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Weight scales in the Extended PAF Theory

1. Introduction

2. The PAF theory

The main parameters of the PAF theory (Hulst 1996, 2010, 2012) are:

(1) *The parameters of the PAF theory*

a. Domain Type (Bounded/Unbounded)
b. Domain Edge (L/R) if Domain Type (Bounded)
c. Extrametricality (L/R)
d. Project weight (Y/N)
e. Select (L/R)
f. Default (L/R)

PAF correctly accounts for accent location in a large variety of languages, but encounters difficulties with lexical accent systems and with systems that combine phonological weight and lexical accent ("hybrid" systems).

Today's talk:

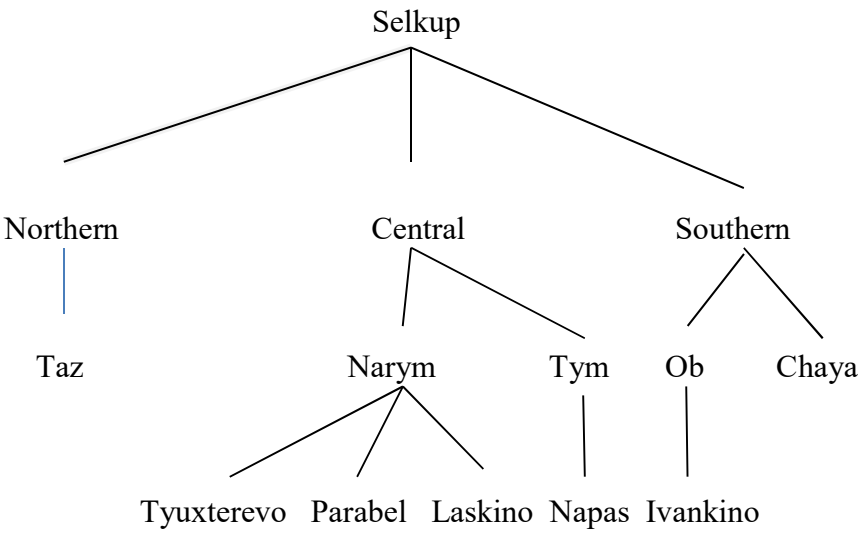
Today, I will present an extension of the PAF theory, with the example of two Uralic languages: Selkup and Eastern Literary Mari. The languages are typologically different: the former is a lexical accent system, while the latter is a hybrid system.

In this talk, I seek how to account for the accentual generalizations and systematic exceptions in terms of a single theory to accent assignment. Importantly, the approach should be general and not *ad-hoc*.

3. Accent in Selkup

Selkup (Samoyedic, Uralic)

(2) *The dialects of Selkup*



My account of Selkup accent is based on descriptions and data by Normanskaya (2011, 2012) and Normanskaya et al. (2011).

3.1. Accent is contrastive

Accent in Central and Southern Selkup is contrastive: one easily finds tens of minimal stress pairs in C. and in S. Selkup, as in (3).

(3) *A minimal stress pair (Parabel Selkup)*

a. ˈydəʃpa fall-PRES-3Sg (about a night)

b. yˈdəʃpa get drunk-PAST-3Sg

3.2. Lexical accent

Since accent in Central and Southern Selkup dialects is contrastive, it is then not phonologically predictable. Therefore, Selkup is a lexical accent system (cf. Normanskaya et al. 2011, Normanskaya 2011, 2012).

4. The description

4.1. The accent patterns

The Napas dialect

(4) *unaccented root-accented suffix*

kapˈt-e	current (berry)
kɨˈgʲ-e	river

(5) *accented root-accented suffix*

ˈʔapt-e	smell
ˈa:d-e	deer
ˈky:ʒ-e	urine

With multiple suffixes:

(6) *unaccented root*, /-eʃ/ and /-gu/ *accented*, /-pu/ and /-ɨ/ *unaccented*

iˈl-eʃ-pu-gu	weigh.off-INF
tʲʃʲonˈdʲ-eʃ-pu-gu	girdle-INF
næd-ɨ-ˈgu	marry-INF

(7) *an accented root*

ˈigʲ-eʃ-pu-gu	detach-INF
ˈkɨl-eʃ-pu-gu	cast.aside-INF
ˈʃerʲ-eʃ-pu-gu	break.in-INF

Words consisting of unaccented morphemes alone have default initial accent.

(8) *unaccented root-unaccented suffix*

ˈloɣ-a	fox
ˈlak-a	thing
ˈmak-a	stick
ˈmɨk-a	needle
ˈmotʲʃʲ-a	heel

4.2. The accent rule (Napas variety of Tym Selkup)

(9) *Accent falls on the leftmost accented morpheme of the word, otherwise on the initial syllable.*

4.3. The "accent-categorizing" suffixes

The "accent-categorizing" suffixes: suffixes that always receive word accent, regardless of the lexical (un)accentedness of other morphemes in the word.

e.g., the semelfactive suffix *–ol/-al* is always stressed (10) (in the Parabel variety).

(10) *The Parabel variety*

a. *unaccented root – categorizing suff – unaccented suff – accented suffix /-gu/*

kad-ˈol-bɨ-gu	scratch
yt-ˈal-ʒu-gu	make drunk

b. *accented root – categorizing suff – accented suffix /-gu/*

taˈp-ol-gu	kick (*of an animal*)-SEMEL-INF
koˈb-al-gu	scour-SEMEL-INF

Accentedness of certain morphemes varies with the variety of Selkup, as in Figure 1:

FIGURE 1. *Accentedness varies across Selkup dialects.*

	-a	-ol/-al
Napas	unaccented	Accented
Parabel	accented	"accent-categorizing"

Although lexical accentedness of individual suffixes varies across dialects of Central and Southern Selkup, the accent rule holds for all dialects (Normanskaya 2012).

5. The Problem

- ✓ (10) reveals that, in certain cases, accent does <u>not</u> fall on the leftmost heavy morpheme, thus violating the accent rule (9).
- ✓ The PAF theory, by itself, fails to capture the accent pattern in (10).

I solve this problem by introducing the *diacritic weight scale* into the PAF theory.

6. Diacritic weight and the weight scales

6.1. Weight

Morphemes, like syllables, are able to attract or repel stress. Hulst (1999:19) identifies this ability as "diacritic weight".

6.2. Diacritic weight and lexical accent

A *diacritic weight scale* is an ordering of morphemes according to their relative diacritic weight.

The data in (10) with the accent-categorizing suffix can be accounted for by using the diacritic weight scale.

Recall the phonological weight scales in WS languages:

FIGURE 2. *Examples of phonological weight scales (from Gordon 2006: 27-28).*

Klamath (isolate; Oregon, USA)	CVV(C) > CVC > CV
Moro (Niger-Kongo; Sudan)	CVC > full V > reduced V
Kobon (Trans-New Guinea; PNG)	low V > mid V > high V > reduced V
Asheninca (Maipurean; Peru)	CVV > Ca(C),Ce(C),Co(C), CiC > Ci > Cɨ

By analogy with *phonological* weight scales, I propose that, in Central and Southern dialects of Selkup, accent is assigned with reference to the *diacritic* weight scale in (12):

(12) superheavy > heavy > light

Comparing diacritic weight to lexical accent:

Diacritic weight is to be preferred over lexical accent because accent is categorical, while weight is ordinal. Ordinality of weight allows morphemes to be ordered in a *diacritic weight scale*.

7. The weight grid

The scale in (12) can be encoded phonologically as a *weight* grid in (13) (in the spirit of Prince 1983 and Hulst 1984:67-68 who suggest to grid weight and of Parker (1989:9-12) who grids

sonority - traditionally expressed as a scale). The height of the grid columns in (13) encodes relative degrees of weight.

(13) *The weight grid*

sup	h	l
*	*	*
*	*	
*		

8. The grammar of Selkup

8.1. The grammar

The grammar for Central and Southern Selkup consists of the weight grid in (13) and the set of PAF parameter settings in (14):

(14) Domain type: Unbounded
EM: No
Project weight: Yes
Select: Left
Default: Left

8.2. Sample derivations

(15) a.

*	Select (L)
*	Project Weight
tʃapt-e	
l h	
[tʃapˈte]	

b.

*	Select (Left)
*	Project weight
* *	Lexicon
tvele-gu	
h h	
[ˈtvelegu]	

c.

*	Select (L)
*	Project Weight
tap-ol-gu	
h sup h	
[taˈpolgu]	

d. *The default case*

*	Default
loɣ-a	
l l	
[ˈloɣa]	fox

9. Conclusion

I presented (for the first time in English) an accentual description of Central Selkup (9)-(10), drawing heavily on recent Russian-language descriptions (Normanskaya *et al.* 2011; Normanskaya 2011, 2012).

I proposed here to capture this formally in terms of a particular set of PAF parameter settings and a *diacritic weight scale* translated into a *weight grid* introduced here.

10. Accent in Eastern Literary Mari

Eastern Literary Mari (ELM), the standardized dialect based on Eastern Mari. This is a Finno-Permic Uralic language spoken in the Mari El Republic, by the Volga and Vyatka rivers, next to Tatarstan.

10.1. The data

In (16), underived nouns with all full vowels. In (17), all vowels are *either* full *or* /ə/.

(16)	a. olˈma	apple	(17)	a.ˈputʃəməʃ	porridge
	b. køgørˈtʃen	dove		b. ˈkalək	nation

In (18), all vowels are full except the final vowel, which is /e/, /o/, or /ø/.
In (19), nouns end in a mid vowel and also contain one or more /ə/.

(18)	a. kopˈʃange	beetle	(19)	a. ˈkoləzo	fisherman
	b. ˈjumo	God		b. ˈikʃəve	child
	c. ˈʃyrtø	thread			

The words in (20) contain a schwa in every syllable. In (21), /ə/ is in all syllables but the final one, which contains a mid vowel.

(20)	a. ˈʃəʒə	now	(21)	a. ˈərəʃe	stale		c. ˈʃəmle	seventy
	b. ˈtʃələm	pipe		b. ˈʃəmləʃe	researcher		d. ˈəlʲe	be-3Sg.PAST

The syllables with non-final mid vowels and those with other full vowels are **heavy**.
Open final syllables with mid vowels (18), (19), (21) and syllables with /ə/ are **light**.

10.2. The accent rule

Accent location in ELM is determined by the rule in (22):

(22) *Accent falls on the rightmost heavy syllable of the word; otherwise, accent is initial.*

ELM is an unbounded Last/First WS accent system.

The rule (22) applies to inflected nouns (23) in the same way as to underived nouns (16-19):

(23)	***NOM***	***GEN***	***INESSIVE***	***LATIVE***	***gloss***
	paˈʃa	paˈʃa-n	paˈʃa-ʃte	paˈʃ-aʃ	work
	uˈrem	uˈrem-ən	uˈrem-əʃto	ureˈm-eʃ	street
	ˈpələʃ	ˈpələʃ-ən	ˈpələʃ-əʃto	pələˈʃ-eʃ	ear

The same accent rule applies in derived words, regardless of the category of the stem:

(24)	a. **A → N:** ˈtaza	healthy	taˈza-lək	healthiness
	b. **V → N:** ˈvontʃ	cross	vonˈtʃ-ak	crossing
	c. **N → N:** məskaˈra	joke	məskaˈratʃe	joker
(25)	a. **N → A**: ˈvem	brain	ˈvem-dəme	brainless
	b. **A → A:** kaˈŋa	thin	kaŋa-ˈta	meager

Multiple layers of derivation do not affect accent assignment:

(26)	a. ˈvuj	head	b. ˈvuj-dəmo	reckless (*literally*, “headless”)
	c. ˈvuj-dəmə-lək	recklessness		

Accent assignment in ELM is not sensitive to morphological complexity and lexical categories. It does not make reference to morphological structure.

Lexically-conditioned exceptions

Certain suffixes (Comitative, Comparative, Imperative) behave exceptionally *wrt* (9). These are morphologically productive and, therefore, lead to systematic exceptionality.

- The Comitative case suffix /-ge/ is always stressed (cf. Riese 2012:97):

(27)	a. joˈtʃa	child	jotʃa-ˈge	child-COM
	b. jeʃ	family	jeʃ-na-ˈge	family-1Pl.Poss-COM

jeʃ-da-ˈge family-2Pl.Poss-COM

- The suffix /-de/ "NEG GERUND" is always stressed:

(28) tunem-aʃ study tunem-ˈde study-NEG.GERUND

- The Comparative /-la/ is never stressed (Riese 2012: 127):

(29) a. ˈkajək bird ˈkajək-la bird-COMPAR
tulˈʃol coal tulˈʃol-la coal-COMPAR
b. pørt-ˈem-la house-1Sg.POSS-COMPAR
pørt-ˈet-la house-2Sg.POSS-COMPAR
c. pørt-ˈna-la house-1Pl.POSS-COMPAR ~ pørt-la-ˈna house-COMPAR-1Pl.POSS

- In Imperatives, the final /-sa/ (2Pl.IMPER) is never stressed:

(30) koˈdaʃ stay-INF ˈkodsa stay-2PL.IMPER

Claim: The hybrid weight scale (31) is part of the grammar of ELM:

(31) $\mathbf{h_d \geq h_p > \{ l_p , l_d \}}$

Evidence for the scale in (31):

- $h_d \geq h_p$

(32) jeʃ family jeʃ-na-ˈge family-1Pl.Poss-COM *jeʃ-ˈna-ge
tuneˈm-aʃ study tunem-ˈde study-NEG.GERUND *tuˈnem-de

- $h_p > l_d$

(33) pørt-ˈna-la house-1Pl.POSS-COMPAR pørt-la-ˈna house-COMPAR-1Pl.POSS

- $h_d > l_d$

(34) a. ˈgø somebody-NOM b. niˈgø nobody-NOM * ˈnigø
ˈmo something-NOM niˈmo nothing-NOM *ˈnimo

Hence, the root (/gø-/, /mo-/) is diacritically heavy.

(35) niˈgøla nobody-COMPAR

niˈmola nothing-COMPAR

From the pairwise comparisons above ($h_d \geq h_p$, $h_p > l_d$, $h_d > l_d$), we conclude that $\mathbf{h_d \geq h_p > l_d}$.

- $h_d > l_p$

(36) ˈpələʃ ear-NOM pələʃ-ˈge ear-COMIT

From the pairwise comparisons ($h_d > l_p$, $h_p > l_p$, $h_d \geq h_p$), we conclude $\mathbf{h_d \geq h_p > l_p}$.

- Comparing l_d and l_p, we conclude that $\mathbf{\{l_d, l_p\}}$.

(37) a. ˈpələʃ ear-NOM ˈpələʃ-la ear-COMPAR

b. ˈjəŋgərt-əza call-2PL.IMPER

/-la/ and /-sa/ are diacritically light and syllables in the root are phonologically light. If the weight of /-la/ and /-sa/ were different from that of $\mathbf{l_p}$, accent would be elsewhere.

Based on the orderings $h_d \geq h_p > l_d$, $h_d \geq h_p > l_p$ and $\{l_d, l_p\}$, we establish $\mathbf{h_d \geq h_p > \{l_d, l_p\}}$.

10.3. The account of accent assignment

10.3.1. The grammar

The grammar which I propose is a set of the standard parameters of the Primary Accent First (PAF) theory (van der Hulst 1996, 2010, 2012) set as in (38b) plus the weight scale in (38a).

(38) a. The weight scale: $h_d \geq h_p > \{ l_d, l_p\}$

b. The parameter settings: Domain (Unbounded), Select (Right), Default (Left), EM (No)

10.3.2. Sample derivations

The weight of the phonologically/diacritically heaviest units (syllables, morphemes) in a word is projected, while the weight of the other units is not. If the word consists of light units only, nothing is projected.

(39) a. /pørt-em-ən/ house-1Sg.Poss-GEN

h_p h_p l_p

*

b. /pørt- la- na/ house-COMPAR-1Pl.Poss

h_p l_d h_p

*

Select (R)

[(* *)] [(* *)] Project Weight

[pørˈteməәn] [pørtlaˈna]

c. /pørt-em-ge/ house-1Sg.POSS-COMIT
h_p h_p h_d

Select (R) *
Project Weight [(*)]

[pørtemˈge]

d. /pələʃ-la/ ear-COMPAR
l_p l_p l_d
Default *
Project Weight [( )]

[ˈpələʃla]

11. The conclusion for Mari

Eastern Literary Mari displays systematic exceptions from the accent rule associated with a small set of individual lexical items that participate in productive morphological processes.

I have proposed a well-motivated approach which makes reference to weight, not to individual morphemes. The approach combines diacritic and phonological weight into a single weight scale which is part of the overall accentual grammar.

12. The general conclusion

a. Mari and Selkup exhibit accentual exceptions of different kinds.

In Selkup, which is a lexical accent system, some morphemes always attract accent regardless of the accentual properties of other morphemes in the word. In Mari, which is a WS system, certain morphemes are lexically accented and certain others unaccented.

b. *I proposed in this talk that accent assignment in these two different cases is done by the same kind of mechanism, which consists of a weight scale and a set of parameters of the PAF theory.*

c. The resulting Extended PAF theory thus provides a unified approach to accent assignment in certain other systems, *e.g.* Turkish, Uzbek.