Clashes and Lapses: Responses to Edge Prominence

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1 Introduction

1.1 Standard Metrical Theory (Liberman & Prince 1977)

Standard Metrical Theory is a *bottom-up* model of stress assignment, which initially formalises the rhythmic structure by grouping two syllables together into a weak-strong pattern (foot formation), and then promotes one such foot to accentual prominence.

(1) *Foot formation*

F	F
/\	/\
s w	w s
σ σ	σ σ
(x ·)	(· x)
trochee	iamb

1.2 Clash systems

Although the stress pattern of languages usually involves an alternating pattern, there are a few languages that systematically display *clashes*, that is, two successive strong beats (to be revised).

Clash systems that display a clash in words with an *odd* number of syllables:

(2a) *Biangai* (Clash at left edge; accent at right edge) (Dubert & Dubert 1973)

Even number of syllables: σσσσσσ e.g. *làwék*, *pànú*, *ngèrági*
Odd number of syllables (clash): σσσσσσσ (no glosses)

(2b) *Central Alaskan Yupik* (Clash at right edge; accent at left edge) (Miyaoka 1985; cited in Kager 2001)

Even number of syllables: σσσσσσ
Odd number of syllables (clash): σσσσσσσ

Clash systems that display a clash in words with an *even* number of syllables:

(3a) *Tauya* (Clash at left edge; accent at right edge) (MacDonald 1990)

Even number of syllables (clash): σσσσσσ
Odd number of syllables: σσσσσσσ

(3b) *Gosiute Shoshone* (Clash at left edge; accent at right edge) (Miller 1996)

Even number of syllables (clash): σσσσσσ e.g. *nímmimàntìn* 'one of us'; *kínká* 'onion'; *tikkáhk^{w}à* 'ate'
Odd number of syllables: σσσσσσσ

1.3 Metrical Theory Analysis

Metrical Theory can account for the data in (2) by including the notion of a degenerate foot:

(4) *Biangai*

```
                  x
(x)  (x·)  (x·)  (x·)
 ὸ    ὸ σ   ὸ σ   ό σ
```

However, it cannot account for the data in (3), since any two syllables would be grouped together to form a foot, which cannot have two heads:

(5) *Tauya*

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x  x (· x) (· x)
ὸ ὸ σ ὸ σ ό
```

→ Aim of the talk: To provide a unified account for the data in both (2) and (3).

2 Proposal

The proposal will consist of two aspects: an alternative model of stress assignment (PAF); and an additional feature (EP).

2.1 Primary Accent First (Van der Hulst 1996)

I will assume a *top-down* model of stress assignment. In the first step, an accentual algorithm identifies a syllable, which is marked for Accent. At a lower level, rhythm docks onto the accented syllable and unfolds itself like a carpet from that syllable onwards.

(6) *Primary Accent First*

```
A(ccent)              grammatical level
|
ό σ ὸ σ ὸ σ
|
x→· x · x ·           utterance level
```

Crucially, rhythm is considered to be a fully automated process that never deviates from its alternating pattern of strong-weak beat assignment.

2.2 Edge Prominence

In order to explain the data in (2-3), I propose an additional feature: syllables can be marked for EP.

(7) *Edge Prominence* (EP): An edge syllable (left or right) is designated as 'unignorable' for the purpose of beat assignment.

I assume EP to be the grammaticalisation of phonetic reinforcement. Hayes (1995: 100) has proposed analyses involving phonetic final lengthening for e.g. Icelandic, Cahuilla and Chickasaw: "It is significant that final position is the characteristic environment of word- and phrase-final phonetic lengthening (cf. Klatt 1975; Wightman et al. 1992), which can also make a syllable perceptually prominent." I claim that such phonetic edge properties can permeate the grammar and become a more abstract marking, which is formally represented as a feature EP.

2.3 Clash (revised version)

Incorporating EP gives us three components that are involved in stress determination: (i) accent, (ii) EP, and (iii) rhythm. This gives rise to three possible clash configurations; however, only clashes between rhythm and EP are attested, while clashes involving the primary accent are unattested. As such, I propose a redefinition of clashes, which are universally banned.

(8) *Clash* (revised version): "a configuration in which a beat is immediately adjacent to a primary accent" (universally banned)

3 Discussion

3.1 Clash systems

Including EP as a mechanism provides an analysis of the problematic data in (3). Both primary accent and EP are determined at the grammatical level, while at the utterance level rhythm attaches to the accented syllable. The rhythmic carpet unfolds from the accented syllable towards the EP syllable, which results in a clash between the EP marked syllable and the rhythmic wave.

(9) *Tauya*

(a) even-numbered

EP		A
|		|
ὸ ὸ	σ ὸ σ	́σ
|		|
x x ·	x ·	←x

grammatical

utterance

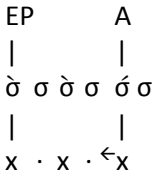
(b) odd-numbered

EP		A
|		|
ὸ σ ὸ	σ ὸ σ	́σ
|		|
x · x ·	x ·	←x

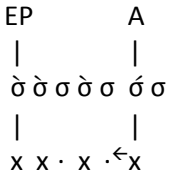
Note that the data in (2) can also be accounted for:

(10) *Biangai*

(a) even-numbered



(b) odd-numbered



3.2 Extension to languages displaying lapses

EP also offers a natural niche for what have traditionally been called "dual systems" (e.g. Kager 2005), which are characterised by a lapse next to the primary accent:

(11a) *Garawa* (accent: left; EP: right) (Van der Hulst 2010)

Even number of syllables (lapse): σ́σσὸσὸ
Odd number of syllables: σ́σὸσὸσὸ

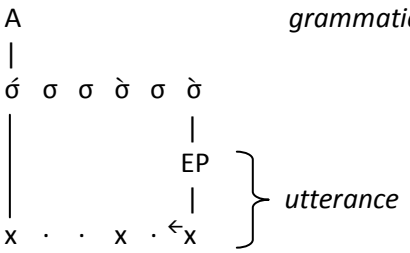
(11b) *Piro* (accent: right; EP: left) (Van der Hulst 2010)

Even number of syllables: ὸσὸσσ́σ
Odd number of syllables (lapse): ὸσὸσσσ́σ

The crucial difference with the clash systems discussed above is that in (11) the rhythmic component latches onto the EP syllable rather than the accented syllable. As such, the universal ban on clashes (8) is obeyed and rhythm avoids a clash with the primary accent at the expense of a lapse.

I claim that in languages displaying lapses EP is not assigned at the lexical level, but is assigned at the utterance level, that is, at the same level of representation that the rhythmic carpet is laid out. As such, this not only ensures the visibility of the EP marked syllable, but rhythm docks onto the first prominence-labelled syllable available: the one marked EP.

(12) *Garawa*



3.3 Dual systems

I propose to include the clash languages discussed above (2-3) into the group of dual systems, which are then characterised by the presence of a primary accent and EP marking. See (13) for the four types of dual systems:

(13)

	EP(left)	EP(right)
EP(grammatical)	EP A ὸ ὸ σ ὸ σ σ́ σ x x · x ·←x (e.g. Biangai)	A EP σ́ σ ὸ σ ὸ ὸ x→· x · x x (e.g. Central Alaskan Yupik)
EP(utterance)	A ὸ σ ὸ σ σ σ́ σ EP x→· x · · x (e.g. Piro)	A σ́ σ σ ὸ σ ὸ EP x · · x ·←x (e.g. Garawa)

3.4 Stress shifts

In English and Dutch, primary accent is computed at the right edge, while the initial syllable is strengthened by virtue of EP:

(14)

English	*Dutch*	(Kager 1989)
pàraphernália	lòkomotíef	
dàmariscótta	ìnfinitíef	
àbracadábra	àbracadábra	

In case compounding results in a clash, stress is retracted to a preceding syllable:

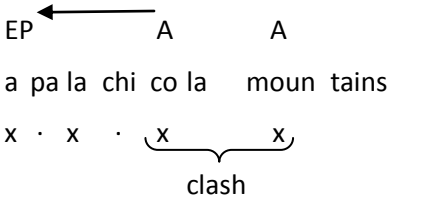
(15)

		isolation	*compound*	(Gussenhoven 2004)
(a)	*English*	ponTOON	PONtoon BRIDGE	
(b)	*Dutch*	bijGAAND	BIJgaand BRIEFje	'accompanying letter'

Crucially, (16) shows that it is not simply the previous syllable but the syllable marked for EP that stress is shifted to, as represented in (17).

(16) Àpalàchicóla Ápalàchicòla móuntains (Hayes 1984)

(17) *Clash at phrasal level: stress shifts to EP syllable*



4 Conclusion

→ The theory outlined here can account for canonical stress systems, as well as the problematic data in (2-3). It offers a unified account of dual systems, which are characterised by the presence of both a primary accent algorithm as well as an EP strengthened syllable. However, the degree of grammaticalisation of phonetic edge effects causes fundamentally different patterns:

- In case EP is assigned at the grammatical level, the EP marked syllable becomes invisible to the rhythmic component, and as such clashes are observed;
- In case EP is assigned at the utterance level, the EP marked syllable absorbs rhythm and according to a universal ban on clashes involving the primary accent, a lapse is observed.

→ The proposal developed here retains the insight that rhythm is a fully automated process of alternating beat assignment. 'Non-rhythmic' behaviour (i.e. clashes and lapses) results from the interaction with EP-marked syllables.

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