Generalized Mora Affixation

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Main Claim In this talk, we argue that subtractive morphology (Horwood, 2001; Kurisu, 2001) is triggered by affixation of a morphemic mora which is only partially prosodically integrated. Our basic observation is that an affixal mora may be (non-)integrated into the prosodic structure of its base in different ways: In (3-a), it is fully integrated leading to lengthening or epenthesis (Davis and Ueda, 2006), in (3-b) the mora is dominated by a syllable node, but does not dominate a segment: this results in opacity (van Oostendorp, 2005) or shortening effects (Seiler, 2008). We argue that (3-c) is the structure characteristic of morphologically triggered subtraction. Following Classical Containment Theory (Prince and Smolensky, 1993), we assume that a segment which is not dominated by a prosodic word node is by definition not pronounced phonetically (thus the mora in (3-d) is fully 'deleted').

Data In contrast to instances of morphological truncation where a segmental string is mapped onto a fixed template and phonological material that does not fit into this template is removed, subtraction deletes some well-defined portion of a phonological string in order to mark a morphological category. This portion is in virtually all cases of morphological subtraction either the rhyme of the final syllable or the final coda consonant of a string. A typical example exemplifying the former pattern is plural formation in the Muskogean language Koasati (1), and the latter pattern can be found in the Uto-Aztecan language Tohono O'odham where the contrast between imperfective and perfective aspect is marked through subtraction of the final consonant (2).

Framework We adopt the Coloured Containment version of Optimality Theory (van Oostendorp, 2006) where underlying elements are distinguished from epenthetic material by morphological colour. As in Classical Containment, underlying material is never literally deleted, but retained in the output. Autosegmental nodes are invisible to phonetics if they are not dominated by another prosodic node. Slightly simplifying the turbidity-based plug-in to Classical Containment of van Oostendorp (2006), we assume that association lines are parametrically marked for whether they are visible for phonetics or not.

Analysis We argue that the exponent of a subtractive morpheme is always a morphological mora that associates to segmental material of its base. As shown by the tableau in (4), the floating mora in Koasati associates to the last vowel of the base by force of the constraint *FLμ (excluding (4-e)), but is not parsed into prosodic structure due to DEPS-μ, penalizing the insertion of a colourless association line that links morphologically coloured elements (excluding (4-f)). The vowel cannot receive pronunciation by virtue of retaining its association to its original mora because this would result in a structure where two root nodes dominate the vowel (under violation of 1ROOT, excluding (4-a)). The affix mora associates to the vowel and not to the base-final consonant to avoid a moraic coda consonant (due to $*\mu$/C excluding (4-b)). The consonant itself is deleted because otherwise a CONTIGUITY violation would result (4-d).

This analysis results in a straightforward factorial typology: Subtraction can either target base-final consonants (the major pattern in Tohono), the base-final mora (consonant or vowel, a minor pattern in Tohono), or the left-/rightmost vowel in the base including consonants intervening between the vowel and the base edge (the major pattern in Koasati) or excluding them (Hebrew, Bat-El 2002). Other constraint rankings result in the standard morphological lengthening/gemination pattern (e.g. in Alabama, Grimes 2002) or catalexis (e.g. the morphological shortening pattern in Eastern Franconian, Seiler 2008). Additional markedness constraints lead to cases of apparent vowel length polarity as exhibited for example in Western Nilotic (Wolf, 2005; Reh, 1993).

Discussion There are three substantial advantages of our analysis over approaches invoking arbitrary morphological operations (Anderson, 1992) or paradigmatic output-output constraints (as Horwood 2001): *First,* the mora affixation account explains the fact that subtractive morphology never targets onset consonants since moraic onset consonants are impossible (or at least extremely marked crosslinguistically, cf. Topintzi 2008). *Second,* it accounts for the local adjacency of subtraction to morpheme edges. *Third,* it allows to derive the fact that subtraction might lead to phonotactic patterns which are otherwise excluded in the language. Thus morphological subtraction of a final vowel in Icelandic deverbal action noun formation leads to consonant clusters which are impossible in non-truncated words in Icelandic (e.g. *klifra,* 'climb' → *klifr,* 'climbing', cf. Benua 1995 and references there).

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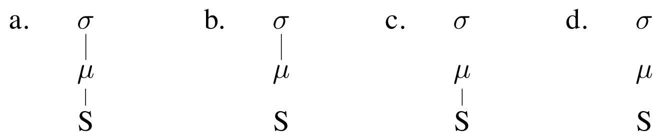
(1) *Koasati* (Martin 1988, Kurisu, 2001, 88)

pitáf-fi-n	pít-li-n	"to slice up the middle"
ataká:-li-n	aták-li-n	"to hang sth.
tiwáp-li-n	tíw-w-n	"to open sth."

(2) *Tohono O'odham* (Fitzgerald 1997, Horwood, 2001, 10)

Impf.	Perfect	
ʔí:ɨ	ʔíɨ	"drinking"
ɲɨ́ok	ɲɨ́o	"speaking"
mà:k	mà:	"gave"

(3)



(4) *Rhyme deletion: Koasati*

	pi t a f + μ	1ROOT	*FLμ	*μ/C	CONTIG	DEPμ-σ	PRS-S
	a. pi t a f (μ μ)	*!				*	
	b. pit a (f) (μ)			*!			*
☞	c. pit (a f) (μ)						**
	d. pit (a) f (μ)				*!		*
	e. pi t a f (μ unassociated)		*!				
	f. pi t a f (μ μ)					*!	

(5) *Constraints*

a. *μ/C: Consonants must not be moraic.

b. DEPS-μ: Morphologically coloured elements must not be associated by a colourless association line.

c. PARSE-μ: Every μ must be dominated by a syllable node.

d. *FLμ: Every μ must be associated with a segment.

e. 1ROOT: Every element must be dominated by maximally one root node (a node that is not dominated by another node).