA *[əR] exhibit conditioned “lowering” to Hitt. [aR] (cf. Kloekhorst 2007, Melchert 2020:266–7).

Morphophonological change via paradigm uniformity

- **Proposal:** Extension of vowel reduction in PA radical *mi*-verbs is due to an emergent preference for uniform paradigms

Morphophonological change via paradigm uniformity

(A14) ONSET UNIFORMITY CONDITION (OUC):
Inflectional paradigms must have the same word-initial onset in all paradigm cells.

- **Proposal:** Extension of vowel reduction in PA radical *mi*-verbs is due to an emergent preference for uniform paradigms — i.e., (A14).

Morphophonological change via paradigm uniformity

(A15)		PRE-PA	
a.	3SG	*$nóh_2$-ei*	‘frightens’
	3PL	*$n̥h_2$-énti*	‘they frighten’
b.	3SG	*$sóh_2$-ei*	‘clogs, fills up’
	3PL	*sh_2-énti*	‘they clog, fill up’
c.	3SG	*$lóg^h$-ei*	‘knocks out, bends’
	PTCP	*$l̥\hat{g}^h$-ónt*	‘bent’
d.	3SG	*$wóh_2\hat{g}$-ei*	‘bites’
	3PL	*$uh_2\hat{g}$-énti*	‘they bite’
e.	3SG	*$nó\hat{k}$-ei*	‘dies’
	3PL	*$n̥\hat{k}$-énti*	‘they die’

- Independent Hittite evidence for OUC comes from ahistorically non-alternating radical *ḫi*-verb paradigms (cf. Melchert 2012).
- Already in PA stress mobility introduced into PL.NPST.ACT of most verbs in this category (cf. Melchert 2013a), yielding **o*/∅ alternations.

Morphophonological change via paradigm uniformity

(A16)		Pre-PA		Hittite	
a.	3SG	*nóh$_2$-ei	>	nāḫi	‘frightens’
	3PL	*n̥h$_2$-énti	⋟̈	xaḫḫanzi	‘they frighten’
b.	3SG	*sóh$_2$-ei	>	šāḫi	‘clogs, fills up’
	3PL	*sh$_2$-énti	⋟̈	xišḫanzi	‘they clog, fill up’
c.	3SG	*lóg^h-ei	>	lāki	‘knocks out, bends’
	PTCP	*l̥g̑^{h}-ónt	⋟̈	xalgān	‘bent’
d.	3SG	*wóh$_2$ĝ-ei	>	wāki	‘bites’
	3PL	*uh$_2$ĝ-énti	⋟̈	xukanzi	‘they bite’
e.	3SG	*nók̂-ei	⋟̈	xnākki	‘dies’
	3PL	*n̥k̂-énti	>	akkanzi	‘they die’

- Expected Hittite outcomes of verbs in (A16) would show initial onset alternations in strong vs. weak contexts.

Morphophonological change via paradigm uniformity

(A17)		PRE-PA		HITTITE	EXPECTED
a.	3SG	*nóh$_2$-ei	>	nāḫi	
	3PL	*n̥h$_2$-énti	>>	naḫḫanzi	ˣaḫḫanzi
b.	3SG	*sóh$_2$-ei	>	šāḫi	
	3PL	*sh$_2$-énti	>>	šaḫḫanzi	ˣišḫanzi
c.	3SG	*lóg^h-ei	>	lāki	
	PTCP	*l̥g̑^{h}-ónt	>>	lagān	ˣalgān
d.	3SG	*wóh$_2$ĝ-ei	>	wāki	
	3PL	*uh$_2$ĝ-énti	>>	wakkanzi	ˣukanzi
e.	3SG	*nók̂-ei	>>	aki	ˣnākki
	3PL	*n̥k̂-énti	>	akkanzi	

- But attested Hittite outcomes in (A17) show analogical changes that bring verbs into compliance with OUC.

Morphophonological change via paradigm uniformity

(A18)	a.	Ved. *prathi-ṣṭha*	‘(s)he spread out’	<<	*ˣpr̥thi-ṣṭhá*
	b.	Ved. *vyathi-tá–*	‘wavering’	<<	*ˣvithi-tá–*
	c.	Ved. *śvas-ánt–*	‘snorting’	<<	*śuṣ-ánt–* (RV I.61.10)

- OUC aligns with diachronic developments observed elsewhere in IE.

Morphophonological change via paradigm uniformity

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- OUC aligns with diachronic developments observed elsewhere in IE.
- Well-known tendency for vowel deletion to underapply to **CReC* (“State II”) roots in zero-grade contexts.
  - Thus, e.g., in Vedic forms like (A18) (Jamison 1983:209 n. 9).

Morphophonological change via paradigm uniformity

(A18)

a.	Ved. *prathi-ṣṭha*	‘(s)he spread out’	<<	x*pṛthi-ṣṭhá*
b.	Ved. *vyathi-tá–*	‘wavering’	<<	x*vithi-tá–*
c.	Ved. *śvas-ánt–*	‘snorting’	<<	*śuṣ-ánt–* (RV I.61.10)

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- Non-alternations like (A18) could be attributed to dispreference for word-initial onset alternations vis-à-vis stressed contexts — i.e.:

$$*[\mathrm{CR\acute{e}C}] \sim *[\mathrm{C\underset{\vert}{R}C\acute{}}]$$

Morphophonological change via paradigm uniformity

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a.	Ved. *prathi-ṣṭha*	‘(s)he spread out’	<<	^{x}*pr̥thi-ṣṭhá*
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⇒ (Latent) dispreference for word-initial onset alternations in PIE, which often emerges in daughter languages.