Multiple Exponence and the Phonology-Morphology Interface[*]

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1. Introduction

The theoretical relevance of Multiple Exponence (ME), a one-to-many mapping between a morphological category and its formal expression (Matthews 1974; Stump 1991, 2001; Anderson 2001, 2005; Blevins 2003), has been attributed to the challenges it poses to incrementalist theories of morphology (Halle & Marantz 1993; Noyer 1997; Stump 2001) and principles of economy and structural complexity (Andrews 1990, Anderson 1992, Noyer 1993, Kiparsky 2005). A parade example of ME is found in plural marking in German nouns, where plural is marked by either an affix (1a-b), Umlaut (1c-d), or both by an affix and Umlaut (1e-f).

(1) Multiple Exponence in German plural nouns

	Singular	Plural		
a.	Arm	Arm-e	'arm'	*Suffixation*
b.	Bild	Bild-er	'picture'	
c.	Vater	Väter	'father'	*Umlaut*
d.	Boden	Böden	'earth'	
e.	Wurm	Würm-er	'worm'	*Suffixation + Umlaut (ME)*
f.	Hals	Häls-e	'neck'	

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The theoretical implications of ME have prompted two kinds of responses. One kind of response involves claiming that there is no ME, but that seemingly redundant markers realize different, partially overlapping features (Halle & Marantz 1993), or that one of the exponents is in fact a concomitant morphophonological change or a special stem modification dependent on the primary marker (Wiese 1996). Alternatively, in realizational theories of morphology, ME has been treated as a real phenomenon that arises when inflectional features are expressed by multiple exponents belonging to different rule blocks (Aronoff 1994, Stump 2001, Sells 2004), or are doubled post-syntactically before vocabulary insertion through a process of 'enrichment' (Müller 2006), among other possibilities. In this paper, I examine a typologically unusual case of ME in an endangered language, Choguita Rarámuri (Tarahumara). Through the analysis of original data obtained through field research, I propose that this novel case of ME is not morphosyntactically motivated (as would be expected in realizational theories of morphology), but is instead morphophonologically conditioned.

There are four patterns of ME in this language. All patterns are uniformly characterized by being completely superfluous (no additional meanings are realized by the second exponent), by involving derivational morphology, and by involving formally distinct exponents, whether because they are different markers or different allomorphs of the same marker. Most importantly, ME is realized in only two verbal zones of the hierarchical morphological structure of the verb.

These patterns receive a unified analysis in Stratal OT (Kiparsky 2000, 2003) and Optimal Construction Morphology (OCM; Inkelas et al. 2006, Paster 2007), where constraints associated with different morphological domains within the word may have different rankings. Assuming a cyclic approach to word formation, I contend that ME in this language optimizes morphological subconstituents of the word (Inkelas et al. 2006). Specifically, I propose that ME arises when certain inner exponents are morphophonologically opaque by being unproductive or highly fused phonologically with the stem. The morphophonological opacity of a reduced level output may trigger a structural well-formedness requirement at a subconstituent level (a 'slot' in the word), which is satisfied by a second round of morphology. Finally, other well-formedness constraints operating at this level rule out ME of other morphological exponents in the language. There are no ME-specific constraints, but only general markedness constraints operating at different morphological subconstituents of the word. The CR case shows that at least some cases of ME are synchronically motivated by phonological constraints on morpheme or stem shape.

This paper is structured as follows. First, in §2, I present the details of each ME construction in CR. In §3, I lay out the details of the analysis. In §4, I show that there are no ME-specific constraints, and that general, independently needed constraints prevent the occurrence of ME with other markers. Finally, I conclude in §5 by introducing potential broader implications and questions for further research.

2. Choguita Rarámuri Multiple Exponence

CR is a Uto-Aztecan language of the Tarachitan branch spoken by approximately 1,000 people in the Mexican state of Chihuahua in Northwest Mexico. The patterns of ME in this language are summarized in (2).

(2) a. Pluractional prefixation and stem consonant mutation (§2.1)
b. Applicative stems that take applicative suffixes (§2.2)
c. Causative suffix doubling (§2.3)
d. Multiple suffixation of applicative suffixes (§2.4)

I briefly describe each type of ME next.

2.1 Pluractional Prefixation + Stem Consonant Mutation

CR has a category of pluractionality which marks plural number with nouns, and plural subject or that an action occurs or is being performed several times with verbs.[1] Pluractionals in CR are marked through prefixation (3), consonant mutation (4), or through both prefixation and consonant mutation (5), in a pattern that mirrors the German ME example in (1) above.[2]

	Singular	Pluractional	Gloss	
(3)	čóni	o-čóni	'become black'	[AH 05 2:24/El][3]
	siríame	i-sérikame	'governor'	[BF 05 1:156/El]
(4)	ka**p**órame	ka**b**órame	'be round'	[BF 05 1:155/El]
	remarí	**t**émuri	'young people'	[BF 05 1:155/El]
(5)	ki**p**á	i-ki**b**á	'snow'	[SF 05 2:8/El]
	si**t**ákame	i-si**r**ákame	'be red'	[BF 05 1:157/El]
	mu**k**í	o-mu**g**í	'woman'	[BF 05 1:156/El]
	ranára	a-**t**anára	'offspring'	[BF 05 1:156/El]

The forms with both prefixation and stem consonant mutation do not have corresponding forms with only a single exponent.

2.2 Applicative Stems + Applicative Suffixes

A second type of ME in CR involves multiple applicative marking. Some roots are marked applicative by replacing the final base stem vowel with a stressed front vowel

[1] Either by the same agent several times or by several agents several times.

[2] The abbreviations used in this paper are: APPL - Applicative; CAUS - Causative; DESID - Desiderative; EV - Evidential; FACT – Factitive; FUT - Future; IMP - Imperative; IMPF - Imperfective; MOT - Associated Motion; PASS - Passive; PST - Past; PL – Plural; POT - Potential; SG - Singular; TR - Transitive.

[3] Each example cited contains source information, which includes consultant identifier, year, hard copy or electronic document and type of document (El = elicitation or Tx = Text).

(e.g., *osá* 'write' – *osí* 'write for'). These applicative stems may optionally add an applicative suffix, as shown (6).

(6)	**osí**-ma	'write.**APPL**-FUT.SG'	[BF 06 2:98/El]
	osí-ki-ma	'write.**APPL-APPL**-FUT.SG'	[BF 06 2:98/El]
	roné-ma	'boil.**APPL**-FUT.SG'	[BF 06 2:101/El]
	roné-ki-ma	'boil.**APPL-APPL**-FUT.SG'	[BF 06 2:101/El]
	rahé-ma	'light.up.**APPL**-FUT.SG'	[RF 04 VR/El]
	rahé-ki-ra	'light.up.**APPL-APPL**-POT'	[SaF 06 4:104/El]
	ku'rí-ni-ma	'turn**.APPL**-TR-FUT.SG'	[BF ApplDB/El]
	ku'rí-n-**ki**-ri	'turn**.APPL**-TR**-APPL**-IMP.SG'	[BF 08 1:92/El]
	suwé-ri	'finish.up.**APPL**-PST'	[SF 05 1:119/El]
	suwé-ki-ri	'finish.up.**APPL-APPL**-PST'	[LEL 06 5:123/El]

While there are four applicative suffixes in CR (the productive *–ki* suffix, and the unproductive *-ni*, *-wi*, and *–si* suffixes), only the productive applicative *–ki* suffix may be added to stems that are already marked applicative. This is shown in (7).

(7)	osí-ki	*osí-ni	*osí-si	*osí-wi	'write.**APPL-APPL**'
	roné-ki	*roné-ni	*roné-si	*roné-wi	'boil.**APPL-APPL**'
	rahé-ki	*rahé-ni	*rahé-si	*rahé-wi	'light.up.**APPL-APPL**'

2.3 Causative Suffix Doubling

A third ME pattern involves causative suffix doubling. The causative suffix has two allomorphs, *-ti* and *-ri*, which are lexically determined but also phonologically conditioned. Specifically, the onset of an allomorph will be voiceless post-consonantally, due to a general rule ([+ voice] stop → [-voice] / C__). Causative stems may optionally be marked with one causative suffix or be doubly marked with the two distinct allomorphs, as exemplified in (8).[4]

(8)	mé-**ri**-ma	'win-**CAUS**-FUT.SG'	[LEL 06 4:151/El]
	mé-**r-ti**-ma	'win-**CAUS-CAUS**-FUT.SG'	[BF 08 1:113/El]
	ra'ičá-**ri**-ma	'speak-**CAUS**-FUT.SG'	[LEL 06 4:154/El]
	ra'ičá-**r-ti**-ma	'speak-**CAUS-CAUS**-FUT.SG'	[BF 08 1:113/El]

[4] The sequence *r-ti* consists of two separate exponents, and not a fused element *–rti*, since: i) each allomorph is found independently marking a modification of argument structure of the predicate; and ii) this sequence is also found in words where each allomorph introduces a causer argument.

noké-**ri**-ma	'move.APPL-**CAUS**-IMPF'	[SF 05 1:80/El]
noké-**r-ti**-a	'move.APPL-**CAUS-CAUS**-IMPF'	[BF 05 1:114/El]
bahí-**ri**-a	'drink-**CAUS-(CAUS)**-FUT.PASS'	[SF 04 1:100/El]
bahí-**r-ti**-po	'drink-**CAUS-(CAUS)**-FUT.PASS'	[BF 04 1:11/El]
aka-rá-**ri**-ma	'sandal-FACT-**CAUS**-FUT.SG'	[LEL 06 4:185/El]
aka-rá-**r-ti**-ma	'sandal-FACT-**CAUS-CAUS**-FUT.SG'	[SF 05 1:103/El]

An important property of causative doubling is that it is prosodically conditioned. As shown in (9), double suffixation is only possible with bases with (underlying) final stress (i.e., non-final stress bases do not display causative ME).

(9)	paník-**ti**-ma	'wash.hand-**CAUS**-FUT.SG'	[BF 08 1:114/El]
	*paníki-**r-ti**-ma	'wash.hand-**CAUS-CAUS**-FUT.SG'	
	opéš-**ti**-ma	'vomit-**CAUS**-FUT.SG'	[BF 08 1:114/El]
	*opéši-**r-ti**-ma	'vomit-**CAUS-CAUS**-FUT.SG'	
	bačím-**ti**-po	'sprinkle-**CAUS**-FUT.PL'	[BF 08 1:114/El]
	*bačími-**r-ti**-po	'sprinkle-**CAUS-CAUS**-FUT.PL'	
	očóp-**ti**-po	'stick-**CAUS**-FUT.PL'	[BF 05 1:113/El]
	*očópi-**r-t**i-po	'stick-**CAUS-CAUS**-FUT.PL'	

2.4 Multiple Suffixation of Applicatives

As mentioned above, there are three lexically restricted applicative suffixes, *-ni*, *-si* and *-wi*. Applicative stems built with one of these suffixes may optionally be further marked with the productive applicative suffix *–ki* (e.g., (10)). Forms with one applicative marker and forms with two applicative markers occur in free variation.

(10)	sú-**ni**-ma	'sew-**APPL**-FUT.SG'	[SF 05 1:80/El]
	sú-**n-ki**-ma	'sew-**APPL-APPL**-FUT.SG'	[SF 06 6:73/El]
	pá-**si**-ri	'throw-**APPL**-PST'	[LEL 06 6:77/El]
	pá-**s-ki**-ri	'throw-**APPL-APPL**-PST'	[LEL 06 6:77/El]
	wasará-**ni**-ma	'plow-**APPL**-FUT.SG'	[BF 08 1:92/El]
	wasará-**n-ki**-ra	'plow-**APPL-APPL**-POT'	[BF 08 1:92/El]
	riwí-**wi**-ma	'find-**APPL**-FUT.SG'	[BF 08 1:16/El]
	riwí-**w-ki**-ma	'find-**APPL-APPL**-FUT.SG'	[BF 08 1:16/El]
	rimé-**ni**-ma	'make.tortilla-**APPL**-FUT.SG'	[BF 05 1:111/El]
	rimé-**n-ki**-ma	'make.tortilla-**APPL-APPL**-FUT.SG'	[BF 08 1:93/El]

pakó-**ni**-ra	'wash-**APPL**-POT'	[BF 08 1:93/El]
pakó-**n-ki**-ra	'wash-**APPL-APPL**-POT'	[BF 08 1:93/El]

The second applicative is always the productive suffix *–ki*. The hypothetical, unattested forms in (11) illustrate how other applicative suffixes cannot be added to bases which already contain an applicative marker.

(11)	sú-**n-ki**	*sú-**n-si**	*sú-**n-ni**	*sú-n-wi	'sew-**APPL-APPL**'
	pá-**s-ki**	*pá-**s-ni**	*pá-**s-si**	*pá-s-wi	'throw-**APPL-APPL**'
	wasará-**n-ki**	*wasará-**n-si**	*wasará-**n-ni**	*wasará-n-wi	'plow-TR-**APPL-APPL**

Like causative doubling, multiple applicative suffixing is also subject to prosodic conditioning: non-final stress bases do not display applicative ME.

2.5 Summary

There are four different kinds of ME in CR, involving affixal exponents (causative doubling (§2.3) and applicative ME (§2.4)) or a combination of non-concatenative and affixal exponents (pluractionals (§2.1) and applicative stems (§2.2)). While divergent in one or more ways, each type of ME involves derivational morphology where each of the exponents realizes the exact same set of features. That is, no additional information is contributed by the second exponent, making the second exponent completely superfluous semantically.

3. Morphophonologically Motivated Multiple Exponence

There is independent morphotactic and morphophonological evidence for a hierarchical structure of the CR verb composed of six domains (depicted in Table 1) (Caballero 2008). A key characteristic of ME in CR is that it is confined to two specific domains in the verbal structure of the verb: the Inner Stem (pluractional, applicative stems) and the Syntactic Stem (causative doubling and applicative multiple marking).

I propose that ME is localized in two defined levels of the morphological structure because there is a set of properties that make the markers in these areas morphophonologically *opaque*, or less susceptible to morphological segmentation (Booij 2002, to appear).[5] Morphophonological opacity may be understood as a *gradient* property of morphological entities: the more 'bound' a marker is to its base (the less salient its juncture is), the more opaque it is. Factors contributing to a marker's high boundary strength include morphophonological fusion, low frequency and/or low productivity (Hay & Plag 2004:571). CR inner exponents in ME constructions are either unproductive (pluractional and applicative stem) or display a high degree of morphophonological fusion (reduced Causative and Applicative suffixes).

[5] It is not the case that these markers are opaque because of the morphological position they occupy (i.e., they are not diacritically marked).

Table 1: Verbal domains and the localized appearance of ME

	Marker	**Domain**	**Morphophonology**	**Stress properties**
(Root)	N Incorporation, number **pluractionality, valence stem allomorphy**	Inner Stem	Haplology, CL Imperative stress shift Round harmony	Stress-shifting
S1	Inchoative	Derived Stem	Imperative stress shift Round harmony	Stress-shifting
S2	Transtivizers			
S3	**Applicatives**	Syntactic Stem	Round harmony	Stress-neutral
S4	**Causative**			
S5	**Applicative**			
S6	Desiderative	Aspectual Stem	Round harmony	Stress-shifting/ stress-neutral
S7	Associated Motion			
S8	Auditory Evidential			
S9	Voice/Aspect/Tense	Finite Verb		Stress-neutral/ stress-shifting
S10	Mood			
S11	TAM			
S12	Deverbal morphology	Subord. Verb		Stress-neutral

These patterns receive a unified analysis in LPM/Stratal OT and OCM, where different domains or morphological subconstituents within the word may have different rankings. I propose that ME optimizes word structure, and that a second round of morphology turns a suboptimal (in this case opaque) morphological subconstituent into a well-formed subconstituent. The verbal zones depicted in Table 1 are mapped onto two different morphological domains with different phonological constraint rankings. A Stem 1 level, which includes the root plus first layer of affixation, is the domain of stress assignment. Constraints operating at this stem level are listed in (12).

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

The second domain, Stem 2, is a level where outputs are required to be vowel-final. This stem level contains the constraints in (13).

(13) FINAL-V: Every PrWd is vowel-final (counterpart of FINAL-C (McCarthy & Prince 1994:22)
*$CC_{[+VOICE]}$: After a consonant, consonants must not be voiced
DEP: Output segments must have input correspondents

PARSE-σ: Syllables must be parsed into feet.
MAX-IO: Every segment in the input has a correspondent in the output.

Finally, the constraint REALIZE-MORPH (Kurisu 2001) (defined in (14)) enforces the expression of input semantic features in output forms in all levels of evaluation.

(14) REALIZE-MORPH: Every morpheme has to be expressed in the phonological structure.

First, I address the cases of ME that are prosodically conditioned.

3.1 Prosodically Conditioned ME

The Syntactic Stem is the locus of the two prosodically conditioned cases of ME, causative doubling and applicative multiple marking. Suffixes in the Syntactic Stem are stress-neutral and within the domain of rounding harmony, properties that make them comparatively more fused with the root than suffixes in the outer zones or domains of the verb. ME in these cases occurs when the first allomorph is reduced by post-tonic reduction. The stem shape condition on derived Stems is that stress falls in a closed syllable. This is schematized in Table 2.

Table 2: Stem shape condition on derives stems with ME

Pattern	**Prosodic generalization**	**Examples**
Causative doubling	[... ˈ σ -C]–ti	[bučé-**r**]-**ti**-ma [aka-rá-**r**]-**ti**-ma
Multiple applicatives	[... ˈ σ -C]–ki	[sú-**n**]-**ki**-ma [pá-**s**]-**ki**-ri

I contend that phonological reduction (via posttonic vowel deletion) renders the inner suffixes less morphologically segmentable. These reduced exponents are part of a causative or applicative base which requires further suffixation, a second exponent, for morphophonological transparency. Reduction via posttonic syncope takes place in the Stem 1 level, the domain of stress assignment. Iambic feet are built from left to right through the ranking ALL-FT-L >> IAMB >> PARSE-σ. Posttonic syncope is modeled through the ranking PARSE-σ >> MAX. Free constraint ranking at the Stem 1 level between PARSE-σ and MAX, yields alternative outputs with posttonic deletion (Tableau (15)) and no posttonic deletion (Tableau (16)):

(15) Stem 1 level evaluation, Root *čipó* ‘bounce’ plus Causative (PARSE-σ >> Max)

	/čipó, -ri/	REALIZE-MORPH	PARSE-σ	MAX
a.	(či.pó.)-ri		*!	
☞ b.	(či.pó-r)			*
c.	(či.pó)	*!		

(16) Stem 1 level evaluation, Root *čipó* 'bounce' plus Causative (MAX >> PARSE-σ)

	/čipó, -ri/	REALIZE-MORPH	MAX	PARSE-σ
☞ a.	(či.pó.)-ri			*
b.	(či.pó-r)		*!	
c.	(či.pó)	*!		

The Stem 1 output with no deletion (*čipóri* in (16a)) does not require further suffixation in order to be a well-formed (i.e., self-standing) word, but the output with post-tonic deletion (*čipór* in (15b)) does. This reduced C-final Stem 1 output has a feature 'Causative' that percolates to the Stem 2 level. This input is evaluated with the ranking *$CC_{[+VOICE]}$, DEP, FINAL-V >> REALIZE-MORPH >> PARSE-σ (Tableau (17)).

(17) Stem 2 level evaluation, Stem 1 output *čipór* plus Causative

	/čipór, -ri/	*$CC_{[+VOICE]}$	DEP	FINAL-V	REALIZE-MORPH	PARSE-σ
a.	(či.pó.)ri		*!		*	*
☞ b.	(či.pór.)-ti					*
c.	(či.pó.)ri.-ti		*!			**
d.	(či.pór)			*!	*	
e.	(či.pór.)-ri	*!				

The Stem 1 output and the exponent added in the Stem 2 level are *codependent*: an opaque Stem 1 output is a 'morphomic' stem, a purely formal subconstituent of the word which is co-dependent with a suffix in the expression of a target meaning (i.e., Causative) (Aronoff 1994, Blevins 2003, Luis & Spencer 2005, Stump 2001, Inkelas & Zoll 2005).

Multiple suffixation of applicatives receives an analogous treatment in the analysis proposed here: a possible output at the Stem 1 level is a form with posttonic vowel deletion (*sú-n* 'sew-Appl') through the ranking PARSE-σ >> MAX, as illustrated in Tableau (18).

(18) Stem 1 evaluation, Root *sú* 'sew' + Applicative

	/sú, -ni/	REALIZE-MORPH	PARSE-σ	MAX
a.	(sú)-ni		*!	
☞ b.	(sú-n)			*
c.	(sú)	*!		

The Stem 1 output *sún* must then be submitted to a second round of morphology in order to be a well-formed constituent. In Tableau (19), the winning candidate (*sún-ki* in (19b)) satisfies the high ranked FINAL-V constraint.

(19) Stem 2 evaluation, Stem 1 output *sún* plus Applicative

	/sún, -ki/	DEP	FINAL-V	REALIZE-MORPH	PARSE-σ
a.	(sú.)ni	*!		*	*
☞ b.	(sún.)-ki				*
c.	(sú.)ni.-ki	*!			**
d.	(sún)		*!	*	
e.	(sún-k)		*!		

The interaction between Stem 1 and Stem 2 yields forms that contain a sharp juncture, a consonant final Stem followed by an affixal exponent which is aligned with a syllable rhyme.

3.2 Productivity conditioned ME

The analysis proposed above can be extended to those patterns of ME that are not prosodically conditioned. A claim of this paper is that ME of applicative and pluractional stems described above is motivated by the receding productivity of inner, non-concatenative markers. Recall how in applicative ME, the inner exponent does not get redundantly marked with an unproductive applicative marker, but only with the productive applicative *–ki* suffix (see (7) and (11) above). In a Stem 1 evaluation of an input root plus applicative, the constraint REALIZE-MORPH determines that the output candidate is *suwé* (b), the Applicative stem.

(20) Stem 1 evaluation, Root *suwi* 'finish off' plus Applicative

	/suwi, Appl/	REALIZE-MORPH	PARSE-σ	MAX
a.	(su.wí)	*!		
☞ b.	(su.wé)			

This Stem 1 output may be used as an optimal word form or it may be submitted to a Stem 2 level evaluation. In this later level, the ranking DEP, FINAL-V>>REALIZE-MORPH>>PARSE-σ favors the candidate with ME (candidate (b) in Tableau (21)).

(21) Stem 2 evaluation, Applicative stem + Applicative

	/suwé, -ki/	DEP	FINAL-V	REALIZE-MORPH	PARSE-σ
a.	(su.wé)			*!	
☞ b.	(su.wé.)-ki				*
c.	(su.wé-k)		*!		

The winning output form, *suwéki*, is a well-formed word that can be used by itself or undergo further morphological marking.

Finally, the pluractional pattern of ME, which involves mutation of a consonant stem and prefixation, is also motivated by receding productivity. Consonant mutation takes place at the Stem 1 level (Tableau (22)).

(22) Stem1 level, Root *kipá* 'snow' + Pluractional

	/kipá, Pl/	REALIZE -MORPH	PARSE-σ
a.	(ki.pá)	*!	
☞ b.	(ki.bá)		

The output (candidate (b)) is then evaluated in the Stem 2 level (Tableau (23)); a second pluractional exponent satisfies the high-ranked REALIZE-MORPH constraint.[6]

(23) Stem2 level, Stem1 output + Pluractional

	/kibá, Pl/	DEP	FINAL-V	REALIZE-MORPH	PARSE-σ
a.	(ki.bá)			*!	
☞ b.	(<i>-ki.bá)				

The only difference between pluractional realization and the other patterns of ME is that pluractional forms that display ME do not have an alternative form with no ME. Evaluation at the Stem 2 level for these forms can thus not be obviated.

In sum, I contend that the overarching mechanism generating ME in the Choguita Rarámuri verb is morphophonological opacity: ME arises when a morphological marker is difficult to parse and a second round of marking is required for the sake of morphological transparency/structural well-formedness.

4. Why is ME not Pervasive?

Given the analysis proposed in the previous section, we might ask what prevents the appearance of ME with any other potentially opaque (unproductive and/or phonologically reduced) affixes. In this section, I argue that general, independently needed restrictions prevent the appearance of ME in other morphological domains.

Other potentially opaque markers in CR are stress-neutral suffixes, since they never bear stress and may be affixed to a stress-final base and undergo V-deletion, the same environment where prosodically-conditioned ME is found. Consideration of unattested forms with hypothetical ME of one of these suffixes, Associated Motion, reveals the reason why these forms are not attested. Hypothetical ME of this marker (exemplified in (24)) would involve reduction of the first marker (through posttonic vowel deletion) and

[6] Third-syllable stress is modeled through a ternary constituent, a foot with a single (left-) adjoined syllable (Caballero 2005, 2008).

a second round of affixation, analogous to causative doubling and multiple applicative suffixation.

	Attested	Unattested (ME)	Gloss
(24)	siná-**s**-čane	*siná-**s-si**-čane	'scream-MOT(*-MOT)-EV'
	wikará-**s**-ka	*wikará-**s-si**-ka	'sing-MOT(*-MOT)-GER'
	ubá-**s**-nare	*ubá-**s-si**-nare	'bathe-MOT(*-MOT)-DESID'
	wikawá-**s**-pa	*wikawá-**s-si**-pa	'lose-MOT(*-MOT)-FUT.PASS'

There is no blocking or economy constraint involved: ME of Associated Motion would violate *[ss], a high-ranked constraint banning alveolar fricative geminates. In each case of potential but unattested ME there is a general phonotactic constraint that would be violated (Caballero 2008).

Attested ME patterns in this language involve two formally distinct exponents, where the outer marker is more morphophologically transparent than the inner marker. In other cases morphological opacity cannot be resolved since there are no morphological means of making these forms more transparent in a phonotactically licit fashion.

5. Conclusions and Implications

I have argued here for the existence in CR of a type of ME which has morphophonological sources. The broader generalization that can be drawn from this case is that the phenomenon of ME requires a new typology. In this new typology, we will find a subtype of redundant morphological marking where one of the exponents will present a certain degree of structural opacity, a strong morphological juncture. In addition, there will be no restrictions as to the types of morphological categories undergoing the process; since the source is morphophonological, both inflectional and derivational morphology may be susceptible to undergo ME. In the case of CR, a second exponent provides a clear cue to the morphological structure through optimal morpho-prosodic alignment with a syllable rhyme and a clear contrast with respect to the opaque marker. Other possible cases of this type of ME are found in Skou (Donohue 2003), Chichewa (Hyman & Mchombo 1992), and Jita (Downing 2005).

Phonological cues may be critical in enhancing a morphological juncture in a morphologically complex language like CR, which displays a high degree of morphophonological fusion. The role of syllable structure, phonotactics and the frequency and regularity of certain sequences for ease of parsing has been addressed in research concerned with learning word and morpheme segmentation (see Albright 2004 for discussion and references). Phonotactics and frequency/probability of junctures are also addressed in research concerned with parsing as a synchronic constraint in grammar (Hay 2003, Hay & Plag 2004; Broselow 2003). ME might be a morphophonological resource that speakers use in parsing complex morphology. ME provides optimal morphoprosodic alignment and a critical cue of a relevant juncture in this morphologically complex language.

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