Generalized mora affixation

Jochen Trommer and Eva Zimmermann

University of Leipzig

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mfm[18]

Assumption:

Morphology is always additive.

The Final Frontier: Subtractive Morphology

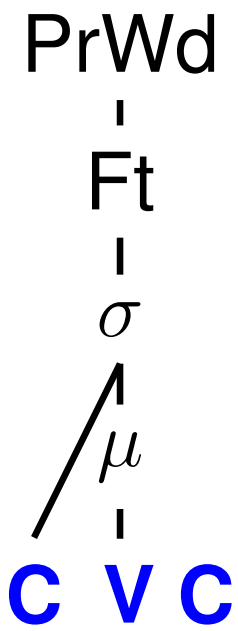
(1) **Koasati** (Martin 1988, Kurisu 2001)

Singular			*Plural*			
pitáf**áf**	-fi	-n	pít**ø**	-li	-n	“to slice up the middle”
ataká:**á:**	-li	-n	ataák**ø**	-li	-n	“to hang sth.”
tiwáp**áp**	-li	-n	tíw**ø**	-w	-n	“to open sth.”

. . . and similarly morphological vowel shortening & length polarity

Containment Theory: Deletion ≈ Non-Parsing

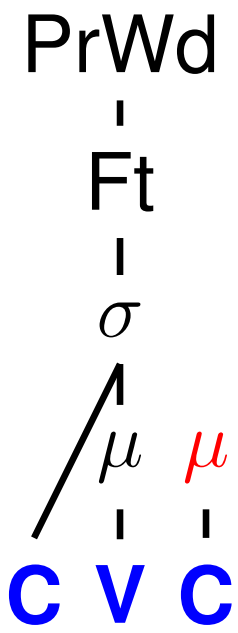
(Prince&Smolensky 1993)



⇒ [CV] at the surface

Subtraction as Mora Affixation

CVC + morphological μ:



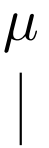
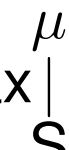
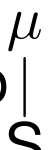
$\Rightarrow$ [CV] at the surface

Colored Containment Theory (van Oostendorp 2006)

- Phonological material of a specific morpheme has an unambigous color
- Insertion $\approx$ Addition of colorless material
- Deletion $\approx$ Marking of morphological material as phonetically invisible

Phonetically (In)Visible I

Association lines obey containment: they cannot be deleted and are marked for whether they are phonetically visible or not.

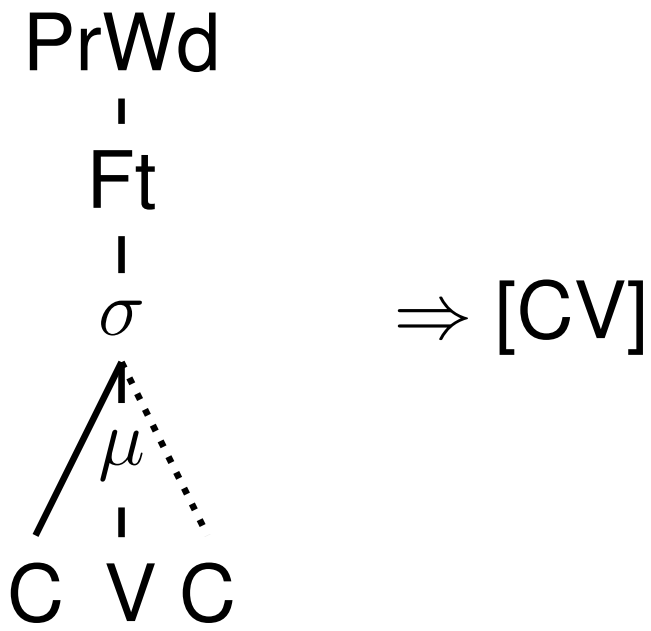
Underlying association line		Inserted association line
phonetically visible:	phonetically invisible:	phonetically visible:
		
	violates Max 	violates Dep 

Phonetically (In)Visible II

Visibility of segments for phonetics is governed by (2):

(2) **Axiom of Phonetic Visibility**
All and only the phonological nodes which are dominated by the designated root node through an uninterrupted path of phonetically visible nodes and association lines are pronounced.

Containment Theory: Deletion ≈ Non-Parsing



⇒ The final C is not integrated under the highest prosodic node through an uninterrupted path of phonetically visible nodes and association lines

Types of Quantity Manipulating Morphology

1. Lengthening (Vowel Lengthening, gemination)
2. Insertion of epenthetic segments
3. Vowel Shortening
4. Subtractive Morphology
5. Length Polarity

Quantity-Manipulating Morphology by Generalized Mora Affixation

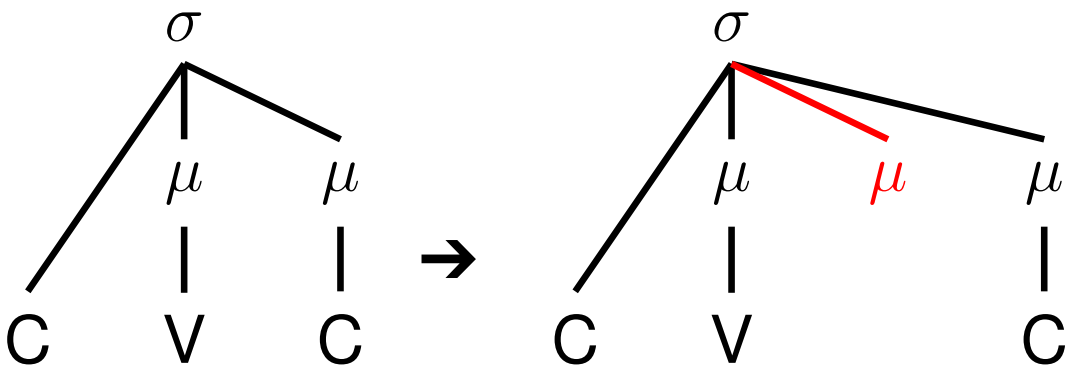
Standard Assumption:

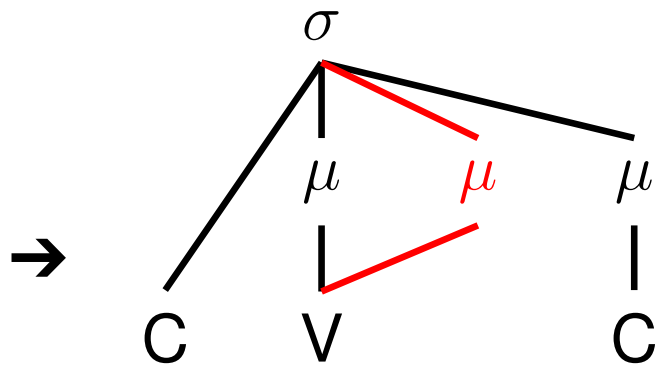
Augmentative quantity-manipulating morphology derives from mora affixation

Our Claim:

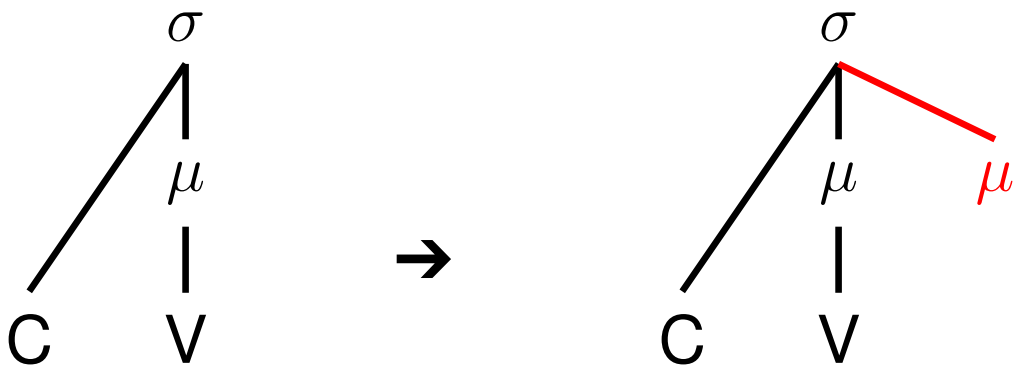
So does subtractive quantity-manipulating morphology.

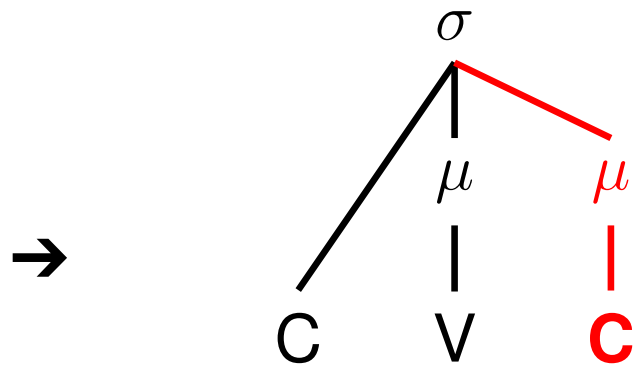
Lengthening (cf. Davis & Ueda 2002)



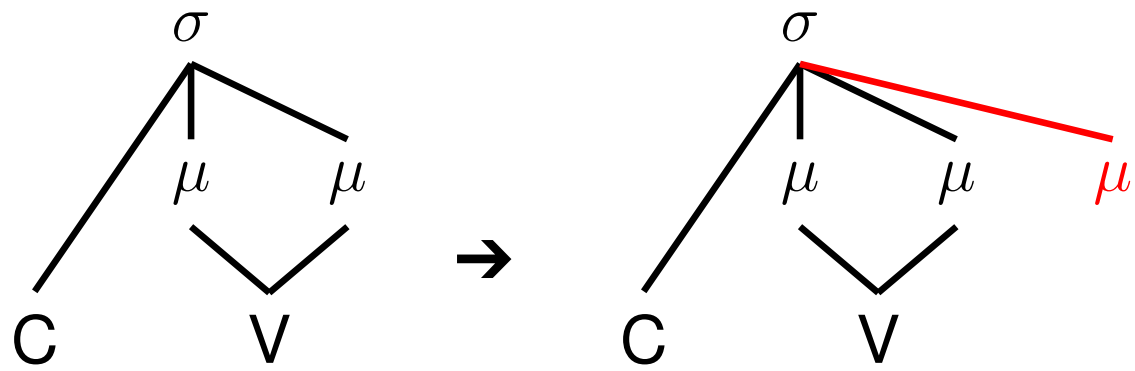


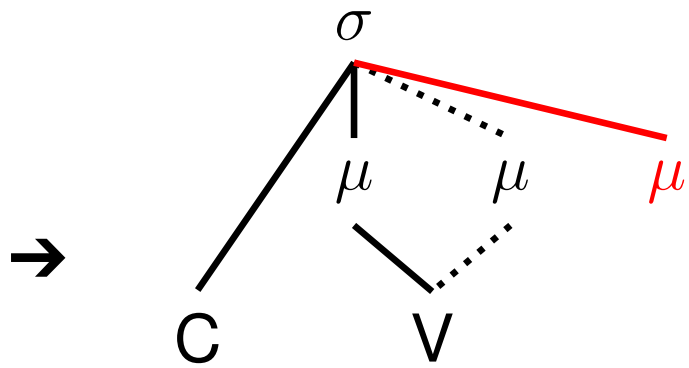
Insertion (cf. Davis & Ueda 2002)



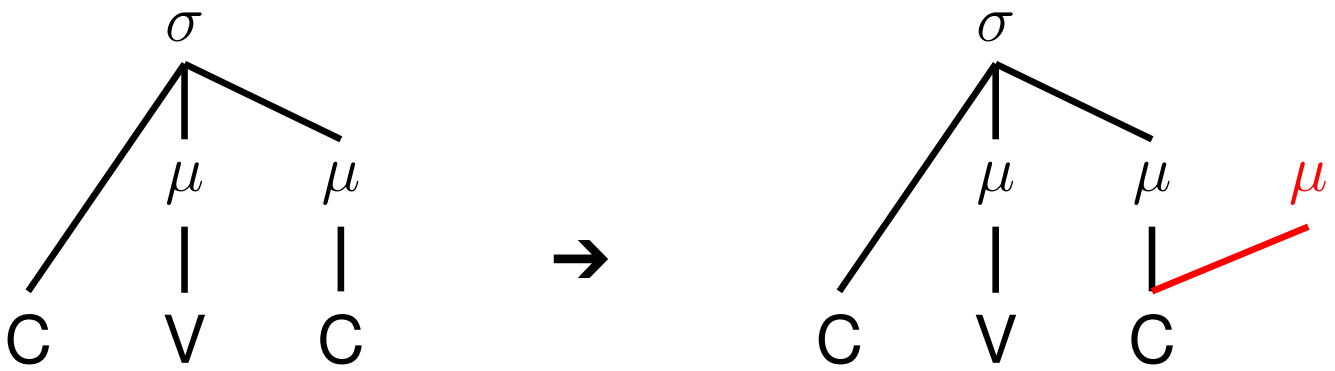


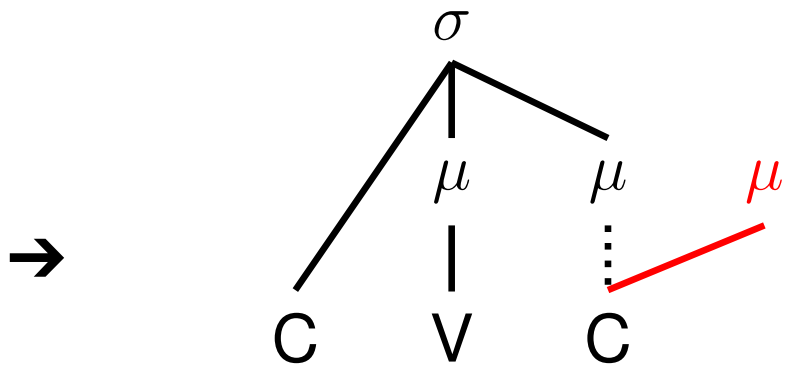
Vowel Shortening (by catalexis, cf. Seiler 2008)





Subtraction





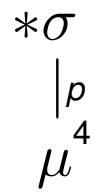
Faithfulness Constraints Ensuring Realization of Morphemic μ

(3) MAX-μ:
Assign a violation mark for every μ that is not dominated (phonetically or morphologically) by a syllable node.

(4) *FI-μ:
Assign a violation mark for every μ that does not dominate (phonetically or morphologically) any segment.

General Constraints on Prosody

(5)



Assign a violation mark for every syllable that dominates more than three moras phonetically.

Assign a violation mark for every vowel that is dominated by more than two moras.

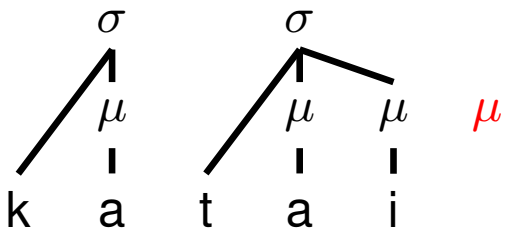
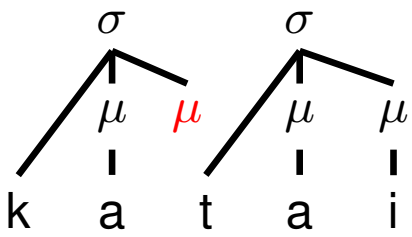
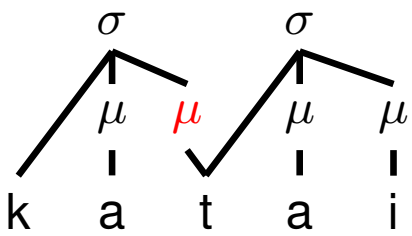
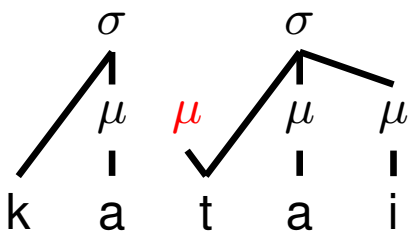
Assign a violation mark for every node that has more than one root (=nodes that are not dominated by another node).

Augmentation in Shizuoka-Japanese

(6) **Emphatic Adjective formation** (Davis & Ueda 2002)

Adjective	*Emphatic Form*	
hade	ha**n**de	“showy”
ozoi	o**n**zoi	“terrible”
nagai	na**ŋ**gai	“long”
katai	ka**tt**ai	“har”
osoi	o**ss**oi	“slow”
takai	ta**kk**ai	“high”
zonzai	z**o:**nzai	“impolite”
suppai	s**u:**ppai	“sour”
okkanai	**o:**kanai	“scary”

(7)

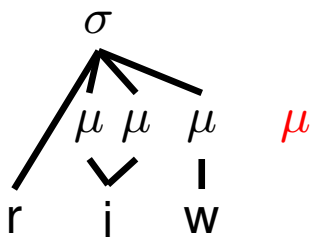
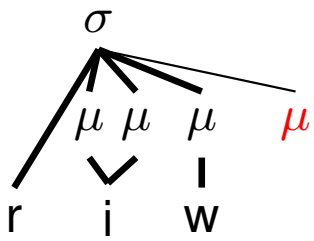
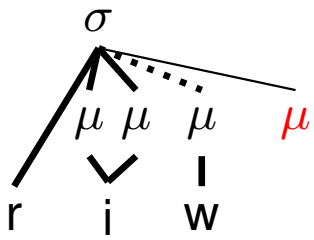
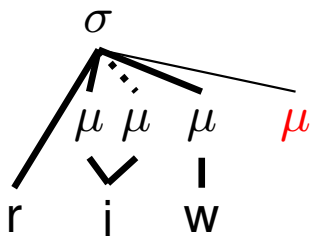
	MAX-μ	*Fl-μ	Dep$^{\mu}_{\mathrm{S}}$
	*!	*	
		*!	
☞ 			*
	*!		

Vowel Shortening in Anywa

(8) **Patient deletion** (Reh 1993)

Root		*Derived form*
Underlying long vowels: shortening		
r**i:**w-	“to lay sth. crosswise”	r**i**w-
m**a:**DH- ([-ATR])	“drink sth.”	m**a**DH- ([+ATR])
c**ʊ:**l- ([-ATR])	“pay sth.”	c**ʊ**D- ([+ATR])
Underlying short vowels: no effect		
cam- ([-ATR])	“eat sth.”	cam- ([+ATR])
ŋɔl- ([-ATR])	“cut sth. off”	ŋɔl- ([+ATR])

(9)

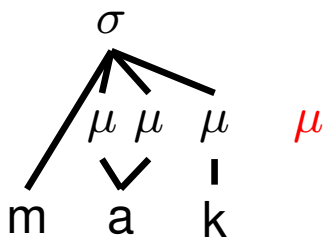
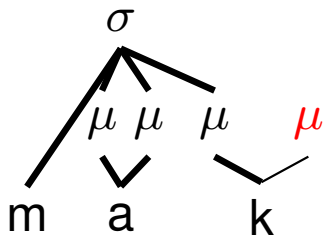
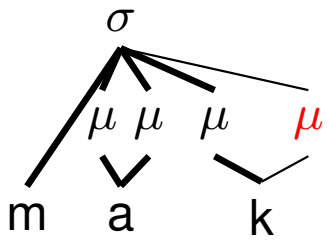
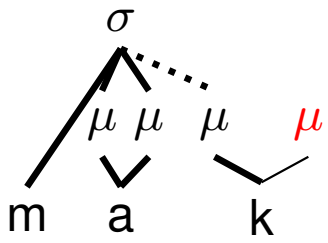
	MAX-μ	$*\sigma$ | p μ^4	MAX-S	*FI-μ
	*!			*
		*!		*
			*!	*
☞ 				*

Subtractive Morphology in Tohono

(10) **Perfective formation** (Fitzgerald 1997, Horwood 2001)

Imperfect	*Perfect*	
bisc**k**	bisc	“sneezed”
ñeo**k**	ñeo	“spoke”
ma:**k**	ma:	“gave”

(11)

	*Fl-μ	*$_{R}$S$_{R}$	Dep σ|μ	MAX-μ
	*!			*
		*!		*
			*!	
☞ 				*

Subtractive morphology in Koasati

(12) **Plural formation of verbs** (Horwood 2001, Kurisu 2001)

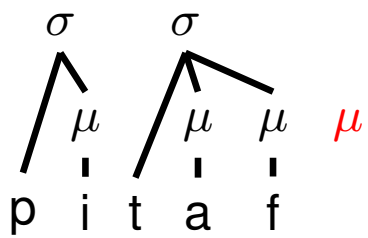
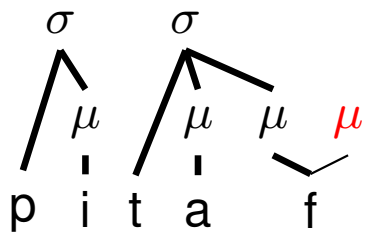
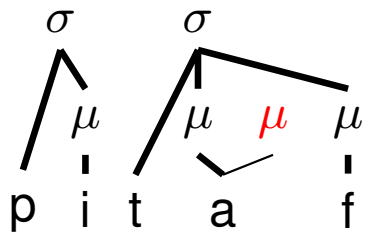
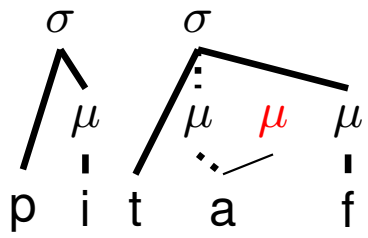
Singular		*Plural*
pit**áf**-fi-n	pít-li-n	“to slice up the middle”
atak**á:**-li-n	aták-li-n	“to hang sth.
tiw**áp**-li-n	tíw-w-n	“to open sth.”

Rhyme deletion in Koasati

The “subtracting” mora dominates the final stem *vowel*, not the coda (as in Tohono).

(13) $*^{\mu}_{\mu}C_{\mu}$:
Assign a violation mark for every consonant that is dominated (phonetically or morphologically) by two μ.

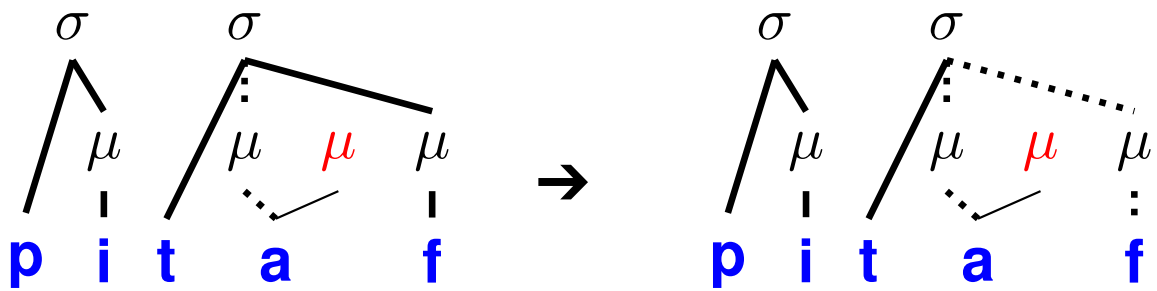
(14)

	*Fl-μ	*$_{\mu}$C$_{\mu}$	*$_{R}$S$_{R}$	MAX-S
	*!			
		*!	*	
			*!	
☞ 				*

Contiguity (e.g. McCarthy & Prince 1995, Landmann 1999)

A CONTIG constraint demands that "deletion" inside a contiguous string is impossible: if the stem-internal vowel remains phonetically uninterpreted, the final C must remain unparsed as well:

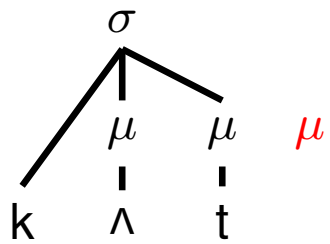
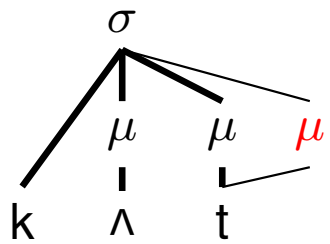
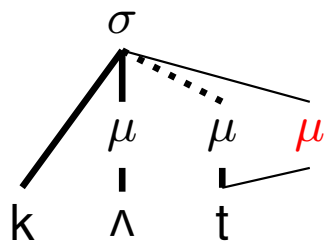
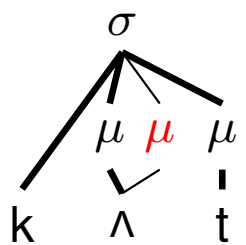
(15) CONTIGUITY
Assign a violation mark for every instance of a phonetically uninterpreted segment that is not at the edge of a string.

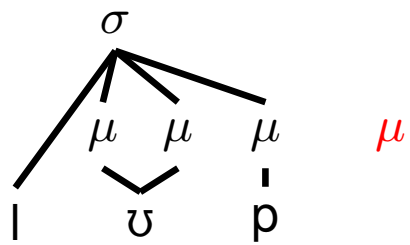
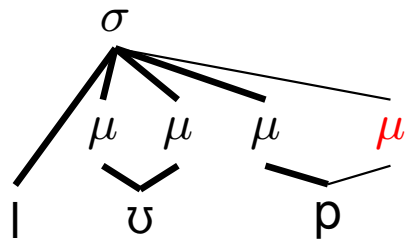
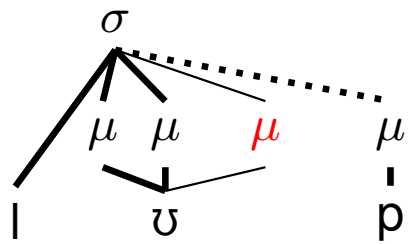
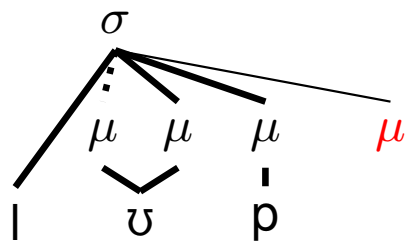


Length Polarity in Päri

(16) **Multiplicative verb stems in Päri** (Andersen 1989)

Stem		*Multiplicative*
Short stem vowels: lenghtening		
a-y**a**p	“open”	a-**ya:**mb-ɪ
a-nhɔth	“suck”	a-nh**ɔ:**ndh-ɪ
a-y**ɪ**k	“make”	a-y**ɪ:**ŋg-ɪ
a-k**ʌ**t	“plait”	k**ʌ:**nd-ɪ
Long stem vowels: shortening		
a-l**ʊ:**p	“speak”	a-l**ʊ**p-ɪ
a-kw**a:**n	“count”	a-kw**a:**nd-ɪ
a-r**ɪ:**th	“sew”	a-r**ɪ**th-ɪ
a-w**a:**ŋ	“burn”	a-w**a**ŋg-ɪ

	MAX-μ	$*\sigma$ | p μ^4	$^*_\mu C_\mu$	Max σ | μ
	*!			
			*!	
			*!	*
☞ 				

	MAX-μ	$*\sigma$ |p μ^4	MAX-S	$*\mu^3$ | V	$^*_\mu C_\mu$	Max σ | μ
	*!					
		*!			*	
			*!	*		
☞ 						*

Conclusion

- subtractive morphology is triggered by affixation of a morphemic mora which is only partially prosodically integrated

- subtractive or shortening effects in morphology therefore follow from the very basic mechanisms and assumption necessary for well-known cases of mora augmentation

Plural in Eastern Franconian (Seiler 2008)

- in this Upper German dialect of the Taubergrund, length of the stem vowel distinguishes singular and plural forms

(17) **Eastern Franconian Nouns**

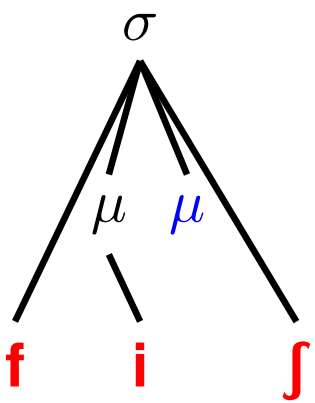
Sg		*Pl*
ri:s	“crack”	ris
fi:ʃ	“fish”	fiʃ
ʃni:ds	“cut”	ʃnids
fle:k	“blot”	flek

- Seiler (2008) argues, that it this is not an instance of morphological lengthening to form the singular, but rather **the absence of expected lengthening** in the plural

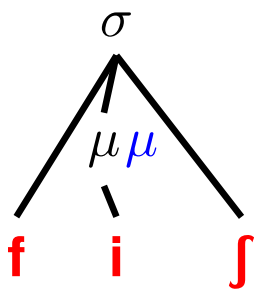
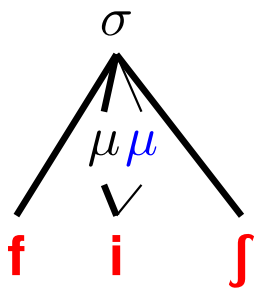
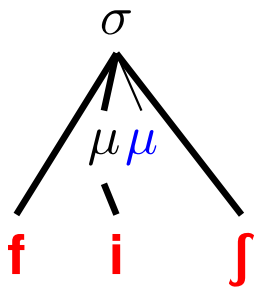
Seiler's analysis of Eastern Franconian

- codas are non-moraic and there is a minimal word requirement of 2 μ
- this predicts lengthening in monosyllabic forms without a long V: fiʃ$\rightarrow$ fi:ʃ
- and this expected phonological lengthening is absent in the plural forms since **a catalectic mora** (Kager 1995, Kiparsky 1991) is affixed (and fulfills the 2-μ minimality requirement):

(18) **EF plural nouns in Seiler 2008**



(19)

	*$(\mu)_{\text{PRWD}}$	*Fl-μ	Dep$^{\mu_{\text{Af}}}$-S	Max-μ
	*!	*		*
			*!	
☞ 				*