Losing strength at each optimization: Stratal paradoxes in Kashaya

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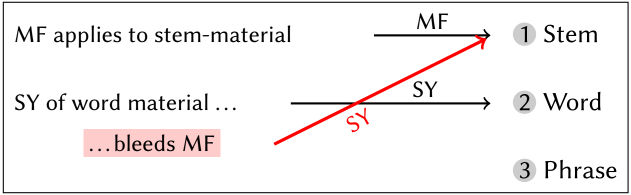
Main Claim

- the metrical system of **Kashaya** shows interstratal differences but remains a **challenge for classical stratal** systems
- the novel **Harmonic Layer Theory** predicts the Kashaya facts from assuming that processes are not restricted to certain strata but to **elements that underwent a certain number of cyclic optimizations**

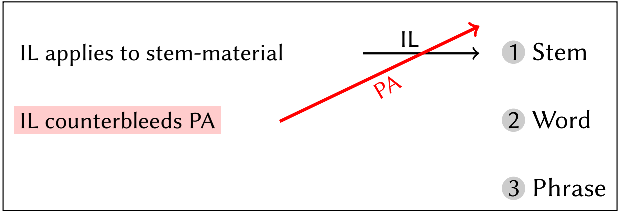
Kashaya: The stratal paradoxes in a nutshell

MF=Mora flip, S=Syllabification, IL=Iambic Lengthening, PA=pitch accent assignment

(1) MF is bled by a process that affects material outside of MF's domain



(2) IL counterbleeds PA but affects the smaller domain

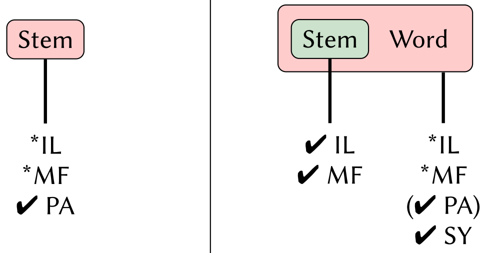


Kashaya: The HLT solution in a nutshell

- ✲ IL and MF only apply to material that was already optimized once
- ➙ predicted from **monotonic activity decay** within a cyclic optimization model

(3)

a. Optimization 1: No IL or MF	b. Optimization 2: IL and MF only for previously optimized structures



Metrical processes as a stratal paradox in Kashaya

Kashaya: Background

- Pomoan, California; ‘two or three dozen’ speakers (Buckley, 1994a)
- described extensively in, for example, Buckley (1994b), Buckley (1998), or Buckley (2017); based mainly on Oswalt (1961)
- only three metrical processes at the – mainly – non-phrasal level are discussed here

Metrical structure: Three relevant processes

Iambic lengthening (=IL)

(4) /CV CV CV CV CV/ → (CV.CVː)(CV.CVː)CV

The challenge: Not all CV-foot heads undergo IL...

Pitch accent (=PA): H-tone realized on the leftmost foot head

(5) /CV CV CV CV CV/ → (CV.CV́ː)(CV.CVː)CV

The challenge: Sometimes it's further to the right...

Mora Flip (=MF): Initial CVː gives its mora to a following CV syllable

(6) /CVː CV CV/ → (CV.CV́ː)CV *(CVː)(CV.CV)

The challenge: Not always...

Metrical structure in Kashaya: Background

- iterative iambic feet

(7) (CV.**CV**)(CV.**CV**)(CV.**CV**)

- nonfinal CVC and all CVː syllables are heavy; there are no* degenerate feet
  (*unless there will be an unfooted word)

(8) (CV.CV)(CVC)(CVː)CV

- initial syllable is extrametrical (9-a+b) unless the word starts with a monosyllabic root (9-c)

(9) a. <CV>(CV.CV)CV
b. <CV>(CV.CV)CV
c. (CVCV)(CV.CV)

- distinction into stem- and word-level affixes is crucial

(10) Verbs in Kashaya

Word			
Stem			
[[prefix-	root	-suffix]	-suffix]

Iambic lengthening

[[...] ...] – morphological stem/word
(...)(...) – my foot structures

(11) [[mo-mul-iʧ’-ed] -u]
(mo.múː)(li.ʧ’eː)du
[[run-around-REFL-DUR] -ABS]
‘run in circles’ (B17:114)

(12) [[kel-mul-ad-uʧed] -u]
(kél)(mu.laː)(du.ʧeː)de
[[peer-around-DUR-DUR] -ABS]
‘keep peering around’ (B17:115)

(13) [[ʧa-qʰam-ala-w-ibiʧ] -ʔ]
<ʧa>(qʰa.máː)(la.wiː)biʔ
[[by.knife-cut-down-MVMT-INCEP] -ABS]
‘start to cut downward’ (B17:115)

(14) [[qaʔʧ’aʈ-ad-uʧed] -u]
<qaʔ>(ʧa.ʈáː)(du.ʧeː)du
[[cry-DUR-DUR] -ABS]
‘used to cry and cry’ (B17:115)

Iambic lengthening: Only stems

- only stem vowels undergo IL; vowels of word-level suffixes never do

(15) [[mo-matʃ-ed] -ela]
(mo.máː)(tʃe.de)la
[[run-in-DUR] -PERF.IPFV]
'I keep running in there' (B17:120)

(16) [[s'i] -pʰila]
(s'i.pʰí)la
[[do] -DS.FUT]
'if it happens' (B17:120)

Pitch accent: Default

- H is usually realized on the leftmost foot-head (cf. above).

(17) [[mo-mul-iʧ'-ed] -u]
(mo.múː)(li.ʧ'eː)du
[[run-around-REFL-DUR] -ABS]
'run in circles' (B17:114)

(18) [[mo-maʧ-ed] -ela]
(mo.máː)(ʧe.de)la
[[run-in-DUR] -PERF.IPFV]
'I keep running in there' (B17:120)

(19) [[kel-mul-ad-uʧed] -u]
(kél)(mu.laː)(du.ʧeː)de
[[peer-around-DUR-DUR] -ABS]
'keep peering around' (B17:115)

- PA avoids is not realized on the initial foot-head if this head contains an underlying long V; it is realized one foot-head further right

(20) [[du-ʔyaːq-ad-qa] -ba]
<duʔ>(yaː)(qán')(qa.ba)
[[by.finger-think-DUR-CAUS] -SS.PST]
'after thinking about it' (B17:116)

(21) [[ʃulaːm] -iʔba]
<ʃu>(laː)(máʔ)ba
[[be.sick] -COND]
'would get sick' (B17:117)

(22) [[q'aː] -mela]
(q'aː)(me.lá)
[[leave.behind] -PERF.PFV]
'I left' (B17:121)

Pitch accent: Realized on derived long vowels

- recall that PA does surface on long V's that are the result of IL

(23) [[mo-mul-iʧ'-ed] -u]
(mo.múː)(li.ʧ'eː)du
[[run-around-REFL-DUR] -ABS]
'run in circles' (B17:114)

(24) [[mo-maʧ-ed] -ela]
(mo.máː)(ʧe.de)la
[[run-in-DUR] -PERF.IPFV]
'I keep running in there' (B17:120)

MF. Mora flip

- an initial (or post-extrametrical) long vowel flips its μ to a following short vowel if this vowel is in an open syllable
- PA is not on the resulting long V

(25) [[t'eːt-ibitʃ] -ba]
(te.tiː)(bítʃ')ba
[[stand-up] -SS.PST]
'having stood up' (B17:117)

(26) [[loq'oːtʃ-ad-uwad] -u]
<lo>(q'o.tʃaː)(du.wáː)du
[[move.noisily-along-DUR] -ABS]
'make noise by moving around' (B17:118)

MF only within stems

- MF only applies if both vowels belong to the stem

(27) [[<u>q'aː</u>] -mela]
(q'aː)(me.lá) *(q'a.meː)lá
[[leave.behind] -PERF.PFV
'I left (it) behind' (B17:121)

(28) [[<u>simaːq</u>] -eti]
<si>(maː)(qa.tí) *<si>(ma.qaː)tí
[[sleep] -CONC
'although he's asleep' (B17:121)

But word-level syllabification feeds/bleeds MF!

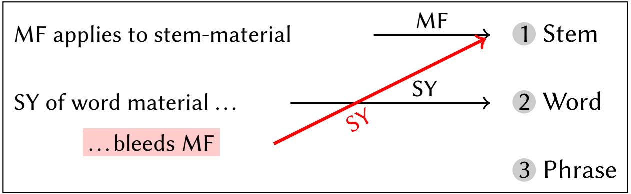
- syllabification of word-level suffixes determines whether the context for MF is given

(29) [[q'aː-ʧid] -u]
(q'a.ʧiː)dú
[[leave.behind-DUR] -ABS]
'keep leaving' (B17:121)

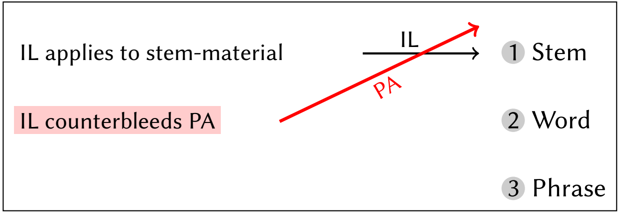
(30) [[q'aː-ʧid] -ba]
(q'aː)(ʧín')ba *(q'a.ʧiːn')bá/*(q'a.ʧin')bá
[[leave.behind-DUR] -SS.PST]
'after leaving' (B17:122)

Stratal paradoxes in Kashaya: Summary

(31) MF is bled by a process that affects material outside of MF's domain



(32) IL counterbleeds PA but affects the smaller domain



A Harmonic Layer Theory Account

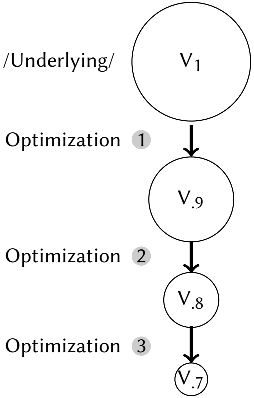
(Trommer, 2019; Zimmermann and Trommer, 2022; Tebay et al., 2025; Zimmermann, 2025b)

1. A **single grammar** optimizes cyclically
2. Gradient activity in phonological representations

   (Smolensky and Goldrick, 2016; Zimmermann, 2018a,b, 2019, 2025a; Rosen, 2019; Walker, 2020)

   ➙ Activity of elements can **cyclically decay**

(33) Tone decay across layers:



(34) Example: Hiatus-contexts across layers

$\mathcal{W}$ =	MaxV 100	$\|$*Hiatus$\|$ 99	$\mathcal{H}$
1 Stem, IP: $/V_1V_1/$			
☞ a. $V_{.8}V_{.8}$		-1	-99
b. $V_{.8}$	-1		-100
2 Word, IP: $/V_{.8}V_{.8}/$			
a. $V_{.6}V_{.6}$		-1	-99
☞ b. $V_{.6}$	-0.8		-90

➙ Different activities=**different behaviour**

HLT: Activity differences are a result of gradient markedness violations

(35) Activity loss for vowels

V_1 $V_{0.8}$	IDA≥.2 11	MAX-V 11	‖MAX-V‖ 11	*V 10	IDA 1	$\mathcal{H}$
a. $V_{1.0}$ $V_{0.8}$				-1.8		-18.0
b. $V_{0.1}$ $H_{0.1}$	-1.6			-0.2	-1.6	-21.2
☞ c. $H_{0.8}$ $H_{0.6}$				-1.4	-0.4	-14.4
d. $H_{0.6}$		-1	-1	-0.6	-0.2	-28.2
e. $V_{0.8}$		-1	-0.8	-0.8	-0.2	-28.0

IL can only apply to **V's that were weakened** once and within feet that are not yet weakened twice: Stem-V's are still too strong at ① and the triggering feet will be too weak at ③

MF can only apply to **V's that were weakened** once but moras cannot dominate vowels which are stronger (=no MF between stem- and word-material)

PA avoids long vowels but will **stay where it is** if a vowel is lengthened later

(36)

a. Optimization 1: No IL or MF	b. Optimization 2: IL and MF only for previously optimized structures	
Stem	Stem	Word
*IL	✔ IL	*IL
*MF	✔ MF	*MF
✔ PA		(✔ PA)
		✔ SY

(37) Activity adjustments in Kashaya

	Optimization 1	Optimization 2	Optimization 3	…	
Vowels	V_1	$V_{0.8}$	$V_{0.6}$	…	-0.2 Decay
	➙ **(De)Association of μ's will get easier...**				
Moras	μ_1	$\mu_{0.8}$	$\mu_{0.8}$	…	-0.2 Decay
	➙ **early μ's can never associate to late vowels...**				
Feet	Ft_1	$Ft_{0.9}$	$Ft_{0.8}$	…	-0.1 Decay
	➙ **CV-foot-heads are easier to tolerate...**				
H-tone	H_1	$H_{0.8}$	$H_{0.6}$	…	-0.2 Decay
	➙ **H's outside of feet are easier to tolerate...**				

Avant: Where do all the numbers come from?...

- the account presented in the following relies on crucial **relative weighting differences** and on relative activity differences resulting in **relative gradient constraint violation differences**

➙ the concrete numbers are just concrete illustrations compatible with the relative weighting arguments

HLT account: IL

IL: A ‘late’ process affecting only stem-material

- IL can only apply to vowels that were already weakened once: St-V’s lengthen at ②.
- IL is only triggered by feet that are still strong enough: Wd-V’s don’t undergo IL at ③.

(38)

a. DepAL(V-μ)
Assign -x violations for every input V_x that is linked to a μ via an inserted association line.

b. *Hd/σ_μ
Assign -x violations for every Ft_x that has a monomoraic syllable in its head position.

IL: Stem-material lengthens only at ②

(39) [[**mo**-mul-itʃ'-ed] -u]

	DEPAL(V-μ) 70	*HD/σ_μ 69	$\mathcal{H}$
① No IL: Vowel 'too strong' – IP: $mo_1mu_1li_1tʃe_1d$			
☞ a. $(mo_{.8}.mu_{.8})_1$ $(li_{.8}.tʃe_{.8})_1$ <d>		-2	-138.0
b. $(mo_{.8}.mu\!\!:_{.8})_1$ $(li_{.8}.tʃe\!\!:_{.8})_1$ <d>	-2		-140.0
② IL: Vowel weak enough – IL: $(mo_{.8}.mu_{.8})_1$ $(li_{.8}.tʃe_{.8})_1$ <d> $-u_1$			
a. $(mo_{.6}.mu_{.6})_{.9}$ $(li_{.6}.tʃe_{.6})_{.9}$ $du_{.8}$		-1.8	-124.2
☞ b. $(mo_{.6}.mu\!\!:_{.6})_{.9}$ $(li_{.6}.tʃe\!\!:_{.6})_{.9}$ $du_{.8}$	-1.6		-112.0

(Non-final optimizations: PA is omitted for now)

IL: Word-level suffixes are not lengthened at ②

(40) [[**mo**-maʧ-ed] -ela]

	DepAL(V-μ) 70	*Hd/σ_μ 69	$\mathcal{H}$
① H-docking but no IL – IP: mo_1ma_1ʧe_1d			
☞ a. $(mo_{.8}.ma_{.8})_1$ ʧ$e_{.8}$<d>		-1	69.0
b. $(mo_{.8}.m$aː$_{.8})_1$ ʧ$e_{.8}$<d>	-1		-70.0
② IL for stem- but not word material – IP: $(mo_{.8}.ma_{.8})_1$ ʧ$e_{.8}$<d> $-e_1la_1$			
a. $(mo_{.6}.ma_{.6})_{.9}$ (ʧ$e_{.6}.de_{.8})_1$ $la_{.8}$		-1.9	-131.1
☞ b. $(mo_{.6}.m$aː$_{.6})_{.9}$ (ʧ$e_{.6}.de_{.8})_1$ $la_{.8}$	-0.8	-1	-125.0
c. $(mo_{.6}.m$aː$_{.6})_{.9}$ (ʧ$e_{.6}.d$eː$_{.8})_1$ $la_{.8}$	-1.8		-126.0

(Non-final optimizations: PA is omitted for now)

IL: Word-level suffixes are not lengthened at ③: Weak foot

(41) [[**s’i**] -p^hila]

		DepAL(V-μ) 70	*Hd/$σ_μ$ 69	$\mathcal{H}$
① No IL: V too strong – IP: $s’i_1$				
☞ a.	$(s’i_{.8})_1$		-1	-69.0
b.	$(s’iː_{.8})_1$	-1		-70.0
② No IL: V too strong – $(s’i_{.8})_1$ -$p^hi_1la_1$				
☞ a.	$(s’i_{.6}.p^hi_{.8})_{.9}$ $la_{.8}$		-0.9	-62.1
b.	$(s’i_{.6}.p^hiː_{.8})_{.9}$ $la_{.8}$	-1		-70.0
③ No IL: Ft too weak – IP: $(s’i_{.6}.p^hi_{.8})_{.9}$ $la_{.8}$				
☞ a.	$(s’i_{.4}.p^hi_{.6})_{.8}$ $la_{.6}$		-0.8	-55.2
b.	$(s’i_{.4}.p^hiː_{.6})_{.8}$ $la_{.6}$	-0.8		-56.0

(Non-final optimizations: PA is omitted for now)

PA: Counterbleeding

- H associate as early as possible but avoid long vowels
- but if it already is associated to a V, it will remain there if the V gets long later

(42)

a. ||*LongT||
Assign -x violations for every tone T_x that is associated to more than one TBU.

b. ||MaxAL(μ-T)||
Assign -x for every association of H_x to a TBU without an output correspondent.

c. ||Align(H;L)||
Assign -n violations for every σ that intervenes between a H-toned σ and the left edge of t

d. ||H>μ||
Assign -1 violation for every output form without a H-tone.

e. *NHd/H (W=∞)
Assign -x violations for every tone T_x that is realized in the non-head position of a foot.

PA: H avoids long vowels at ①

(43) [[du-ʔ**yaːq**-ad-qa] -ba]

	||MaxAL(μ-T)|| 50	||*LongT|| 6	||H>μ|| 5	||Align(H;L)|| 0.4	$\mathcal{H}$
① H docks further right to avoid Vː – du$_1$yaː$_1$qa$_1$dqa$_1$					
a. <du$_{.8}$>(yaː$_{.8}$)$_1$ (qa$_{.8}$d)$_1$ qa$_{.8}$ H$_1$			-1		-5.0
b. <du$_{.8}$>(yáː$_{.8}$)$_1$ (qa$_{.8}$d)$_1$ qa$_{.8}$		-1			-6.0
☞ c. <du$_{.8}$>(yaː$_{.8}$)$_1$ (qá$_{.8}$d)$_1$ qa$_{.8}$				-1	-0.4
② No reason for H to move – IP: <du$_{.8}$>(yaː$_{.8}$)$_1$ (qá$_{.8}$d)$_1$ qa$_{.8}$ -ba$_1$					
☞ a. <du$_{.6}$>(yaː$_{.6}$)$_{.9}$ (qá$_{.6}$d)$_{.9}$ (qa$_{.6}$.ba$_{.8}$)$_1$				-1	-0.4
b. <du$_{.6}$>(yáː$_{.6}$)$_{.9}$ (qa$_{.6}$d)$_{.9}$ (qa$_{.6}$.ba$_{.8}$)$_1$	-1	-1			-57.0

PA + IL: H remains on V’s that are lengthened at ②

(44) [[**mo**-mul-iʧ’-ed] -u]

	DepAL(V-μ) 70	*Hd/σμ 69	‖MaxAL(μ-T)‖ 50	‖*LongT‖ 6	‖H>μ‖ 5	‖Align(H;L)‖ 0.4	$\mathcal{H}$
① H-docking on the leftmost foot – IP: $\text{mo}_1\text{mu}_1\text{li}_1\text{ʧe}_1\text{d}$							
a. $(\text{mo}_{.8}.\text{mu}_{.8})_1\ (\text{li}_{.8}.\text{ʧe}_{.8})_1$ <d> H_1		-2			-1		-143.0
☞ b. $(\text{mo}_{.8}.\text{mú}_{.8})_1\ (\text{li}_{.8}.\text{ʧe}_{.8})_1$ <d>		-2				-1	-138.4
c. $(\text{mo}_{.8}.\text{mu}_{.8})_1\ (\text{li}_{.8}.\text{ʧé}_{.8})_1$ <d>		-2				-3	-139.2
② IL and H remains – IP: $(\text{mo}_{.8}.\text{mú}_{.8})_1\ (\text{li}_{.8}.\text{ʧe}_{.8})_1$ <d>							
a. $(\text{mo}_{.6}.\text{mú}_{.6})_{.9}\ (\text{li}_{.6}.\text{ʧe}_{.6})_{.9}\ \text{du}_{.8}$		-1.8				-1	-124.6
☞ b. $(\text{mo}_{.6}.\text{mú}_{.6\text{ː}})_{.9}\ (\text{li}_{.6}.\text{ʧe}_{.6\text{ː}})_{.9}\ \text{du}_{.8}$	-1.6			-1		-1	-117.6
c. $(\text{mo}_{.6}.\text{mú}_{.6})_{.9}\ (\text{li}_{.6}.\text{ʧe}_{.6\text{ː}})_{.9}\ \text{du}_{.8}$	-0.8	-0.9				-1	-118.5
d. $(\text{mo}_{.6}.\text{mu}_{.6\text{ː}})_{.9}\ (\text{li}_{.6}.\text{ʧe}_{.6\text{ː}})_{.9}\ \text{dú}_{.8}$	-1.6		-1			-4	-163.6

HLT account: MF

PA: A 'later' process bleeds an earlier one

- MF only applies to vowels that were optimized once: St-V's undergo it at 2
- μ's are weakened and can never dominate a stronger vowel: St-μ's don't flip to Wd-V's
- H can remain floating at 1 if no unmarked host is available

(45) a. ||*IniMonoσ||
Assign -1 violations for every leftmost foot Ft that is monosyllabic.

b. MaxAL(V-μ)
Assign -x violations for every input vowel V_x that is linked to a μ that has no output correspondent.

c. ||*WkD(μ-V)||
Assign -1 violation for every V_x dominated by μ_y and x¿y.

d. HInFt!
Assign -x violations for every H_x that is not dominated by a foot node.

(46) [[**qaːʧid**] -u]

	||*WkD(μ-V)||	MaxAL(V-μ)	||*IniMonoσ||	DepAL(V-μ)	*Hd/σμ	||*LongT||	||H>μ||	HInFt!	||Align(H;L)||	$\mathcal{H}$
	∞	1.000	960	70	69	6	5	5	0.4	
① No MF and no H assigned – IP: qa$_1$ːʧi$_1$d										
☞ a. (qa$_{.8}$ː)$_1$ ʧi$_{.8}$<d> H_1			-1				-1			-965.0
b. (qá$_{.8}$ː)$_1$ ʧi$_{.8}$<d>			-1			-1				-966.0
c. (qa$_{.8}$ː)$_1$ ʧí$_{.8}$<d>			-1					-1	-1	-965.4
d. (qa$_{.8}$.ʧí$_{.8}$ː)$_1$ <d>		-1		-1		-1			-1	-1076.4
e. (qa$_{.8}$.ʧi$_{.8}$ː)$_1$ <d> H_1		-1		-1			-1			-1075.0
② μ-Shift and H-association – IP: (qa$_{.8}$ː)$_1$ ʧi$_{.8}$<d> H_1 -u$_1$										
a. (qa$_{.6}$ː)$_{.9}$ (ʧi$_{.6}$.dú$_{.8}$)$_1$			-1		-1				-2	-1029.8
b. (qa$_{.6}$.ʧi$_{.6}$ː)$_{.9}$ du$_{.8}$ $H_{.8}$		-0.8		-0.8			-1			-861.0
☞ c. (qa$_{.6}$.ʧi$_{.6}$ː)$_{.9}$ dú$_{.8}$		-0.8		-0.8				-0.8	-2	-860.8
d. (qa$_{.6}$.ʧí$_{.6}$ː)$_{.9}$ du$_{.8}$		-0.8		-0.8		-1			-1	-862.4

MF: Wd-level syllabification bleeds MF

(47) [[**qaːʧid**] -ba]

	‖*WkD(μ-V)‖ ∞	MaxAL(V-μ) 1.000	‖*IniMonoσ‖ 960	DepAL(V-μ) 70	*Hd/σμ 69	‖*LongT‖ 6	‖H>μ‖ 5	HInFt! 5	‖Align(H;L)‖ 0.4	$\mathcal{H}$
① No MF and no H assigned – IP: qa$_1$ːʧi$_1$d										
☞ a. (qa$_{.8}$ː)$_1$ ʧi$_{.8}$<d> H$_1$			-1				-1			-965.0
b. (qá$_{.8}$ː)$_1$ ʧi$_{.8}$<d>			-1			-1				-966.0
c. (qa$_{.8}$ː)$_1$ ʧí$_{.8}$<d>			-1					-1	-1	-965.4
d. (qa$_{.8}$.ʧí$_{.8}$ː)$_1$ <d>		-1		-1		-1			-1	-1076.4
e. (qa$_{.8}$.ʧi$_{.8}$ː)$_1$ <d> H$_1$		-1		-1			-1			-1075.0
② H association but no MF – IP: (qa$_{.8}$ː)$_1$ ʧi$_{.8}$<d> H$_1$ -u$_1$										
a. (qa$_{.6}$ː)$_{.9}$ (ʧi$_{.6}$d)$_1$ ba$_{.8}$ H$_{.8}$			-1				-1			-965.0
b. (qá$_{.6}$ː)$_{.9}$ (ʧi$_{.6}$d)$_1$ ba$_{.8}$			-1			-1				-966.0
☞ c. (qa$_{.6}$ː)$_{.9}$ (ʧí$_{.6}$d)$_1$ ba$_{.8}$			-1						-1	-960.4
d. (qa$_{.6}$ː)$_{.9}$ (ʧi$_{.6}$d)$_1$ bá$_{.8}$			-1					-0.8	-2	-964.8

MF: Never affects Wd-level suffixes

(48) [[**q'aː**] -mela]

	∞ ||*WkD(μ-V)||	1.000 MaxAL(V-μ)	960 ||*IniMonoσ||	70 DepAL(V-μ)	69 *Hd/σ_μ	6 ||*LongT||	5 ||H>μ||	5 HInFt!	0.4 ||Align(H;L)||	$\mathcal{H}$
① No H assigned										
☞ a. (q'a$_{.8}$ː)$_1$ H$_1$			-1				-1			-965.0
b. (q'á$_{.8}$ː)$_1$			-1			-1				-966.0
② H assigned but μ-shift impossible										
a. (q'a$_{.6}$ː)$_{.9}$ (me$_{.8}$.la$_{.8}$)$_1$ H$_{.8}$			-1		-1		-1			-1034.0
b. (q'á$_{.6}$ː)$_{.9}$ (me$_{.8}$.la$_{.8}$)$_1$			-1		-1	-1				-1035.0
☞ c. (q'a$_{.6}$ː)$_{.9}$ (me$_{.8}$.lá$_{.8}$)$_1$			-1		-1				-2	-1029.8
d. (q'a$_{.6}$.me$_{.8}$ː)$_{.9}$ lá$_{.8}$	-1	-0.8		-1				-0.8	-1	-∞

Summary

HLT account: Summary

- IL and MF apply **only to stem-material at the second optimization**

(49)

a. Optimization 1: No IL or MF	b. Optimization 2: IL and MF only for previously optimized structures	
Stem	Stem	Word
*IL *MF ✔ PA	✔ IL ✔ MF	*IL *MF (✔ PA) ✔ SY

= Wd-syllabification can bleed MF

= IL counterbleeds PA that applied at 1

Contextualization and Conclusion

- a stratal account is not impossible
  - IL-PA counterbleeding vanishes if extrametricality of initial (CVː)-feet is assumed (Buckley, 1994a, 2017)
  - that MF is bled by a later process could follow if MF is a two-level process involving a marked intermediate structure (=hanging mora)

  …but not based on standard constraints like ‖*LongT‖

- reminiscent of a prosodic alternative but based on **general processes**/constraints
  (∼IL/Mf only apply within prosodic domain X…?)

- HLT has been argued to be **more restrictive** than stratal models in excluding *ABA patterns (Tebay et al., 2025) – this case study adds the argument that the predictions are **qualitatively different**: Processes can apply 'late' but only to 'early' material

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IL: Word-level suffixes are not lengthened at ③: Deforestation

(50) [[**mo**-matʃ-ed] -ela]

		DepAL(V-μ) 70	*Hd/σμ 69	$\mathcal{H}$
① H-docking but no IL				
☞ a.	(mo.8.ma.8)1 tʃe.8<d>		-1	69.0
b.	(mo.8.maː.8)1 tʃe.8<d>	-1		-70.0
② IL for stem- but not word material				
a.	(mo.6.ma.6).9 (tʃe.6.de.8)1 la.8		-1.9	-131.1
☞ b.	(mo.6.maː.6).9 (tʃe.6.de.8)1 la.8	-0.8	-1	-125.0
c.	(mo.6.maː.6).9 (tʃe.6.deː.8)1 la.8	-1.8		-126.0
③ No further IL: Deforestation				
☞ a.	(mo.4.maː.4).8tʃe.4.de.6.la.6			0.0
b.	(mo.4.maː.4).8tʃe.4.de.6ː.la.6	-0.8	-1	-70.0

(Non-final optimizations: PA is omitted for now)