Templates as affixation of segment-sized units: the case of Southern Sierra Miwok

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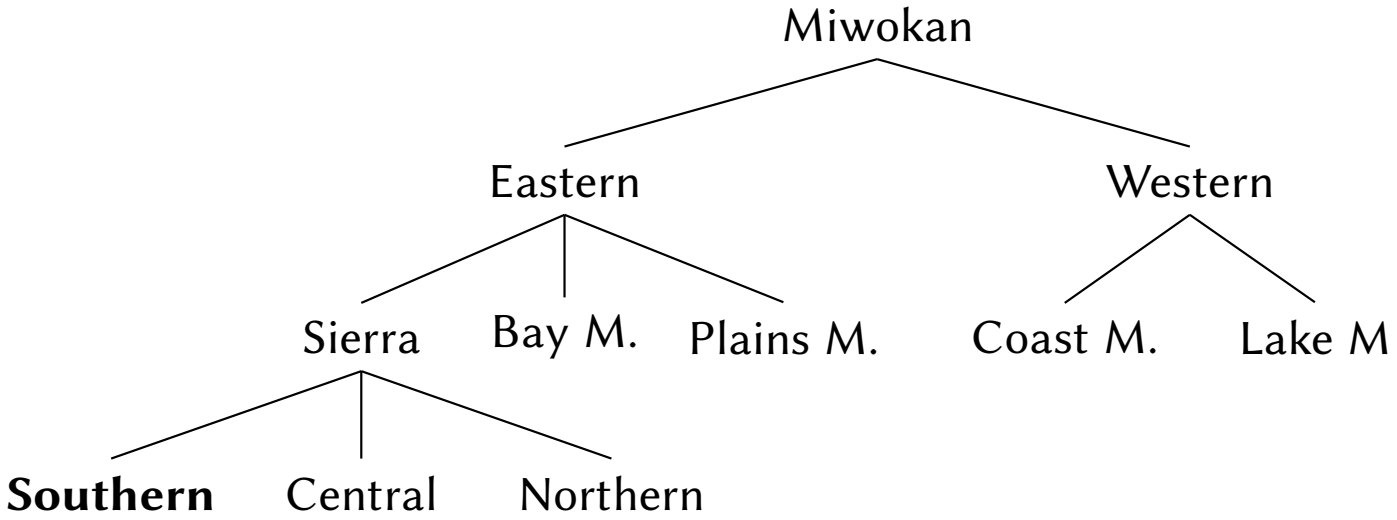
Main Claim

- templatic effects in Southern Sierra Miwok (SSM) follow from affixation of moras and underspecified segments
- this avoids the assumptions of a syllabified X-Slots representation a previous analysis of SSM argue for (Sloan, 1991)

Affixation of segment-sized phonological elements predicts 'templatic effects' over whole strings of segments

Southern Sierra Miwok

(1) *Miwokan (Penutian) family tree*



- 7 speaker in 1994 (Hinton 1994)
- described in Freeland (1951) and Broadbent (1964)
- analyses of lengthening phenomena in Sloan (1991), Brown (2004)

‘Templates’ in SSM

(2) a. halːik-iH-hːY-ʔ (Sloan 1991, pp.152-154)
‘he used to hunt’

b. halik-meh-nY-haHk-te-ʔ
‘I was hunting on my way’

c. halki-paH
‘a good hunter’

d. haːlik-teː-nY
‘to hunt along the trail’

- many suffixes in SSM require that the roots to which they attach must conform to a particular shape: **template-requiring affixes**
(cf. also Yawelmani, e.g. Archangeli 1991)

2. The Data

Three LH templates as a challenge for theoretical analysis

Three classes of LH-requiring affixes (Sloan 1991, pp.172-177)

(3) *Affix –peH 'agentive'*

a.	halik-peH	'hunter'	
b.	ʔokoj-peH	'a nurse'	class I
c.	liwaʔ-peH	'speechmaker'	➡ CVCVC
d.	kotoʔ-peH	'guide'	

(4) *Affix –t 'to do what is characteristic of . . . '*

a.	wyliː-t	'to flash, of lightening'	
b.	paTyː-t	'to take, accept'	class II
c.	puluː-t	'to dip up'	➡ CVCVː
d.	moliː-t	'shade'	

(5) *Affix –na 'benefactive'*

a.	kojow-na	'to tell for someone'	class III
b.	hekaː-na	'to clean for someone'	➡ CVCVC or
c.	juwal-na	'to stir for someone'	CVCVː
d.	TeTyː-na	'to gather for someone'	

Three classes of LH-requiring affixes (Broadbent 1964, Sloan 1991

(6) *LH templates: examples*

		followed by class I affix	followed by class II affix	followed by class III affix
Biconsonantal stems				
a.	liwːa	liwaʔ	liwaː	liwaː
b.	pelːe	peleʔ	peleː	peleː
c.	koːl	koluʔ	koluː	koluː
Three-consonantal stems				
e.	wyliːp	wylip	wyliː	wylip
f.	halki	halik	haliː	halik
g.	wyks	wykys	wykyː	wykys

- degemination, vowel shortening, consonant deletion, insertion of /y/ or /ʔ/, vowel lengthening or CV metathesis apply to ensure that the stem conforms to the templatic requirement

Various strategies to achieve LH template

(7) *Phonological changes*

example			meta.	+ ʔ	+ y	short.	C-del.	leng.	degem.
a.	ʔamla	ʔamal (I)	✓	✗	✗	✗	✗	✗	✗
b.	wyks	wykys (I)	✗	✗	✓	✗	✗	✗	✗
c.	wyliːp	wylip (I)	✗	✗	✗	✓	✗	✗	✗
d.	helaːj	helaː (II)	✗	✗	✗	✗	✓	✗	✗
e.	hekːa	hekaʔ (I)	✗	✓	✗	✗	✗	✗	✓
f.	hoːja	hojaʔ (I)	✗	✗	✓	✓	✗	✗	✗
g.	polat	polaː (II)	✗	✗	✗	✗	✓	✓	✗
h.	hekːa	hekaː (II/III)	✗	✗	✗	✗	✗	✓	✓
i.	cyːm	cymyʔ (I)	✗	✓	✓	✓	✗	✗	✗
j.	cyːm	cymyː (II)	✗	✗	✓	✓	✗	✓	✗
k.	pult	puluː (III)	✗	✗	✓	✗	✓	✓	✗

Three LH templates in SSM

(8) *The three LH templates*

	biconsonantal stem	three-consonantal stem
class I requires	CV.CVC	CV.CVC
class II requires	CV.CVː	CV.CVː
class III requires	CV.CVː	CV.CVC

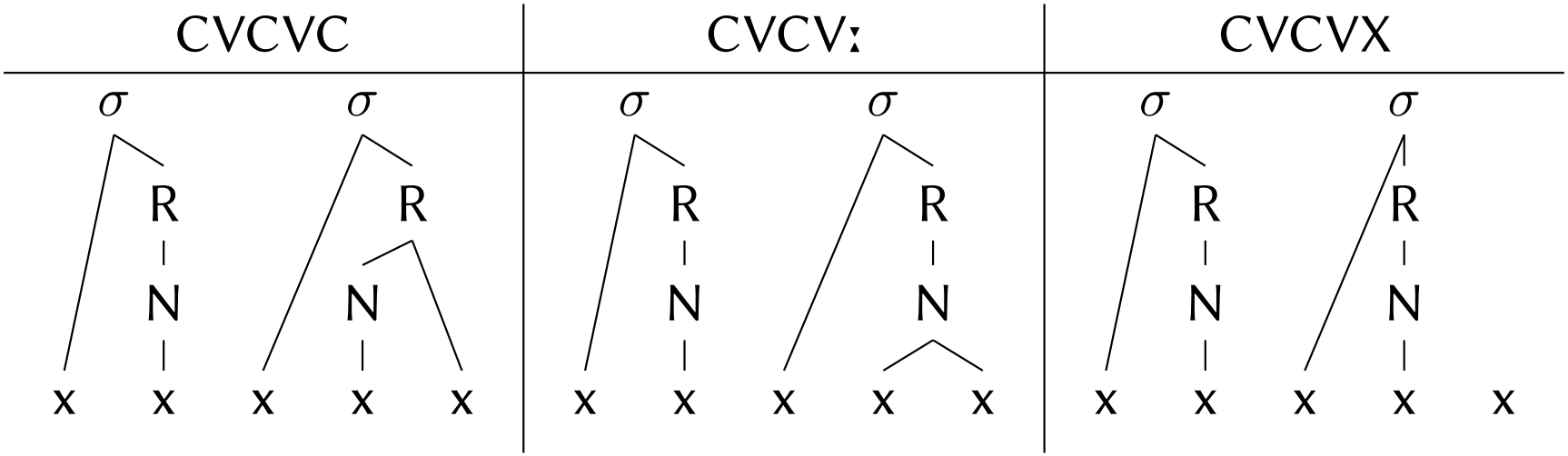
Representing the three LH templates?

- in standard moraic theory, light (μ) and heavy (μμ) syllables are distinguishable but the difference between heavy CVC and CVː cannot be coded

The analysis in Sloan (1991)

- the need to distinguish C- and V-final stems (class I/II) is taken as an argument for X-Slot theory and the LH templates are represented as (partially) syllabified sequences of X-Slots

(9) *LH templates: representation in Sloan (1991)*



3. Analysis

Predicting the templatic effects in SSM through affixation of segment-sized units

Avant: Iambic lengthening (Callaghan 1978, Hayes 1995)

- main stress in SSM is always on the first heavy syllable and must be on the first or second
- only heavy syllables are stressable

LH templates as affixation of segment-sized units

1. **Prefixation of a μ**
   moraic overwriting: the first syllable is light
2. **Suffixation of defective C/V segments in class I/II**
   defective segments specified as C or V must be realized stem-final

3.1. Prefixation of a μ

❶ A prefixed mora

causes the first σ to be short.

A prefixed μ...

- affixation of moras is proposed in various analyses of non-concatenative morphology
  (e.g. Davis&Ueda 2002, Grimes 2002, Davis Ueda 2006, Seiler 2008 or Zimmermann&Trommer 2010)

- must be realized at the left edge of the stem,
  i.e. dominate the first vowel

A prefixed μ...

- is the only possible μ in a syllable:

(10) DepLink-μ]$_\sigma$ (e.g. Morén 1999 for DepLinkμ)
Assign a violation mark for every inserted association line between μ and a segment that is not at the right edge of a syllable.
(=DL])

- 'inserted' = an association line that was not present in the input
- this faithfulness constraint demands that modifications of the prosodic structure are preferred at the right edge of a syllable
  ➡ prominence by position

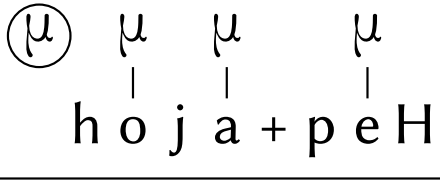
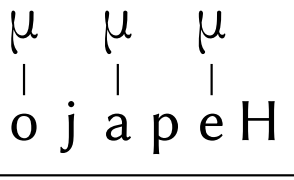
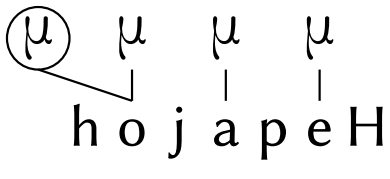
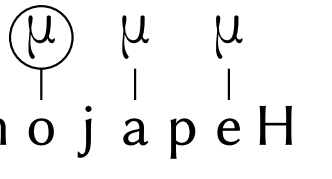
Constraints ensuring realization of μ

MAX-μ
Assign a violation mark for every μ in the input without an output correspondent.

MAX-μ_{AF}
Assign a violation mark for every affix μ in the input without an output correspondent.

Prefixation of a mora

(11) *Moraic Overwriting*

	MAX-μ_{AF}	DL]	MAX-μ
			
a. 	*!		*
b. 		*!	
(☞) c. 			*

(underlyingly unassociated μ are circled)

Constraints responsible for iambic lengthening

ALL-FT-L (McCarthy&Prince 1993)

Assign a violation mark for every left edge of a foot that is not aligned with the left edge of a prosodic word.

RHT:I (Kager 1993)

Assign a violation mark for every foot with non-final prominence.

STRESS-TO-WEIGHT (Kager 1999)

Assign a violation mark for every stressed syllable that is not heavy (=2μ).

DEP-μ (e.g. Morén 1999)

Assign a violation mark for every μ in the output that has no input correspondent.

PARSE-σ (Prince&Smolensky 1993, McCarthy&Prince 1993)

Assign a violation mark for every syllable that is not parsed into a foot.

Iambic Lengthening

...and if the first σ is light, the second is necessarily heavy!

(12) *Iambic Lengthening in SSM*

μ + hojapeH		ALL-FT-L	RHT:I	Stress-to WEIGHT	DEP-μ	PRS-σ
a.	ho$^{\mu}$(ja.péH)	*!		*		*
b.	(hó$^{\mu}$.ja)peH		*!	*		*
c.	(ho$^{\mu}$.já)peH			*!		*
d.	(hó:$^{\mu}$)ja.peH				*	**!
☞ e.	(ho$^{\mu}$.já:)peH				*	*

(if an underlyingly unassociated μ links to an output segment: notated as X$^{\mu}$)

3.2. Suffixation of C/V nodes

❷ Suffixation of defective C/V segments in class I/II

ensure that the stem must end in a C/V

Defective C/V nodes...

- defective segmental root nodes are assumed to result in mutation, reduplication or insertion
  (e.g. Bye&Svenonius to appear, Bermúdez-Otero to appear)

- in SSM, they have a minimal feature specification characterizing them as either obstruents/sonorants/glides or as vowel

(13) [+vocalic] (Padgett 2007, Nevins&Chitoran 2007)
=Absence of a narrow constriction among the articulators

(14) *Natural classes given [±cons] and [±+vocalic]* (Nevins&Chitoran 2007)

obstruents		[+cons][−voc][−son]
liquids, nasals		[+cons][−voc][+son]
vowels		[−cons][+voc][+son]
glides		[−cons][−voc][+son]
illicit	*	[+cons][+voc]

Defective C/V nodes...

- specifications for the missing features are required by constraints like HavePlace

(15) *Example: Representation for suffix class I /–peː/*

●	●	●
	+cons	–cons
	–son	+son
-voc	–voc	+voc
	–cont	+cont
	–nas	–nas
	LAB	DORS

➡ abbreviated as: [-voc] p eː

Defective C/V nodes...

- are realized

	as underspecified default segment, or	as fused segment
	$h_1o_2j_3a_4$ + $\bullet_x$ [-voc]	$p_1o_2l_3a_4t_5$ + $\bullet_x$ [-voc]
	↓	↓
	$h_1o_2j_3a_4ʔ_x$	$p_1o_2l_3a_4t_{5,x}$
violates:	e.g. HAVEPLACE	UNIFORMITY

Defective C/V nodes...

- are part of the following suffix and must be realized at the right edge of the stem

(16) O-Contiguitiy (=O-Cont) (Landmann 2002)
Assign a violation mark for every instance where phonological portions in the output that belong to the same morpheme do not form a contiguous string. ('No M-internal insertion.')

Constraints responsible for iambic lengthening

MAX-S_{AF}
Assign a violation mark for affix segment in the output without an input correspondent.

IDENT-[VOCALIC] (=ID-[VOC]) (McCarthy&Prince 1995+1999)
Assign a violation mark if an input segment corresponds to an output segment with a different value for [±voc].

HAVEPLACE (=HAVPL) (e.g. Padgett 1995, McCarthy 2008)
Assign a violation mark for every segment that has no place specification.

UNIFORMITY (=UNIF) (McCarthy)
Assign a violation mark for every output segment that corresponds to more than one input segment.

Demand to end in a C: realization of a default segment

(17) *Realization of a defective C*

μ + $h_1o_2j_3a_4$ + $\overset{\bullet_x}{[\text{-voc}]}$ p_ye_z	Max-S_{Af}	O-Cont	Id-[voc]	HavPl	Unif
a. $h_1o_2{}^{\mu}.j_3\acute{a}{:}_4.p_ye_z$	*!				
b. $h_1o_2{}^{\mu}.j_{3,x}\acute{a}{:}_4.p_ye_z$		*!			*
c. $h_1o_2{}^{\mu}.j_3\acute{a}{:}_{4,x}.p_ye_z$			*!		*
☞ d. $h_1o_2{}^{\mu}.j_3\acute{a}_4\text{ʔ}_x.p_ye_z$				*	

3.2. Satisfaction of the templatic requirement

Different phonological strategies apply
to ensure satisfaction of the templatic requirement

Summarizing the ranking

(18)

Moraic Overwriting results in LH

μ + hekːa	All-Ft-L	RhT:I	Stress-to Weight	Max-μ_{AF}	DL]	Dep-μ
a. hekːa				*!		
b. he$^{\mu}$ka			*!			
☞ c. he$^{\mu}$kaː						*

Summarizing the ranking

(19)

C/V must be realized in final position

μ + hoja + $\bullet_x$ [-voc] peH	LH	MAX-S_{AF}	O-CONT	ID[VOC]	HAVPL	UNIF
a. ho$^{\mu}$japeH		*!				
b. ho$^{\mu}$j$_x$apeH			*!			*
c. ho$^{\mu}$ja$_x$peH				*!		*
☞ d. ho$^{\mu}$ja$\text{ʔ}_x$peH					*	*

Example I: Insertion of /y/

(20) wyks *realized as* wykys *before class I suffix*

μ + wyks + $\bullet_x$ [-voc] kuH	LH	C/V	HavPl	Unif	Max-C	Lin
a.* wýks.kuH	Max!	Max				
b.* wý$^{\mu}$ks.$_x$kuH	DL]!			*		
c. wý$^{\mu}$k.syʔ$_x$.kuH	DL]!		**			
☞ d. wy$^{\mu}$.kýs.$_x$kuH			*	*		

(Nota that CCC cluster are independently impossible in SSM)

Example II: metathesis

(21) ʔamla *realized as* ʔamal *before class I suffix*

μ + ʔamla + $\bullet_x$ [-voc] kuH	LH	C/V	HavPl	Unif	Max-C	Lin
a. ʔá$^{\mu}$m.l$_x$a.kuH	DL]!	Cont		*		
b. ʔá$^{\mu}$.l$_x$a.kuH	StW!	Cont!		*		
c. ʔá$^{\mu}$.laʔ$_x$.kuH			*!		*	
☞ d. ʔa$^{\mu}$.mál$_x$.kuH				*		*

Example III: Shortening, insertion of /y/ and /ʔ/

(22) cy:m *realized as* cymyʔ *before class I suffix*

μ + cy:m + $\bullet_x$ [-voc] kuH	LH	C/V	HavPl	Unif	Max-C	Lin
a.* cý:$^{\mu}$m$_x$.kuH	DL]!			*		
b. cý$^{\mu}$m$_x$.kuH	DL]!			*		
c. cy$^{\mu}$.m$_x$ý.kuH	StW]!	Cont!	*	*		
☞ d. cy$^{\mu}$.mýʔ$_x$.kuH			**			

(*CV:C syllables are independently impossible in SSM)

Example IV: C-Deletion

(23) hela:j *realized as* hela: *before class II suffix*

μ + hela:j + $\overset{\bullet_x}{[+voc]}$ t	LH	C/V	HavPl	Unif	Max-C	Lin
a. $he^{\mu}.la:_x jt$		Cont!		*		
b. $he^{\mu}.la:j_x t$		Id!		*		
☞ c. $he^{\mu}.la:_x t$				*	*	

4. Broaden the view

Affixes triggering lengthening in SSM

Lengthening suffixes in SSM

- recall that DepLink-μ] results in overwriting if a μ is prefixed
- but there are actually affixes that trigger lengthening, i.e. where a μ is apparently added to the stem!

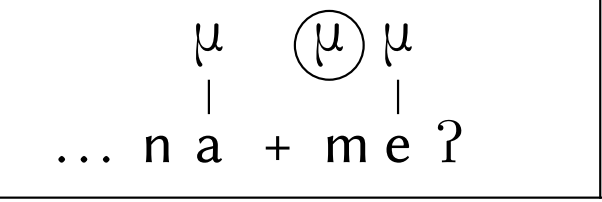
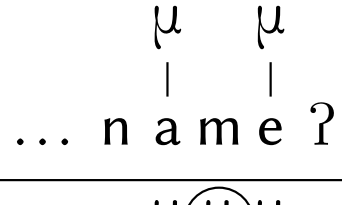
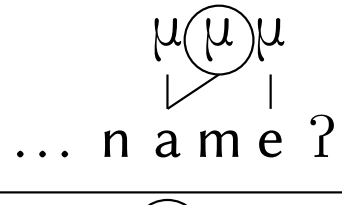
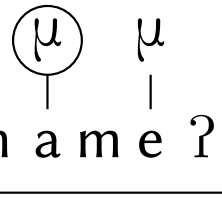
(24) *Lengthening suffixes in SSM* (Bradbent 1964:48, 106)

a. ʔenup-ːeniːte-ʔ
   ʔenupːeniːteʔ
   'I chased you'

b. kelːa-na-ːmeʔ
   kelːanaːmeʔ
   'It snowed on us'

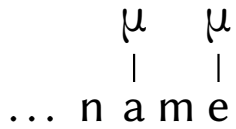
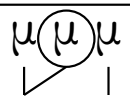
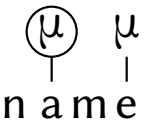
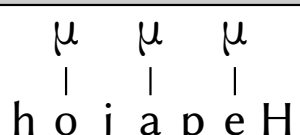
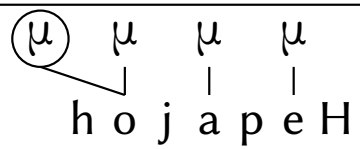
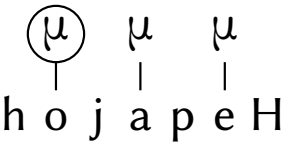
Lengthening suffixes in SSM

(25) *A floating μ in the representation of a lengthening suffix*

	Max-μ_{AF}	DL]	Max-μ
			
a. 	*!		*
☞ b. 			
c. 			*!

Moraic prefixes overwrite and moraic suffixes lengthen

(26)

		MAX-μ_{AF}	DL]	MAX-μ
Lengthening				
a.		*!		*
☞ b.				
c.				*!
Overwriting				
a.		*!		*
b.			*!	
☞ c.				*

Conclusion

- templatic effects in Southern Sierra Miwok (SSM) are the consequence of the affixation of moras and underspecified segments
- this analysis is based exclusively on the affixation of segment-sized units and avoids the assumptions of syllabified X-Slot positions in the representation of morphemes
- this unifies analysis for templatic effects with the analysis of other lengthening phenomena in the language that are based on the assumption of floating moras as well