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Right-Alignment as Avoidance of Stress Lapse and Stress Clash

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Directionality in OT: ALLFTL and ALLFTR generate symmetrical directionality

ALLFTL >> ALLFTR = L→R parsing

Left-aligning trochaic system	Left-aligning iambic system
(σ̀ σ) (σ̀ σ) σ	(σ σ̀) (σ σ̀) σ

ALLFTR >> ALLFTL = R → L parsing

Right-aligning trochaic system	*Right-aligning iambic system
σ (σ̀ σ) (σ̀ σ)	*σ(σ σ̀) (σ σ̀)

The problem: directionality is not symmetrical, right-aligning iambic systems are not attested.

Proposal: right-alignment is not driven by alignment, but by rhythmical constraints such as *LAPSE and *CLASH
(cf. Kager 2000/2001 for a similar proposal)

So far: directionality generated by	**My proposal:** directionality generated by
ALLFTL	ALLFTL
ALLFTR	*LAPSE
	*CLASH

1. Directionality in binary systems: the importance of *LAPSE

Problem: a typological gap: right-aligning iambs do not exist
(cf. Kager 1993, van de Vijver 1998 for analyses, cf. also Hayes 1995)

(1) a. Pintupi: trochaic, left-aligning (Hayes 1995)

yú ma ɻìŋ ka mà ra tʲù ɻa ka 'because of mother-in-law'
(σ́ σ) (σ̀ σ) (σ̀ σ) (σ̀ σ) σ

b. Warao: trochaic, right-aligning (Kager 1999)

e nà ho rò a hà ku tá i 'the one who caused him to eat'
σ (σ̀ σ) (σ̀ σ) (σ̀ σ) (σ́ σ)

c. St.Lawrence Island Yupik: iambic, left-aligning (Hayes 1995)

á:ŋ qaχ ɬáχ ɬaŋ yúx tuq 'he wants to make a big ball'
('H) (L 'L) (L 'L) L

d. unattested: iambic, right-aligning
σ (σ σ̀) (σ σ̀) (σ σ̀) (σ σ̀)

Accounting for the typolocical gap:

ALLFTL: feet are aligned as much as possible to the left edge of the prosodic word = Align (Ft, L, PrWd, L): ∀ foot ∃ prosodic word such that the left edge of the foot and the left edge of the prosodic word coincide. (McCarthy & Prince 1993)

***LAPSE**: rhythm is alternating: no two adjacent unstressed syllables (cf. among others Selkirk 1984, Nespor & Vogel 1989, Kager 1993, Green & Kenstowicz 1995, Kager 1994, Elenbaas & Kager 1999 for different, in general less strict, types of lapse-constraints)

Tableau 1: left-aligning trochees: ALLFTL triggers left-alignment

	ALLFTL	*LAPSE
☞ (a) (σ̀σ)(σ̀σ) σ	**	*!
(b) σ (σ̀σ)(σ̀σ)	* **!*	
(c) (σ̀σ) σ (σ̀σ)	***!	*

Tableau 2: right-aligning trochees: *LAPSE triggers right-alignment

	*LAPSE	ALLFTL
(a) (σ̀σ)(σ̀σ) σ	*!	**
☞ (b) σ (σ̀σ)(σ̀σ)		* ***
(c) (σ̀σ) σ (σ̀σ)	*!	***

Tableau 3: left-aligning iambs: best both for *LAPSE and ALLFTL

	*LAPSE	ALLFTL
☞ (a) (σσ̀)(σσ̀) σ		**
(b) σ (σσ̀)(σσ̀)	*!	* **!*
(c) (σσ̀) σ (σσ̀)	*!	***!

Summary:
- left-alignment triggered by ALLFTL; hence the existence of left-aligning trochaic and iambic systems
- right-alignment triggered by *LAPSE; hence the existence of right-aligning trochaic systems
- iambic systems don't need right-alignment to avoid a lapse; hence right-aligning iambic systems do not exist

The perfectly rhythmical systems: right-aligning trochees and left-aligning iambs:

right-aligning trochees
σ (σ̀ σ) (σ̀ σ) = σ σ̀ σ σ̀ σ

left-aligning iambs
(σ σ̀) (σ σ̀) σ = σ σ̀ σ σ̀ σ

2. Directionality in systems with degenerate feet: the importance of *CLASH

Languages with degenerate feet: PARSE σ >> FT-BIN

(2)	a.	Maithili pámʰə (σ́σ) kìsá:nə (σ̀)(σ́σ)	trochaic, left-aligning	(Hayes 1995) 'little whiskers 'a cultivator'
	b.	Ono: déne (σ́σ) árilè (σ́σ)(σ̀)	trochaic, right-aligning	(Crowhurst & Hewitt) 'my eye' 'I went'
	c.	Weri ŋɪntíp (σσ́) kʊ̀lipʊ́ (σ̀)(σσ́)	iambic, left-aligning	(Hayes 1981, Crowhurst & Hewitt) 'bee' 'hair of arm'
	d.	unattested?? (σσ́) (σσ́)(σ́)	iambic, right-aligning	

(3) ***CLASH**: rhythm is alternating: no two adjacent stressed syllables (Kager 1994; Pater 1995, among others)

Tableau 4: Left-aligning trochaic systems: ALLFTL triggers left-alignment

	ALLFTL	*CLASH
☞ (a) (σ̀)(σ̀σ)	*	*
(b) (σ̀σ)(σ̀)	**!	

Tableau 5: right-aligning trochaic systems: *CLASH triggers right-alignment

	*CLASH	ALLFTL
(a) (σ̀)(σ̀σ)	*!	*
☞ (b) (σ̀σ)(σ̀)		**

Tableau 6: left-aligning iambic systems: best for both ALLFTL and *CLASH

	ALLFTL	*CLASH
☞ (a) (σ̀)(σσ̀)	*	
(b) (σσ̀)(σ̀)	**!	*

The perfectly rhythmical systems: right-aligning trochees and left-aligning iambs:

right-aligning trochees:
(σ́ σ) (σ́ σ)(σ́) = σ́ σ σ́ σ σ́

left-aligning iambs:
(σ́)(σ σ́) (σ σ́) = σ́ σ σ́ σ σ́

Caveats:
- there are few systems allowing for degenerate feet to begin with - typological generalizations may be accidental gaps
- iambic systems like Weri are easily reanalyzed as trochaic and vice versa:

(4)	Weri	trochaic, rightmost main stress	(Hayes 1995)
	ŋɪntíp	RIGHTMOST, TROCH >> FT-BIN, PARSEσ	'bee'
	σ(σ́)		
	kÙlipÚ		'hair of arm'
	(σ̀σ)(σ́)		
	ʊlʊ̀amít		'mist'
	σ(σ̀σ)(σ́)		

Thus, the generalization could be: there are no iambic systems with degenerate feet

3. Unification of *LAPSE and *CLASH?

(5)
***LAPSE**: rhythm is alternating: no two adjacent unstressed syllables
***CLASH**: rhythm is alternating: no two adjacent stressed syllables
***EQUAL PROMINENCE**: ryhthm is alternating: no two adjacent syllables of equal prominence

Prediction:

If a language allows for lapses, but not for clashes (or vice versa), the reason for this cannot be that *CLASH >> *LAPSE (or vice versa), but must stay in some third constraint.

(6) Languages with clashes, but without lapses:
right-aligning quantity-sensitive (hence clashing) systems:

(7) Fijian (Hayes 1995):
pe. rè. si. té. ndi 'president
L ('L L)('L L)

right-aligning trochees → *EP >> ALLFTL (avoidance of lapses)

(8) mbè. le. mbò:. tó. mu 'bellbottoms'
('L L) ('H) ('L L)

clash between H and L → low ranking of *EP ?? (presence of clashes)

(9) **WSP**: heavy syllables are prominent
(Prince & Smolensky 1993)

(10) **PARSEσ**: syllables must be parsed into feet
(Prince & Smolensky 1993)

Tableau 7: Fijian: clashes, but no lapses

	WSP	*EP	PARSEσ	ALLFTL
☞ (a) L('LL)('LL)			*	* ***
(b) ('LL)('LL)L		*!	*	**
(a) ('LL)('H)('LL)		*		** ***
(b) L('LH)('LL)	*!		*	* ***
(c) (LL)(HL)L		*	*!	**

(11) Languages with lapses but without clashes:
left-aligning clash-avoiding quantity-sensitive languages

Estonian:

(12) ´γp pet tà yat tèk<s> (Hint 1973, reported in Hayes 1995)
(´H H) (`L H) (`H)

quantity-sensitive clash-avoiding parse → *EP >> ALLFTL

(13) pí mes tà va le 'blinding, ill. sg.'
(´L H) (`L L) L (Hint 1973, reported in Prince 1980)

left-aligning trochees → ALLFTL >> *EP ?? (lapse is tolerated)

(14) **LEFTMOST**: main stress is leftmost

Tableau 8: Estonian: lapses, but no clashes

	LEFTMOST	*EP	ALLFTL
☞ (a) (´HH)('LH)('H)			** ****
(b) (´H)(`HL)(`HL)		*!	* ***
☞ (a) (´LL)(`LL)L		*	**
(b) L (´LL)(`LL)	*!		***
(c) (´LL)L(`LL)		*	***!

4. More typological predictions: the non-existence of initial dactyls

Predicted not to exist: right-alignment without the possibility to avoid a lapse

(15) (σ̀σ) σ (σ̀σ) (σ́σ)

- could be generated so far by ALIGN (PRWD, FT, L) plus ALLFTR
- under the present proposal: why right-align? Lapse cannot be avoided anyway

Tableau 9:

	ALIGN (PRWD, FT, L)	*LAPSE	ALLFTL
(a) (σ̀σ) σ (σ̀σ)(σ́σ)		*	*** ****!*
(b) σ (σ̀σ)(σ̀σ)(σ́σ)	*!		* *** *****
☞ (c) (σ̀σ)(σ̀σ)(σ́σ) σ		*	** ****

cf. Kager (1991) for the observation that these systems don't exist and Kager (2000/2001) for an explanation of the typological gap in terms of positional licensing of lapses.

Kager (1991): Systems for which initial dactyls have been reported (Indonesian, Hawaiian, Modern Greek) can be reanalyzed.

Indonesian: (Cohn 1989)

(16) dè mi li tè ri sá si 'demilitarization'
(σ̀ σ) σ (σ̀ σ) (σ́ σ)

à me ri kà ni sá si 'Americanization'
(σ̀ σ) σ (σ̀ σ) (σ́ σ)

Kager (1991): Dutch secondary stress has been preserved in Indonesian loanwords. In Dutch initial dactyls are the result of cyclic stress preservation.

(17) militáir → dèmilitàrisátie 'demilitarization'

Amerikáan → àmerikànisátie 'Americanization'

Initial dactyls with leftmost main stress:

Garrwa: (Furby 1974, McCarthy & Prince 1993):

(18) ŋán ki ɽi kì rim pà yi 'fought with boomerangs'
(σ́ σ) σ (σ̀ σ) (σ̀ σ)

Why not:

(19) (σ́ σ) (σ̀ σ) (σ̀ σ) σ

Proposal: a lapse close to a main stress is better than a final lapse:

(20) ***LAPSE**: no two adjacent unstressed syllables
***LAPSE $_{WEAK}$**: no two adjacent *weak* unstressed syllables
(weak = not belonging to a main stress foot)

Garrwa: *LAPSE $_{WEAK}$ >> ALLFTL

cf. Kager 2000/2001 for the same proposal
cf. Pater 1995, Plag 1999 for proposing the same for *CLASH: a clash involving main stress is worse than a clash between secondarily stressed syllables.

3. Directionality in quantity sensitive systems:

Directionality visible in sequences of light syllables:

Trochees: typical right-aligning quantity-sensitive parsing:

(21) ('H)L('LL)('H) → again a case of lapse avoidance
→ or a case of clash avoidance

Trochees: typical left-aligning quantity-sensitive parsing:

(22) ('H)('L L) L ('H) → lapse and clash are tolerated to satisfy left-alignment

The same reasoning as before works for iambic systems:

(23) *('H)L(L'L)('H) → right-aligning quantity-sensitive iamb (not attested):
ALLFTL, *LAPSE and *CLASH are violated

('H)(L'L)L('H) → left-aligning quantity-sensitive iamb (the only possible one):
neither ALLFTL nor *LAPSE or CLASH are violated

4. Summary

- the non-existence of right-aligning iambic systems can be explained through a re-interpretation of right-alignment: right-alignment is not a primitive, but a means to avoid stress lapse (in systems with binary feet) or stress clash (in systems with degenerate feet)

- constraints against lapse and clash thus can influence directionality. *LAPSE and *CLASH are constraints on rhythm, favoring prominence alternation. Maybe they are actually the two aspects of a single rhythmic constraint *EQUAL PROMINENCE

- predictions: the proposed analysis accounts for the non-existence of initial dactyls

- why is there ALLFTL but no ALLFTR?

Hayes (1995): L→ R systems are more wide-spread because they "require less phonological pre-planning in speaking".

Positional faithfulness (Beckman 1998):
positional faithfulness constraints refer to the first syllable in a word, never to the last
e.g.: Shona: the vowel inventory in the first syllable is larger than in non-initial syllables

Biased anchoring (Nelson 1998)
There is ANCHOR-L but there is no ANCHOR-R
e.g. reduplication may start copying from the left edge of a base, from the beginning of a stressed syllable, from both edges of the base, but not from the right edge

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