

Non-optimizing outward conditioning in Tarahumara allomorph selection[@]

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1. Introduction

- (1) Two key questions about the phonology-morphology interface: What phonological effects are possible in morphology? How should these effects be modeled?
 - a. Phonology and morphology operate in tandem; phonology may take precedence over morphology (McCarthy & Prince 1993, Kager 1996, Mascaró 1996).
 - b. Phonology and morphology are distinct components; phonological requirements of stems are part of the subcategorization frames of affixes (Lieber 1980; Kiparsky 1982, 1996; Paster 2006; Bye to appear):
- (2) What is the status of outward conditioning in Phonologically Conditioned Allomorphy (PCA), where a suppletive allomorph (A) is sensitive to outer morphological exponents (B) (X-A- ...-B)?

Phonology and morphology are computed globally	allomorph distribution is phonologically optimizing allomorph distribution may be sensitive to phonological conditions of any part of the word: outward conditioning expected .
Phonology and morphology are distinct components	allomorph distribution is sensitive to input, not surface phonological properties allomorph distribution is only sensitive to the edge of the stem to which it attaches (the effect is 'inside-out'): outward conditioning unexpected .

- (3) Goals of this paper:
 - to document a novel case of PCA in Tarahumara, where allomorph distribution is determined by the presence or absence of **outer** suffixes, a typologically unusual pattern;
 - to show that this case gives an apparent strong empirical argument in favor of allomorphy as phonological optimization (it **looks** like the instantiation of a strong prediction of a globalist theory);
 - to argue that this pattern, however, **does not** satisfy surface phonological well-formedness, but instead arises through morpho-prosodic alignment constraints operating at different stem levels.
- (4) Outline:
 - §2 - *phonological and morphological evidence for positing different morphological subconstituents in the verb*;
 - §3 - *formal properties of Tarahumara allomorphs*;
 - §4 - *distributional properties of Tarahumara allomorphs*;
 - §5 - *analysis: an edge of a morphological constituent coincides with the edge of a morphological pivot*;
 - §6 - *conclusions and some implications*.

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2. Tarahumara verbal structure

- (5) Tarahumara (Rarámuri), is a Uto-Aztecan language of the Taracahitan branch spoken in northern Mexico. Data come from original field research of Choguita Rarámuri (henceforth CR) conducted between 2003 and 2009 as part of a language documentation project.
- (6) Verbal morphology is almost exclusively suffixing, highly agglutinating, and displays a layered (i.e., non-templatic) structure with different degrees of morphophonological cohesion.
- (7) There is semantic, morphotactic and phonological evidence for proposing twelve suffix positions, grouped into six verbal zones or layers (Caballero 2008).

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
	INCH	TR	APPL	CAUS	APPL	DESID	MOT	EV	Voice/ Aspect	TAM	TAM	SUB
Inner Stem	Derived Stem		Syntactic Stem			Aspectual Stem			Finite Verb		Sub Verb	

- (8) Layers closer to the stem display greater morphophonological fusion than outer morphological layers.

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
Inner Stem	Derived Stem		Syntactic Stem			Aspectual Stem			Finite Verb			Subordinate Verb
Haplology												
Compens. Lengthening												
Imperative stress-shift												
Passive-triggered lengthening												
Round Harmony												

- (9) Some morphological properties of stress:
- roots are underlyingly stressed or unstressed;
 - suffixes are either ‘stress-shifting’ or ‘stress-neutral’;
 - stress is never beyond the third syllable from left to right;
- (10) The distribution of stress-shifting and stress-neutral suffixes characterizes the different verbal domains.

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
Stem level	Derived Stem		Syntactic Stem			Aspectual Stem			Finite Verb		Sub. V.	
Sfx stress behavior	Shifting		Neutral			Shifting		Neutral	Shifting		Neutral	Neutral

- (11) These domains map onto two constituents, Stem (the domain of stress assignment) and Word. Different markedness constraints apply in these two levels; any suffix may be attached at either level; what is crucial is the order of attachment.

3. Formal properties of long and short allomorphs

- (12) CR has four disyllabic suffixes, each of which is transparently related to an independent verb:

Disyllabic Suffixes

-simi	Associated motion
-nura	Indirect Causative
-čane	Auditory evidential
-nale	Desiderative

Independent verbs

simí	‘go (sg.)’
nuré	‘oblige, force’
(a)čane	‘say, make noise’
nakí	‘want’

- (13) Disyllabic (‘long’) suffixes have ‘short’ allomorphs matching the first syllable of long allomorph:

	<i>Long allomorphs</i>	<i>Short allomorphs</i>
Desiderative	-nale	-na
Associated Motion	-simi	-si
Auditory evidential	-čane	-ča
Indirect Causative	-nura	-na

(14) The formal properties of both long and short allomorphs are predictable from general phonological rules:

- non-final posttonic vowels are often neutralized in height (e.g., /-čane/ → [-čine], /-nura/ → [-nəra], etc.)
- vowels may undergo posttonic deletion (e.g., /-nare/ → [-nar], /-si/ → [-s], etc.)
- there is no V deletion word-finally or if deletion would result in a phonotactically ill sequence (e.g., [bené-ri-**na**] ‘learn-CAUS-CAUS.I’, but not [*bené-ri-**n**])

(15) Allomorphy vs. morphophonology? Some criteria to differentiate the two (Kiparsky 1996:17; Paster 2006):

	<i>Suppletive allomorphy</i>	<i>Morphophonology</i>
a	The alternation is idiosyncratic (item-specific).	The alternation is general.
b	The alternation may involve more than one segment.	The alternation involves only one segment.

(16) Short allomorphs transparently correspond to the long allomorphs’ first syllable (morphophonology by (a)).

(17) The alternation involves more than one segment (suppletive allomorphy by (b)).

(18) Possible alternative: the alternation involves a single phonological *unit*, a syllable.

(19) Is there a general truncation process in CR? Roots delete their last, unstressed syllable when attaching a suffix with an identical onset.

a.	sutubéči-niri	/sutubéči-nale/	‘trip-DESID’	[BFL 07 1:138/el]
b.	sutubée-čin-o	/sutubéči-čane-o/	‘trip-EV-EP	[SFH 07 1:143/el]
c.	šikorána	/sikorána/	‘have.eye.secretion’	[BFL 07 1:151/el]
d.	šikorráa-nir-o	/šikorrána-nale-o/	‘have.eye.secretion-DESID-EP’	[BFL 07 1:151/el]

(20) Roots may truncate posttonic syllables in N incorporation (a-b) and denominal constructions (c-d).

a.	čame+répi-ma	/čaméka+repu-ma/	‘tongue+cut-FUT.SG’	[SFH 07 1:187/el]
b.	čere+bíwi-ma	/čeréwa+bi’wá-ma/	‘sweat+clean-FUT.SG’	[SFH 07 1:187/el]
c.	sipu-tá-ma	/sipúča-tá-ma/	‘skirt-FACT-FUT.SG’	[LEL 06 4:185/el]
d.	komá-ti-ma	/komáre-tá-ma/	‘comadre-FACT-FUT.SG’	[LEL 06 4:185/el]

(21) Roots, however, don’t have a corresponding ‘short’ allomorph in other morphologically complex forms.

a.	sutubéči-ni-ma	‘trip-DESID-FUT.SG’	*sutubé-ni-ma	[BFL 07 1:150/EI]
b.	basarówa-ni-ma	‘stroll-DESID-FUT.SG’	*basaró-ni-ma	[SFH 07 1:150/EI]

(22) The contexts where roots truncate a post-tonic syllable are not the same ones where short allomorphs are found.

4. Distribution of long and short allomorphs

(23) No lexical conditioning on allomorph distribution:

a.	/opési-čane/	‘vomit-EV’	‘It sounds like throwing up’	[BFL 07 rec300/el]
b.	/opési-ča-nale-o/	‘vomit-EV-DESID-EP’	‘It sounds like they want to throw up’	[BFL 07 rec300/el]

c. /nári- simi /	‘ask-MOT’	‘I go along asking around’	[SFH 08 1:148/el]
d. /nári- si-ma /	‘ask-MOT-FUT.SG’	‘I will go along asking around’	[SFH 08 1:148/el]

(24) Allomorph distribution is in general not dependent on the stress properties of the base to which they attach:

Immediately posttonic

a. /ubá- nale /	‘bathe- DESID ’	‘They want to bathe’	[BFL EDCW29/el]
b. /sú- na-ra /	‘sew- DESID-REP ’	‘She says she wants to sow’	[LEL EDCW126/el]
c. /wikará- čane /	‘sing- EV ’	‘It sounds like singing’	[SFH 07 1:7/el]
d. /noriwí- simi /	‘dissappear-MOT’	‘It was gradually disappearing’	[FLP in61(482)/in]
e. /wikará- si-ka /	‘sing-MOT-GER’	‘He was going along singing’	[BFL 06 EJP(10)/el]

Not immediately posttonic

f. /ko’á-ri-ti- nale-a /	‘eat-CAUS-CAUS- DESID-PROG ’	‘They want to make them eat’	[SFH EDCW(89)/el]
g. /sú-ri-ti- na-ma /	‘sew-CAUS-CAUS- DESID-FUT.SG ’	‘She’ll want to make her sew’	[BFL 06 5:138/el]
h. /rarahípa-ti- čane /	‘run.ball.race-CAUS- EV ’	‘It sounds like they are making him run rarahípa’	[SFH 08 1:127/el]
i. /kéči- simi /	‘chew-MOT’	‘He goes along chewing’	[SFH 08 1:145/el]
j. /porá-pi-ti- si-o /	‘cover-REV-REFL-MOT-EP’	‘It’s going along uncovering itself’	[BFL 08 1:56/el]

➤ **The main predictor of allomorph distribution is the *right* edge of the word.**

(25) Short allomorphs appear almost exclusively in forms where they are followed by outer suffixes:

a. ačé- ni-sa	/ačé- na-sa /	‘put.in- DESID-COND ’	[SFH 07 romara/tx]
b. naharáp- ni-ma	/naharápi- na-ma /	‘wrestle- DESID-FUT.SG ’	[BFL 07 1:152/el]
c. ri’i-bú-r- si-ri	/re’e-bú-ri- si-li /	‘stone-gather-CAUS-MOT-PST’	[SFH 07 2:63/el]
d. tičí-k- si-ma	/tičí-ki- si-ma /	‘comb-CAUS-MOT-PST’	[SFH 07 2:67/el]
e. atís- ča-nar-a	/atísi- ča-nale-a /	‘sneeze- EV-DESID-PROG ’	[SFH 08 1:122/el]

(26) Long allomorphs occur closing the words in which they occur:

a. sú-r- niri	/sú-ri- nale /	‘sew-CAUS- DESID ’	[BFL EDCW(52)/el]
b. porá-p-ti- niri	/porá-pi-ti- nale /	‘cover-REV-REFL- DESID ’	[BFL 08 1:56/el]
c. nári- simi	/náre- simi /	‘ask-MOT’	[SFH 08 1:148/el]
d. toré- čani	/toré- čane /	‘cackle- EV ’	[SFH 07 1:7/el]
e. ubá-s- čani	/ubá-si- čane /	‘bathe-MOT- EV ’	[SFH 08 1:150/el]

(27) Exception 1: the long allomorph of the desiderative, a stress shifting suffix, is always selected by unstressed roots (i.e., there is no stress-shifting version of short desiderative /-na/).

a. rono- nári	/rono- nále /	‘boil- DESID ’	[SFH 08 1:125/el]
b. kočí- nál-si-a=ni	/kočí- nále-si-a=ni /	‘sleep- DESID-MOT-PROG=1SG.NOM ’	[BFL 08 1:60/el]
c. awi- nár-si-ri	/awi- nále-si-li /	‘dance- DESID-MOT-PST ’	[SFH 08 1:75/el]
d. ko’- nári-mi	/ko’- nále-mi /	‘eat- DESID-IRR.SG ’	[SFH 08 1:122/el]

(28) Exception 2: both long and short allomorphs of the indirect causative suffix are closing suffixes (they are final in the morphological structure of the verb and incompatible with inflection).

a. mo’o-bú- nura	/mo’o-bú- nura /	‘go.up-TR-CAUS.I’	[LEL ENIC(37)/el]
b. simí- nura	/simí- nura /	‘go.SG-CAUS.I’	[BFL 06 EJP(4)/el]
c. počí-ti- nura	/počí-ti- nura /	‘jump-CAUS-CAUS.I’	[SFH 08 1:133/el]
d. rimé-ni- nura	/rimé-ni- nura /	‘make.tortillas-APPL-CAUS.I’	[SFH 08 1:134/el]

e. rata-bá-či-na	/rata-bá-ča-na/	‘heat-INCH-TR-CAUS.I’	[LEL ENIC(53)/el]
f. biné-ri-na	/biné-ri-na/	‘learn-CAUS-CAUS.I’	[LEL ENIC(44)/el]
g. kirí-si-na	/kirí-si-na/	‘gather.quelites-MOT-CAUS.I’	[SFH 08 1:133/el]

- (29) Long allomorphs of the desiderative and evidential can be followed by vocalic (onsetless) suffixes that induce deletion of final vowel of the second syllable of the long allomorph.

a. nará-t-čan-a-či	/nará-ti-čane-a-či/	‘cry-CAUS-EV-PROG-TEMP’	[SFH 07 1:9/el]
b. kačí-si-nir-i	/kačí-si-nale-i/	‘spit-MOT-DESID-IMPF’	[SFH 08 1:75/el]
c. to-nál-čin-o	/to-nále-čane-o/	‘take-DESID-EV-EP’	[BFL 06 5:148/el]

- (30) Short allomorphs don’t delete their final vowel with these suffixes:

a. *nará-t-č-a-či	/nará-ti-č-a-či/	‘cry-CAUS-EV-PROG-LOC’	
b. *sutubéči-n-a	/sutubéča-na-a/	‘trip-DESID-PROG’	
c. *kačí-si-n-i	/kačí-si-na-i/	‘spit-MOT-DESID-IMPF’	
d. *to-nál-č-o	/to-nále-č-a-o/	‘take-DESID-EV-EP’	
e. *koči-nál-s-a=ni	/koči-nále-si-a=ni/	‘sleep-DESID-MOT-PROG=1SG.NOM’	

- (31) Forms with multiple relevant allomorphs: any logically possible combination of allomorphs is attested.

- (32) Short-long sequences:

a. bahí-n-čin-a	/bahí-na-čane-a/	‘drink-DESID-EV-PROG’	[SFH 07 1:8/el]
b. wikuwá-s-čin-a	/wikuwá-si-čane-a/	‘whistle-MOT-EV-PROG’	[SFH 07 2:74/el]
c. paraér-či-nir-o	/paraéri-ča-nale-o/	‘dance.paraéri-EV-DESID-EP’	[SFH 07 1:182/el]
d. atísi-ča-nar-a	/atísi-ča-nale-a/	‘sneeze-EV-DESID-PROG’	[SFH 08 1:122/el]
e. kačí-si-niri	/kačí-si-nale/	‘spit-MOT-DESID’	[SFH 08 1:75/el]
f. simá-s-nura	/simá-si-nura/	‘go.SG-MOT-CAUS.I’	[LEL EIC(27)/el]

- These are not fixed ‘portmanteux’ sequences (e.g., /bahí-na-čane-a/ ‘drink-DESID-EV-PROG’ (34a) vs. /atísi-ča-nale-a/ ‘sneeze-EV-DESID-PROG’ (34d)).

- (33) Prediction: if a base containing two relevant allomorphs is further marked by an inflectional morpheme, we expect a short-short allomorph sequence.

a. isí-n-si-a	/isí-na-si-a/	‘urinate-DESID-MOT-PROG’	[BFL 08 1:61/el]
b. yór-si-ni-la	/yóri-si-na-la/	‘be.angry-MOT-DESID-REP’	[SFH 08 1:72/el]
c. pák-si-ni-ma	/páki-si-na-ma/	‘brew-MOT-DESID-FUT.SG’	[SFH 08 1:147/el]
d. pák-si-ni-mi	/páki-si-ni-mi/	‘brew-MOT-DESID-IRR.SG’	[SFH 08 1:147/el]
e. ičí-n-si-ma	/iči-na-si-ma/	‘sow-DESID-MOT-FUT.SG’	[LEL EDCW123/el]

- (34) The stressed allomorph of desiderative can be combined with both short (a-c) and long allomorphs (d-f). Generalization: short allomorphs are selected when there are outer inflectional suffixes.

a. koči-nál-si-a	/koči-nále-si-a/	‘sleep-DESID-MOT-PROG’	[BFL 08 1:60/el]
b. awi-nár-si-ri	/awi-nále-si-li/	‘dance-DESID-MOT-PST’	[SFH 08 1:75/el]
c. ko’-nári-si-mi	/ko’-nále-si-mi/	‘eat-DESID-MOT-IRR.SG’	[SFH 08 1:122/el]
d. ko’-nál-čani	/ko’-nále-čane/	‘eat-DESID-EV’	[SFH 08 1:124/el]
e. rono-náal-čani	/rono-nále-čane/	‘boil-DESID-EV’	[SFH 08 1:125/el]
f. uku-náal-čani	/uku-nále-čane/	‘rain-DESID-EV’	[SFH 08 1:125/el]

5. Allomorph distribution as morpho-prosodic alignment

(35) Long allomorphs are added in a final domain aligned with the right edge of the word; short allomorphs are selected in inner domains that require further suffixation to be promoted to the word level.

(36) Assumptions:

1: there is a relationship between the hierarchical morphological structure of a word and layered phonological domains; different levels may have different rankings (LPM/Stratal OT (Kiparsky 1998, 2000; Bermúdez-Otero 1999, forthcoming);

2: every subconstituent of a morphologically complex word is optimized, relative to a meaning target ('M') (Inkelas et al., Inkelas & Caballero 2008, Paster in press);

3: each tableau compares all possible **single** morphological operations that a stem undergoes (Inkelas & Caballero 2008);

4: affixes are annotated for the type of constituent they combine with and the type of constituent they create (Inkelas et al. 2006, Paster in press).

(37) Other phonological and morphological phenomena in CR motivate two levels of phonological evaluation (see Caballero 2008 for details):

Constraints operating at the Stem level (domain of stress assignment; may be recursive):

- a. ALL-FT-L: Every foot stands at the left edge of the prosodic word (PrWd).
- b. PARSE- σ : Syllables must be parsed into feet.
- c. IAMB: Feet have final prominence.
- d. TROCHEE: Feet have initial prominence.
- d. MAX-IO: Every segment in the input has a correspondent in the output.

Constraints operating at the Word level:

- a. FINAL-V: Every prosodic word is vowel-final
- b. DEP: Output segments must have input correspondents
- c. PARSE- σ : Syllables must be parsed into feet.
- d. MAX-IO: Every segment in the input has a correspondent in the output.

(38) Two constraints that enforce the alignment of allomorphs to morphological subconstituents (an edge of a morph. constituent coincides with the edge of a phonological or morphological pivot (McCarthy & Prince 1993, Yu 2007)).

- a. ALIGN($[\sigma \sigma]_{Af}$, R, Word, R): the right edge of long allomorphs is aligned to right edge of the Word
- b. ALIGN($[\sigma]_{Af}$, R, Stem, R): the right edge of short allomorphs is aligned to right edge of the Stem

(39) A Stem level output with a long allomorph is a self-standing word (a), and a Stem level output with a short allomorph requires undergoing a second round of morphology in order to achieve 'wordhood' (b).

- a. /piči-nale/
sweep-DESID
'He wants to sweep'

	/piči, {-nale, -na}/	ALIGN($[\sigma \sigma]_{Af}$	ALIGN($[\sigma]_{Af}$	MAX-PROM	IAMB	PARSE- σ
a.	(piči)-nale					**
b.	(piči)-na		*!			*

- b. /piči-na-/
sweep-DESID-

	/piči, {-nale, -na}/	ALIGN[σ σ] _{Af}	ALIGN[σ] _{Af}	MAX-PROM	IAMB	PARSE-σ
a.	(piči)-nale	*!				**
☞ b.	(piči)-na					*

- (40) Stem level output *pičina* (Tableau (b)) is evaluated in the Word level with another suffix with competing long and short allomorphs in Tableau (a), and with an inflectional suffix in Tableau (b).

- a. /piči-na-čane/
sweep-DESID-FUT.SG
'He will want to sweep'

	/pičina, {-čane, -ča}/	ALIGN[σ σ] _{Af}	ALIGN[σ] _{Af}	FINAL-V	PARSE-σ
a.	(piči)n-ča		*!		*
☞ b.	(piči)n-čane				**
c.	(piči)n-čan			*!	*
d.	(piči)ni-č		*!	*	*
e.	(piči)na-čane				**!*
f.	(piči)na-ča		*!		**

- b. /piči-na-ma/
sweep-DESID-FUT.SG
'He will want to sweep'

	/pičina, -ma/	ALIGN[σ] _{Af}	FINAL-V	PARSE-σ
a.	(piči)ni-m		*!	*
☞ b.	(piči)ni-ma			**

- (41) The long allomorph of the desiderative, a stress shifting suffix, is always selected by unstressed roots (i.e., there is short allomorph of the desiderative available in the input with these roots).
- (42) The distribution of indirect causative allomorphs is mostly unpredictable; subject to speaker variation, short allomorphs tend to be added in morphologically complex forms, and not be immediately posttonic (f-k).

a.	mo'o-bú- nura	/mo'o-bú- nura /	'go.up-TR-CAUS.I'	[LEL ENIC(37)/el] a
b.	čiwa-ná- nura	/čiwa-ná- nura /	'tear-TR-CAUS.I'	[LEL ENIC(39)/el]
c.	rimé-ni- nura	/remé-ni- nura /	'make.tortillas-APPL-CAUS.I'	[SFH 08 1:134/el]
d.	rata-bá-či- na	/rata-bá-ča- na /	'heat-INCH-TR-CAUS.I'	[LEL ENIC(53)/el]
e.	biné-ri- na	/bené-ri- na /	'learn-CAUS-CAUS.I'	[LEL ENIC(44)/el]
f.	kirí-si- na	/kirí-si- na /	'gather.quelites-MOT-CAUS.I'	[SFH 08 1:133/el]
g.	bené-r-si- na	/bené-ri-si- na /	'learn-CAUS-MOT-CAUS.I'	[SFH 08 1:133/el]
h.	i'né-si- na	/i'né-si- na /	'look-MOT-CAUS.I'	[SFH 08 1:134/el]

5.1 Allomorph distribution as phonological well-formedness?

- (43) Possible alternative: allomorph selection in this language improves phonological well-formedness (as predicted by those who propose that outward conditioning in allomorph selection should be found).
- (44) Some phonological conditions that might determine allomorph choice (from Nevins 2009): segmental dissimilation, segmental phonotactics, syllable structure, foot structure, etc.
- (45) Possible alternative analysis for CR: short allomorphs are added when multiple suffixes contribute multiple unparsed syllables to the posttonic portion of the stem.

- (46) The conditioning environment for allomorph selection would be rendered opaque by allomorph selection itself.

<i>Actual forms</i>			<i>Abstract hypothetical forms</i>		
a.	pičí.- ni .-mi	‘sweep-DESID-IRR.SG’	2	{pičí.- na.re .-mi}	3 [LEL EDCW141/el]
b.	ra.’amá.- ni .-ra	‘give.avice-DESID-REP’	2	{ra.’amá.- na.re .-ra}	3 [BFL 07 EVS47/el]
c.	rosowá.- n .-či.n-o	‘cough-DESID-EV-EP’	2	{rosowá.- na.re .-ča.n-o}	4 [BFL 07 rec301/el]
d.	tičí-k.- si .-ma	‘comb-APPL-MOT-FUT.SG’	2	{tičí.-ki.- si.mi .-ma}	4 [SFH 07 2:67-69/el]

- (47) If allomorph selection is driven by a ban on unparsed syllables (Parse- σ), we would expect short allomorphs to be selected wherever the number of unparsed syllables could be reduced.

- (48) Unexplained: forms with three (or more) surface posttonic syllables; why not two short allomorphs here?

a.	porá-p-ti- niri	/porá-pi-ti- nale /	‘cover-REV-REFL-DESID’	*porá-p-ti- ni	[BFL 08 1:56/el]
b.	rasahíp-ti- čini	/rasahípa-ti- čane /	‘run.ball.race-CAUS-EV’	*rasahíp-ti- či	[SFH 08 1:127/el]
c.	awí-r-si- niri	/awí-ri-si- nale /	‘dance-CAUS-MOT-DESID’	*awí-r-si- ni	[SFH 08 1:122/el]

- (49) Conclusion: allomorph selection in CR does not lead to global phonological optimization in CR.

6. Summary and some implications

- (50) Does the phonology of outer morphemes play a role in conditioning allomorph distribution? Tarahumara contributes a case to a small collection of possible counterexamples (Bobaljik 2000, Embick 2010) to the claim that there is no outward conditioning in PCA.
- (51) Outward conditioned allomorphy is predicted in the ‘output optimization’ (P >> M) approach (McCarthy & Prince 1993a, 1993b, Kager 1996; Mascaró 1996; Rubach & Booij 2001, inter alia).
- (52) Outwardly sensitive allomorphy is expected, since phonology and morphology are evaluated in parallel. CR thus seems to contribute empirical evidence for the P >> M ranking schema.
- (53) Problem for P >> M (and any global model of the phonology-morphology interface): CR allomorphy does not result in global phonological optimization.
- (54) Proposal: Allomorph distribution falls from the interaction of morphological and phonological constraints operating at different stem levels, and the fact that different allomorph types “create” different word structures.
- (55) Allomorph selection provides a relevant insight into the prosodic organization of this language. There are two morpho-prosodic pressures in the CR word:
- the right edge restriction on the size of the prosodic portion of the stem (epiphenomenal);
 - stress assignment is limited to an initial three syllable window;
- (56) The left edge restriction is completely exceptionless, but the right edge restriction is flexible. Both restrictions are morphology-dependent.
- (57) Short allomorphs in CR contribute to the language’s high degree of morphophonological fusion, posing a challenge for the typology of morphological systems and agglutination.

Abbreviations

APPL- applicative; CAUS - causative; CAUS.I – indirect causative; COND - conditional; DESID – desiderative; EMPH - emphatic; EP - epistemic; FACT – factitive; FUT - future; GER – gerund; TR - transitive; PASS - passive; PRS - present; PST - past; SG - singular; MOT – associated motion; NOM – nominative; REFL – reflexive; REP – reportative; REV - reversive.

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