Vowelless Moras and Varieties of a Language Game

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13th Conference on Typology and Grammar for Young Scholars
Institute for Linguistic Studies RAS
Saint Petersburg 24–26.11.2016

Claim: Combining the data from four language games based on syllable reversal, I show that their forms derived from monosyllabic bases are subject to epenthesis of a radically underspecified segment ((McCarthy, 1988), (Zimmermann, 2016)), which is later filled at the phonetic level due to conforming to the *Empty Category Principle* (Polgárdi, 1996). Furthermore, I show how Government Licensing combined with Optimality Theory can successfully derive language specific differences as well as dialectal differences within the same language. The vowel filling the empty mora is the language-specific default, such that it can always be stressed.

1 Overview

- I discuss the effects of CROSSANCHOR constraint (Ito, Mester & Kitagawa, 1995) on monosyllabic bases in **verlan** (French), **vesre** (Argentinian Spanish), **zuuja-go** (Japanese) and **šatrovački** (Serbo-Croatian)
- I argue that these bases are subject to mora[1] epenthesis due to a demand for FOOTBINARITY, necessary for stress assignment
- I address additional issues: mora filling, deletion (verlan) and lenghtening (zuuja-go)
- Turning to the varieties of šatrovački, I show that the mora is not always epenthesized, but is always filled – the effects of *Empty Category Principle*

2 Briefly on Language Games

- *ludling* = Latin *ludus* + *linguae* (Laycock, 1972)
- Also: secret languages, backward languages, disguised languages, play-languages, argot
- use four main mechanisms which can be combined: insertion, rearrangement, substitution, deletion (Laycock, 1972)

[1] or a radically underspecified segment, containing only [-cons] feature.

- Bagemihl (1988, 1995) differentiates three modules template games, syllable reversal, infixation
- Language games are also used as an experimental method in phonology. For further information, see Zaleska & Newins (2015).

Why are they interesting?

- can reveal hidden properties of lexical items and rules not visible in native phonological systems → defaults
- provide evidence for the existence of units such as **mora**, **syllable**, **foot**, **prosodic word** etc.
- show that NOT ALL SPEAKERS OF ONE LANGUAGE HAVE SAME INTUITIONS ON SYLLABLE STRUCTURE → varieties
- refer to the identical lexicon as the natural language → but what do they actually refer to?

  – OO-Correspondence (Ito et al., 1995) – language game forms correspond to surface forms of natural language (reversal games)

  – Surface-to-Surface Correspondence (Frazier & Saba Kirchner, 2011) – language game forms can refer to both underlying representations and surface forms (infixation games)
- the grammars **may differ** (Frazier & Saba Kirchner, 2011)

I wish to claim:

Language games presented here use the same mechanisms and hierarchies as natural languages they originate from. No difference in grammar!

3 Reversal Language Games and CV(C) Bases

The Main Principle: Divide a word into two parts and reverse their order.

(1) Syllable reversal ludlings that I'm discussing:
  a. verlan (French): [bufõ] ↦ [fõbu]
  b. šatrovački (Serbo-Croatian): [bazdi] ↦ [zdiba]
  c. zuuja-go (Japanese): [sake] ↦ [kesa]
  d. vesre (Argentinian Spanish): [libro] ↦ [broli]

How do monosyllabic forms undergo this process if there are no syllables that can be reversed?
• not all monosyllabic forms in a single language system undergo the process of reversal.

The ludling has a **maximal word demand** – often the game doesn't cover words with more than four syllables (Ito et al., 1995) – and a **minimal word demand** – determines the minimal prosodic word (as CV, CV:, CVC(C) etc. However, regardless of their syllable structure, **function words do not enter the ludling** (2).

(2) Functional words do not undergo reversal
  a. 'quand' [kõ] ↦ *[õk] 'when' (French)
  b. 'kada' ['kada] ↦ *[daka] 'when' (Serbo-Croatian)
  c. 'nani' [na'ni] ↦ *[nina] 'what' (Japanese)

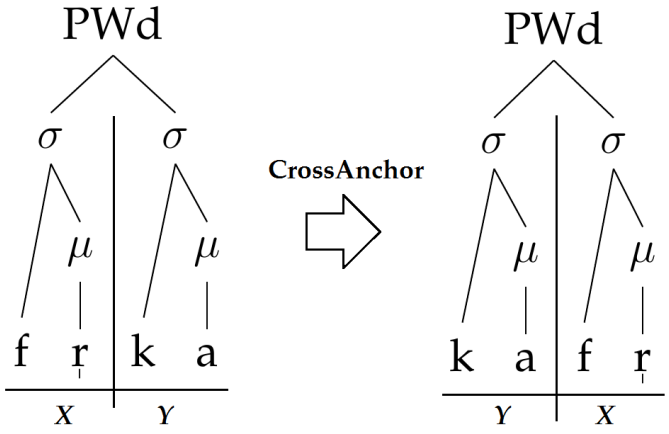

Figure 1: The effect of CROSSANCHOR (Ito et al., 1995) on the example 'rush' (SC)

Only in reversal games! According to Bagemihl (1988, 1995), infixation games cover function words too.

- the game refers to moras

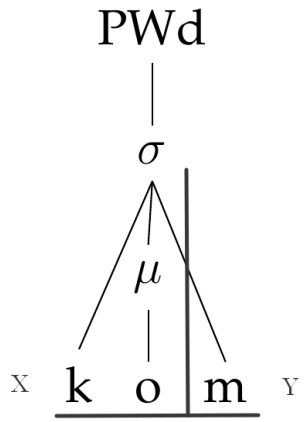

Figure 2: CROSSANCHOR and a monosyllabic word

3.1 Data

CV base forms get extended

(3) CV bases
- a. 'fou' [fu] ↦ [ufə] 'crazy' (verlan)
- b. 'me' [me] ↦ [e:me] 'eye' (zuuja-go)
- c. 'fe' [fe] ↦ [efe] 'faith' (vesre)
- d. 'sto' [sto:] ↦ *[to:s] 'table' (šatrovački)

CVC forms get divided... and also extended

The border for cross-anchoring the parts is between the nucleus and the coda, which becomes the onset of the new formed syllable (in some cases).

(4) **zuuja-go**
- a. 'paN' [pa$^{\mu}$n$^{\mu}$] ↦ [n$^{\mu\mu}$pa$^{\mu}$] 'bread'

b. ‘to:N [to$^{\mu\mu}$n$^{\mu}$] ↦ [n$^{\mu\mu}$to$^{\mu\mu}$] ‘tone’
Processes: reversal, prosodic role preservation, lengthening

Note: only nasal can be found in a coda position in Japanese – and it is always moraic.

(5) **vesre**
a. ‘gil’ [gil’] ↦ [ləgi] ↦ [logi] ‘jerk’
b. ‘fin’ [fin] ↦ [nəfi] ↦ [nofi] ‘end’
c. ‘pa:n’ [pan] ↦ [nəpa] ↦ [nopa] ‘bread’
Processes: reversal, epenthesis, filling of an empty mora

(6) **verlan**
a. ‘bus’ [bys] ↦ [səby] ↦ [səb] ↦ [søb] ‘bus’
b. ‘sac’ [sak] ↦ [kəsa] ↦ [kəs] ↦ [køs] ‘bag’
c. ‘femme’ [fam] ↦ [məfa] ↦ [məf] ↦ [møf] ‘woman, wife’
d. ‘bal’ [bal] ↦ [ləba] ↦ [ləb] ↦ [løb] ‘dance’
e. ‘chatte’ [ʃat] ↦ [təʃa] ↦ [təʃ] ↦ [tøʃ] ‘female cat, vagina’
Processes: reversal, epenthesis, deletion of the final vowel, filling of an empty mora

(7) **šatrovački 1**
a. ‘muž’ [muʒ] ↦ [’ʒmu] ‘husband’
b. ‘dop’ [dop] ↦ [’pədo] ‘dope’
c. ‘disk’ [disk] ↦ [’skədi] ‘disc’
d. ‘smor’ [smor] ↦ [’r̩smo] ‘boredom’
e. ‘film’ [film] ↦ [’məfil] ‘film’
Processes: reversal, epenthesis, syllabic sonorant formation

(8) **šatrovački 2**
a. ‘muž’ [muʒ] ↦ [’ʒəmu] ‘husband’
b. ‘dop’ [dop] ↦ [’pədo] ‘dope’
c. ‘disk’ [disk] ↦ [’skədi] ‘disc’
d. ‘smor’ [smor] ↦ [’r̩smo] ‘boredom’
e. ‘film’ [film] ↦ [l̩’məfi] ‘film’
Processes: reversal, epenthesis, syllabic sonorant formation

4 Analysis

Theoretical framework: Optimality Theory (Prince & Smolensky, 1993) / Correspondence Theory (McCarthy & Prince, 1995) – no rules, no operations. Every derivation has two components, Generator (creates an infinite number of candidates) and Evaluator (determines the optimal candidate based on the ranking of constraints).

1. Constraints are ranked.
2. Constraints are violable.
3. Constraints are universal.

(9) Constraints:
CROSSANCHOR: In a prosodic word that consists of {x,y}, where x ∈ *beginning* and y ∈ *ending*, reverse their order. (Ito et al., 1995)
PWD=σ: A prosodic word consists minimally of 1 syllable. (Friesner, 2005)

*CODA: A syllable does not have a coda. (Prince & Smolensky, 1993)
NUCLEUS: Every syllable must have a nucleus. (Prince & Smolensky, 1993)
DEP-μ: No epenthesis of moras. (Ito et al., 1995)
MAX-μ: No deletion of moras. (Ito et al., 1995)
SYLMARG: Syllable margins must not be of descending sonority. (Zec, 2002)
FTBIN: A foot is minimally binary. (McCarthy & Prince, 1995; Prieto, 1992)
*P-SON: No sonorants may be a nucleus of a syllable. (Zec, 2003)
IDENT-OO: Every segment in the output must have an identical segment in the new output in terms of features. (McCarthy & Prince, 1995)
LICENSE-μ: No empty moras. (Kiparsky, 2003)
GOVERNMENT LICENSING: A governor Onset must be licensed by a Nucleus which is not properly governed. (Polgárdi, 1996)

4.1 Exercise – zuuja-go and vesre

Zuuja-go exhibits mora epenthesis in all cases. If the word is CV, the epenthesized mora will be filled by Vowel Harmony process, and should the PWd be CVN, there is no need for an additional mora, since there are two of them that can be reversed. The lenghtening comes from an already attested process of mora augmentation (emphasizing the meaning, cf. Davis & Ueda (2002)), where a high-ranked constraint determines the location of the lengthened vowel.

ALIGN-L(μ_e,Wd): Align the emphatic mora with the left edge of the word.

(10)

/[pa$^{\mu}$n$^{\mu}$]/	ALIGN-L(μ_e,WD)	DEP-V	FTBIN	*P-SON	DEP-μ
a. [n$^{\mu}$pa$^{\mu\mu}$]	*!			*	*
☞ b. [npa$^{\mu}$]				*	*
c. [n$^{\mu}$apa$^{\mu\mu}$]		*!		*	*

(11)

/fe$^{\mu\mu}$/	FTBIN	IDENT-OO	DEP-V	LICENSE-μ
☞ a. [efe]				
b. [$^{\mu}$fe$^{\mu}$]				*
c. [ef]	*!			
d. [ef$^{\mu}$]		*!		

Vesre has no big problems: /e/ is long in the example (11), and it is also the default epenthetic vowel for Spanish (Prieto, 1992), so we are fine with the analysis. However, it is not clear then why it is not /e/ in the examples in (5), but rather /o/. Additional factors need to be examined, such as potential morphological class or gender, since 'fe' is **feminine**, and 'gil' is **masculine**. Nevertheles, vesre is a nice proof that long vowels are actually double vowels in (Argentinian) Spanish (11).

(12)

/gil/	FTBIN	SYLMARG	DEP-V	*P-SON	LICENSE-μ
☞ a. [l$^{\mu}$gi]					*
b. [legi]			*!		
c. [lgi]	*!	*			
d. [l̩gi]				*!	

4.2 Verlan

Thing to worry about: deletion

Verlan can be also analysed as mora epenthesis, equally for CV (13) and CVC bases (14).

(13)

/sak/	FtBin	Son-Φ	SylMarg	Dep-V	License-μ
☞ a. [k$^{\mu}$sa]					*
b. [køsa]				*!	
c. [ksa]	*!				
d. [kəsa]		*!			

(14)

/fu$^{\mu}$/	FtBin	Dep-V	Son-Φ	License-μ	Ident-OO
☞ a. [uf$^{\mu}$]				*	
b. [$^{\mu}$fu]			*!	*	*
c. [uf]	*!				
d. [ufu]		*!			

Both in (13) and (14) the empty mora is filled by a schwa-like vowel. However, schwa is a segment that is not stressable in French (violation of Son-Φ, cf. (Zec, 2002, 2003)). The closest one is /ø/, and according to Friesner (2005), this is what actually happens.

For deletion, we have to assume an additional constraint (still a sketch) that is going to make sure that there is only one stressable vowel in a minimal foot, and that one should be the left one (CON1). Therefore, we are dealing with an opposite-side effect, noted by Sanders (1999) for Baliktad.

(15)

/sak/	FtBin	Son-Φ	Con1	SylMarg	Dep-V	License-μ
a. [k$^{\mu}$sa]		*!	*!			*
b. [kesa]					*!	
c. [ksa]	*!					
d. [kəsa]		*!	*!			
☞ e. [køs$^{\mu}$]						*

4.3 The central analysis – the varieties of šatrovački

Šatrovački has two varieties, the one where epenthesis is triggered only by syllable structure constraints, such as SylMarg and *P-son. However, the true difference between (7) and (8) lies in the high ranking of FtBin for šatrovački 2, requiring feet in the OFs to be bimoraic, as illustrated in (16) and (17), but not for šatrovački 1 (18).

(16)

/muʒ/	FtBin	Dep-V	SylMarg	License-μ	Dep-μ
a. [ˈʒmu]	*!				
☞ b. [ˈʒ$^{\mu}$.mu]				*	*
c. [ˈʒa.mu]		*!			*

(17)

/dop/	FtBin	Dep-V	SylMarg	Licemse-μ	Dep-μ
a. [ˈpdo]	*!		*		
☞ b. [ˈp$^{\mu}$.do]				*	*
c. [ˈpa.do]		*!			*

Both existence of an empty mora (allowed by ranking DEP-V lower than the drivers and other faithfulness constraints) and syllabification can be partly attributed to requirements on syllable structure – SYLMARG (Zec, 2002).

(18)

/muʒ/	SYLMARG	DEP-V	LICENSE-μ	FTBIN	DEP-μ
☞ a. [ˈʒmu]				*	
b. [ˈʒ$^{\mu}$.mu]			*!		*
c. [ˈʒa.mu]		*!			*

(19)

/dop/	SYLMARG	DEP-V	LICENSE-μ	FTBIN	DEP-μ
a. [ˈpdo]	*!			*	
☞ b. [ˈp$^{\mu}$.do]			*		*
c. [ˈpa.do]		*!			*

The current ranking predicts that word-initially a sonorant should become syllabified, as illustrated in the tableau (20). Zec's (2002: 127) SON-Φ[-cons] constraint requires that the head of the foot be vocalic, which, coupled with the assumption that /r/ is a [-cons] segment (Zec 2002b: 127), means that only vowels and [r] can be accented in šatrovački (20).

(20)

/smor/	SON-Φ[-CONS]	DEP-V	SYLMARG	LICENSE-μ	*P-/R/	DEP-μ
a. [ˈrsmo]			*!			
☞ b. [ˈr̩.smo]					*	*
c. [ˈra.smo]		*!				*
d. [ˈr$^{\mu}$.smo]				*!		*

(21)

/dlan/	SON-ϕ[-CONS]	DEP-V	SYLMARG	LICENSE-μ	DEP-μ
a. [ˈndla]			*!		
b. [ˈn̩.dla]	*!				
☞ c. [ˈn$^{\mu}$.dla]				*	*
d. [ˈna.dla]		*!			*

We see in (8) that nasal segments and liquids can in principle be syllabified, so a complete ban on syllabic sonorants is not a licit solution. The difference between [n$^{\mu}$.dla] and [r̩.smo] lies in the quality of the initial segment. In (22), the constraint eliminates candidate **d.**, which contains an accented nasal stop. This can be contrasted with (21) and escpecially (20), in which the constraint is satisfied by all candidates. As a result the choice between candidates e. and f. is passed on to LICENSE-μ.

(22)

/bend/	*CODA	FTBIN	SON-ϕ[-CONS]	MAX-IO	SYLMARG	LICENSE-μ	DEP-μ
a. [ˈd$^{\mu}$.ben]	*!					*	*
b. [ˈndbe]		*!			*		
c. [ˈd$^{\mu}$.be]				*!		*	*
d. [ˈn̩.d$^{\mu}$.be]			*!			*	*
☞ e. [n̩.ˈd$^{\mu}$.be]						*	**
f. [n$^{\mu}$.ˈd$^{\mu}$.be]						**!	**
g. [ˈn$^{\mu}$d.be]	*!					*	*

4.3.1 Summary of this section:

Previous analyses of syllable reversal games (Itô et al. 1996 for zuuja-go, Friesner 2005 for verlan, Rizzolo 2004, 2006 for šatrovački) fail to account for dialectal differences or are forced to introduce additional machinery such as 'reverlanization' (Friesner 2005: 23). I offer a unified OT account of both dialects, showing that they are the result of constraint reranking.

I argue that (in both dialects) epenthesis is not simply triggered by requirements on syllable margins – it involves interplay of constraints regulating foot structure and assignment of stress / accent.

The quality of the surfacing vowel

- an instance of the Emergence of the Unmarked (McCarthy & Prince, 1995) – the vowel is the least marked segment (given the language-specific hierarchy of segment inventory constraints) (Stojković, 2015)
- an empty mora present in the input (Rizzolo, 2006)
- an empty morpheme – NOM.SG for masculine and type IV feminine nouns has a /-ø/
- an epenthesized mora filled at the phonetic level (Polgárdi, 1996) OR a radically underspecified segment (McCarthy, 1988; Zimmermann, 2016)

5 Conclusion-like remarks

- I have shown how four language games would be analysed by mora epenthesis and *Empty Category Principle* – the prosodic and segmental faithfulness is still a high demand, so epenthesis of phonemic segments is still forbidden
- there is no real proof that epenthetic vowels are not already present in the input of natural languages, so these language games offer additional evidence in favour of them being more repair phenomena than actual licit vowels
- language games attested here show the same results and repairs as their host languages – it must be the same grammar
- Optimality Theory makes possible to derive dialectal and language-specific differences in these games with slight reranking of universal constraints

Questions to be answered in the future:

What would a ludling have to say regarding diphtongs and vowel clusters in general? (recall **vesre**)

What is the relation between ludlingants and lexicalization? – the difference between /o/ and /e/ in **vesre**

Why do the infixation and reversal games show different relations with the input and the output of natural language?

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