Non-concatenative allomorphy and Realize morpheme

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Main Claim in this talk

- different non-concatenative allomorphs at the surface = one (abstract) underlying morphological representation

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- different non-concatenative allomorphs at the surface = one (abstract) underlying morphological representation
- a correspondence-theoretic OT approach based on a Realize morpheme (Kurisu 2001) is:
  1. neither necessary (reanalysis in terms of prosodic/abstract morphemes is possible: section **??**)
  2. nor adequate (empirical mispredictions: **??**)

(1) Non-concatenative allomorphy in Saanich

Kurisu, p. 157+158

	Non-Continuative	Continuative	
a.	*Metathesis*		
	q'p'ə́t	q'ə́p't	"patch"
	sxə́t	sə́xt	"push"
	t'sə́t	t'ə́st	"break"
b.	*Reduplication*		
	qén	qéqən'	"steal"
	q^{w}ə́l	q^{w}ə́q^{w}əl	"say"
	k^{w}úl	k^{w}úk^{w}əl	"school"
c.	*/ʔ/-infix*		
	ʔíɬən	ʔíʔɬən	"eat"
	ʔámət	ʔáʔmət	"sleep"
	w'eqes	w'eʔqes	"yawn"

(2) Non-concatenative allomorphy in Upriver Halkomelem

Kurisu, 143

	Non-Continuative	Continuative	
a.	*Reduplication*		
	wíqəs	wíwəqəs	"yawn"
	t'íləm	t'ítələm	"sing"
b.	*/hə/-prefix*		
	méqət	héməqət	"swallow"
	wéq'^{w}	héwq'^{w}	"drown"
c.	*Vowel Lengthening*		
	hɛ́wə	hɛ́:wə	"hunt"
	háqwət	há:qwət	"smell"
d.	*Stress Shift*		
	ca:léx^{w}əm	cá:lex^{w}əm	"bleed"
	ƛəwéls	ƛéwəls	"bark"

Analysis

Some (abstract) element is realized in different non-concatenative ways

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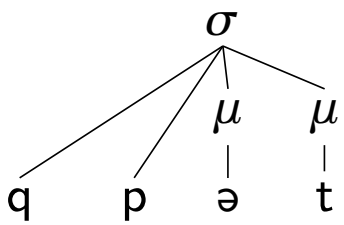
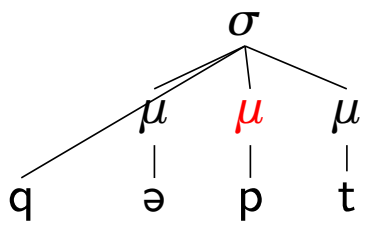
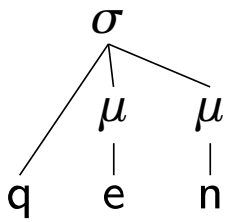
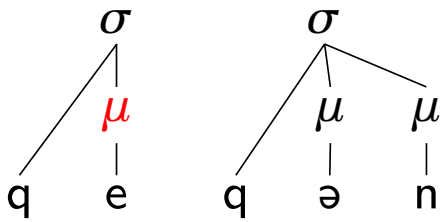
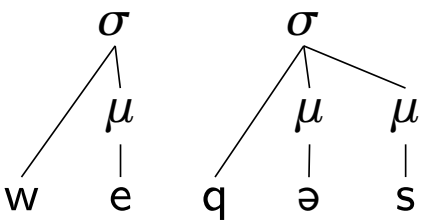
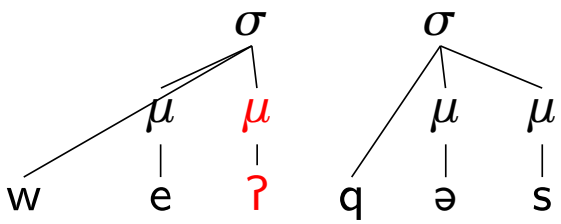
(3) Contexts for allomorphs: Saanich

Non-Continuative	Continuative	
CCVC-bases	Metathesis	
q'p'ə́t	q'ə́p't	"patch"
CVC(C)-bases	Reduplication	
qén	qéqən'	"steal"
elsewhere	ʔ-infix	
w'eqes	w'eʔqes	"yawn"

→ prosodic weight adjustment (Buckley 2002), Stonham (1994, 2007)

(4) Mora affixation in Saanich

Non-Continuative	Continuative
Metathesis	
	
Reduplication	
	
ʔ-infix	
	

Strategies to realize morphemic mora in OT

+ ranking of faithfulness = preference for allomorphs
+ markedness constraints = penalize certain allomorphs in certain contexts

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+ ranking of faithfulness = preference for allomorphs
+ markedness constraints = penalize certain allomorphs in certain contexts

- every non-concatenative morpheme does violate some faithfulness constraint: NCA is possible if RM is ranked above faithfulness constraints:

(5) *Non-concatenative allomorphs and their constraint violations (Kurisu 2001)*

Subtraction	*Max
Umlaut, suppletion, mutation	Ident
Metathesis	*Linearity
Infixation	Contiguity
Reduplication	*Integrity
Haplology (fusion)	Uniformity

Saanich mora affixation in OT

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(6) *Preference order for allomorphs in Saanich*
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Lin ≫ Integ ≫ Contig

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/ʔ/-infixation ≫ reduplication ≫ metathesis

(7) *Ranking of faithfulness constraints*
Lin ≫ Integ ≫ Contig

(8) *Relevant markedness constraints in Saanich*
ComplOns (=CC_{Ons})
ComplCoda (=CC_{Cod})

(9) Contexts for allomorphs: Upriver

Non-Continuative	Continuative	
#CV	Reduplication	
wíqəs	wíwəqəs	"yawning"
#[+son]ə	/hə/-prefix	
méqət	hémqət	"swallowing"
#Laryngal	Vowel Lengthening	
ʔíməx	ʔí:məx	"walking"
stress on non-initial σ	Stress Shift	
ɬɛlqí	ɬélqi	"soaking"

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- Affixation of a morphemic foot
  - affixation of a morphemic foot is proposed in Oostendorp (2006c): stress alone is the morphological exponent of Pst in modern Greek

(10) (Morphemic) Foot in Upriver

Kager (1999)

a. RhT:T
Feet have initial prominence.

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Every foot stands at the left edge of the PrWd.

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c. AllFtL:
Every foot stands at the left edge of the PrWd.

d. FtBin:
Feet are binary under moraic or syllabic analysis.

- since Upriver has lexical stress, those constraints are irrelevant in most cases – but the morphemic mora "overwrites" the underlying prosodic structure (Max-μ) and the shape of theis foot is determined by the constraints above
- but although underlying prosodic structure may be overwritten by this morphemic foot, all underlyingly stressed vowels are at least parsed into the foot:

(11) StressedVowel-to-Foot (SVtF):
Every output vowel that corresponds to a stressed input vowel must be parsed in into a foot.

Non-concatenative allomorphs are different strategies to form a "good" trochaic foot:

(12) *Repair strategies*

Non-cont		Cont	
(ɬɛl.qí)	→	(ɬɛ́l.qi)	
	*	(ɬɛl.qí)	*RhT:T
(wí.qəs)	→	(wí.wə.)qəs	
	*	(wí.qəs)	*Weight-to-Stress Foot
(má.qət)	→	(hám.)qət	
	*	(má.qət)	*Weight-to-Stress Foot
(ʔí.məx)	→	(ʔí:.)məx	
	*	(ʔí.məx)	*Weight-to-Stress Foot

Markedness constraints

Kurisu (2001)

(13)
a. *Placeless σ (PLσ)
Syllables must have a place feature.
b. *Stress[ə] (*ə́)
Only full vowels bear stress .

(14) *Preference order for allomorphs in Upriver*
stress shift ≫ /ʔ/ insertion ≫ reduplication ≫ vowel lengthening

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stress shift ≫ /ʔ/ insertion ≫ reduplication ≫ vowel lengthening

(15) *Ranking of faithfulness constraints*
IdentLength ≫ Integrity ≫ Dep

(16) *Morphemic foot in Upriver I: /hə/-insertion*

máqət, ( )$_{Ft}$	T	FtB	WtS	*ə́	IdL	Int	Dep
a. (mə́.qət)			*!	*			
b. (mə́.)qət		*!		*			
c. (mə́ː.)qət				*	*!		
d. (mə́.mə.)qət				*		*!*	
e. ☞ (hə́m.)qət				*			**

(17) *Morphemic foot in Upriver II: Vowel Lengthening*

/ʔíməx/, ( )$_{Ft}$	T	MaxF	FtB	WtS	*ə́	*PLσ	IdL	Int	Dep
a. ʔiməx		*!							
b. (ʔíməx)				*!					
c. (ʔiməx)	*!								
d. (ʔí)məx			*!						
e. ☞ (ʔíː)məx							*		
f. (ʔíʔə)məx						*!		**	
g. (hə́ʔi)məx					*!			*	

An alternative

no underlying representation for such morphemes:

a general constraint demands that morphologically different forms must be phonologically different as well

(18) Realize Morpheme (RM) Kurisu, p39

Let α be a morphological form, β be a morphosyntactic category, and F(α) be the phonological form from which F(α+β) is derived to express a morphosyntactic category β. Then RM is satisfied with respect to β iff F (α+β) $\neq$ F(α) phonologically.

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⇒ **a morpheme can be realised by any conceivable phonological operation the language's phonology provides**

Kurisu (2001): Two ingredients for the analysis of non-concatenative allomorphy

1. a preference order of allomorphs: ranking of faithfulness constraints

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1. a preference order of allomorphs: ranking of faithfulness constraints
2. phonological requirements militating against certain allomorphs in certain contexts

(19) *Saanich in* RM*-based CT-OT I: reduplication* (Kurisu, 2001, p. 160)

qə́n', ʔ$_{\not c ont}$	RM	*CC$_{Ons}$	*CC$_{Cod}$	Lin	Integ	Cont
a. qə́n‘	*!					
b. qə́ʔn‘			*!			*
c. ə́qn‘			*!	*		
d. qn‘ə́		*!		*		
e. ☞ qə́.qən‘					**	

(20) *Upriver in* RM*-theory I: /hə/-prefixing* Kurisu 2001

máqətCont	*PLσ	Align	RM	IdLgth	*ə́	Int	Dep
a. mə́.qət			*!				
b. mə́.mə.qət					*	*!*	
c. ☞ həm.qət					*		**
d. mə́ː.qət				*!			
e. mə.qə́t		*!					

Problems with such an approach

1. there are too many ways to "do anything": mispredicted non-concatenative allomorphs
2. unattested types of morphological metathesis are predicted
3. the base for a morphological complex category is taken to be a "possible" output of the language

Problem I

1. there are too many ways to "do anything": mispredicted non-concatenative allomorphs
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3. the base for a morphological complex category is taken to be a "possible" output of the language

⇒ subtraction is predicted as allomorph in Upriver Halkomelem

- stem-/ə/ is deleted if /hə/ is prefixed: violation of $\text{Max}_{ə}$ (full vowels are not deleted)
- motivation for this deletion: some markedness constraint MC
- $\text{Max}_{ə}$ must at least be ranked under Integrity – the constraint which decides between prefixing (həmqət) and reduplicating candidate (mə́məqət)

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(21) *$Max_ə$ must be ranked below* Integ

/méqət/	Align	RM	IdLgth	*é	Int	MC	$Max_ə$	Dep
a. méməqət				*	*!*			
b. ☞ hémqət				*			*	**
c. héməqət				*		*!		**

- if deleting /ə/ is penalised by such a low-ranked constraint, one would predict it to become an optimal RM-satisfying operation in some contexts:

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(22) *Misprediction: Subtraction*

/wíqəs/$_{Cont}$	Align	RM	IdLgth	*é	Int	Max$_{ə}$	Dep
a. wíqəs		*!					
b. ☹ wíwəqəs					*!*		
c. héwqəs				*!			**
d. wí:qəs			*!				
e. wiqés	*!						
f. ☞ wíqs						*	

- most obvious solution: candidate (22-e) is excluded by *Complex Coda:

(23) *Solution?*

wíqəs$_{Cont}$	*CC	Int
a. ☞ wíwəqəs		**
b. wíqs	*!	*

- but this reranking mispredicts insertion for monosyllabic CVC-stems (context for /hə/ prefixing):

(24) *Misprediction:* ComplexCoda *would be too high-ranked*

/wə́qʼʷ/	*ə́	*CC	Int	Max$_{ə}$	Dep
a. ☹ hə́wqʼʷ	*	*!		*	**
b. ☞ wə́wəqʼʷ	*		**		

Problem II

1. unattested types of morphological metathesis are predicted
2. there are too many ways to "do anything": mispredicted non-concatenative allomorphs
3. the base for a morphological complex category is taken to be a "possible" output of the language

⇒ Linearity is insensitive to the reordering segments

Generalizations about attested metathesis patterns

1. only CV-metathesis is attested as morphological exponent
2. non-adjacent metathesis is generally unattested

(25) *Examples: morphological metathesis*

a. *Clallam*

šč**á**	"pull"	š**á**c̄	"pulling"

b. *Rotuman*

hula	"moon" (Compl.)	hu**al**	"moon" (Incompl)

c. *Sierra Miwok*

kalá(ŋ)	"to dance"	kál**ŋa**	"a dance"

d. *Alsea*

tums-a	"(don't) close (it)"	t**mu**s-x̣	"is closed"

(26) *Mispredicted non-adjacent metathesis for CCCVC-stems ((**?**, 121))*

xhwq'p'ət, ʔ$_{Cont}$	RM	*CC$_{Ons}$	*CC$_{Cod}$	Lin
a. x^{w}q'p'ət	*!	*		
b. ☞ x^{w}q'əp't		*!	*	*
c. ☞ x^{w}əq'p't			*	**

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- but:

(27) *Mispredicted non-adjacent CC metathesis for CVC-stems*

qə́n', ʔ$_{Cont}$	RM	*CC$_{Ons}$	*CC$_{Cod}$	Cont	Lin
a. qə́n'	*!				
b. ☹ qə́.qə́n'				**	
c. ə́qn'			*!	*	
d. qn'ə́		*!		*	
e. ☞ n'ə́q					**

Problem III

1. unattested types of morphological metathesis are predicted
2. there are too many ways to "do anything": mispredicted non-concatenative allomorphs
3. the base for a morphological complex category is taken to be a "possible" output of the language

⇒ as soon as a bare stem becomes a phonologically *possible* output of Saanich, the context for the continuative allomorph is masked

- Kurisu's assumption was: a morphologically derived form is compared with a phonologically *possible* output
  ⇒ but in Saanich, the context for the continuative allomorph is masked as soon as the stenm becones a *possible* surface form
- the base for the continuative formation in Saanich was taken to be the non-continuative output form:
  CCVC-bases undergo metathesis: q'p'ə́t → q'ə́p't

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- the base for the continuative formation in Saanich was taken to be the non-continuative output form:
  CCVC-bases undergo metathesis: q'p'ə́t → q'ə́p't

⇒ This is empirically wrong:

(28) *CVCVC non-continuative forms undergo metathesis* Montler, p. 186

t'ə̀m'ət sən	"I hit it"	t'ə̀m't sən	"I'm hitting it"
q'ə̀m'ət sən	"I cut it into two"	q'ə̀m't sən	"I'm cutting it"
čə̀nət	"bury it"	čə̀n't sən	"I'm burying it"

Correct context generalization for metathesiszing stems

- the underlying stem representations of the metathesizing stems is actually only CC (+ e.g. /-ət/ "control transitive")
- some of those metathesizing CC-stems surface as CəC in the non-continuative:
  (predictable: root initial obstruent resonant clusters are generally prohibited in Saanich)

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(29) *Rule-based description*

non-continuative:				
	suffixation		ə-epenthesis	
/t'm/ + /ət/	→	t'm'ət	→	[t'm'ət]
continuative:				
	suffixation		metathesis	
/t'm/ + /ət/	→	t'm'ət	→	[t'əm't]

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- the underlying stem representations of the metathesizing stems is actually only CC (+ e.g. /-ət/ "control transitive")
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continuative:				
	suffixation		metathesis	
/t'm/ + /ət/	→	t'm'ət	→	[t'əm't]

⇒ If only the non-continuative surface form CVCVC is visible, those stems are predicted to form their continuative from via /ʔ/-infixation

(30) Misprediction for CC-bases surfacing as CVC in the non-continuative

Kurisu, p.160

t'ə̀m'ət, /ʔ/	RM	*CC_{Ons}	*CC_{Cod}	Lin	Max	Cont
a. ☞ t'ə̀ʔm'ət						*
b. ☹ t'ə̀m't				*		

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t'ə̀m'ət, /ʔ/	RM	*CC_{Ons}	*CC_{Cod}	Lin	Max	Cont
a. ☞ t'ə̀ʔm'ət						*
b. ☹ t'ə̀m't				*		

The form of the underlying stems is the crucial for the choice of the continuative allomorph:
but this underlying stem is no possible output in Saanich

Summary

- affixation of empty prosodic categories (mora, foot) predicts non-concatenative allomorphs

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- affixation of empty prosodic categories (mora, foot) predicts non-concatenative allomorphs
- it avoids the empirical mispredictions of an RM-based approach (Kurisu 2001)

(31) *Saanich mora affixation in OT I: reduplication*

q'ən, μ, ʔ		Max$_\mu$	Align-μ	Int	Lin	Cont	Max-ʔ
a.	qə́n'	*!					*
b.	ə́qn'	*!			*		*
c.	qn'ə́	*!			*		*
d.	qə́ʔn'	*!				*	
e. ☞	qə́.qən'			**			*
f.	qə́ʔ.qən'			**		*!	

(32) *Saanich mora affixation in OT II: /ʔ/ insertion*

wé.qəs, μ, ʔ	Onset	Max$_\mu$	Align-μ	Int	Lin	Cont	Max-ʔ
a. wé.qəs		*!					*
b. wé.wə.qəs				*!*			*
c. ☞ wéʔ.qəs						*	
d. wqé.əs	*!	*		*		*	
e. éw.qəs	*!				*		*

(33) *Mora affixation in OT III: metathesis*

q'p', ə́t, μ, ʔ	Max_{μ}	Align-μ	Int	Lin	Cont	Max-μ_{Affix}
a. q'p'ə́t	*!					
b. ☞ q'ə́p't				*		*
c. q'ə́q'.p'ət			*!*			
d. q'p'ə́ʔt		*!			*	

(34) *Morphemic foot in Upriver III: reduplication*

tíləm, ( )$_{Ft}$	T	WtS	*á	IdL	Int	Dep
a. (tí.ləm)		*!				
b. (tíː)ləm				*!		
c. ☞ (títə)ləm					**	
d. (hə.tí.)tə.ləm	*!					**
e. (há.ti.)tə.ləm			*!			**

(35) *Morphemic foot in Upriver VIa: Stress Shifting*

/caːlə́xʷəm/, ( )$_{Ft}$	RhT:T	WtSF	*ə́	Cont	Int	Dep
a. (caːlə́)xʷəm	*!	*	*			
b. ☞ (cáːlə)xʷəm						
c. (cáːʔcə)ləxʷəm					*!*	
d. (hə́caː)ləxʷəm			*!			**

(35) *Morphemic foot in Upriver VIa: Stress Shifting*

/caːlə́xʷəm/, ( )$_{Ft}$	RhT:T	WtSF	*ə́	Cont	Int	Dep
a. (caːlə́)xʷəm	*!	*	*			
b. ☞ (cáːlə)xʷəm						
c. (cáːʔcə)ləxʷəm					*!*	
d. (hə́caː)ləxʷəm			*!			**

(36) *Morphemic foot in Upriver VIb: Stress Shifting and violation of* WtSF)

ƛɛwə́ls, ( )$_{Ft}$	SVtF	WtS(F)	*ə́	IdL	Int	Dep
a. ☞ (ƛɛ́.wəls)		*				
b. (ƛɛ́.ƛə.)wəls	*!				**	
c. (ƛɛ́ː.)wəls	*!			*		
d. (hə́.ƛə.)wəls)	*!		*			**
e. (ƛɛ́.ƛə.wəls)		*			*!*	

(37) *Saanich in* RM*-based CT-OT II: infixation* (Kurisu, 2001, p. 160)

wéqəs, ʔ$_{\text{cont}}$	RM	*CC$_{\text{Ons}}$	*CC$_{\text{Cod}}$	Lin	Integ	Cont
a. wé.qəs	*!					
b. wéʔ.qəs						*
c. wqé.əs		*!		*		
d. ew.qəs				*!		
e. we.wə.qəs					*!*	

(38) *Saanich in* RM*-based CT-OT III: metathesis* (Kurisu, 2001, p. 160)

q'p'ə́t, ʔ$_{\text{cont}}$	RM	*CC$_{\text{Ons}}$	*CC$_{\text{Cod}}$	Lin	Int	Cont
a. q'p'ə́t	*!	*				
b. q'p'ə́ʔt		*!	*			*
c. ☞ q'ə́p't			*	*		
d. q'ə́.q'əp't			*	*	*!*	

(39) *Upriver in* RM*-theory II: reduplication* (**?**, 146-49)

wíqəs$_{Cont}$	*PLσ	Align	RM	IdLgth	*ə́	Int	Dep
a. wí.qəs			*!				
b. ☞ wí.wə.qəs						**	
c. hə́w.qəs					*!		**
d. wí:.qəs				*!			
e. wi.qə́s		*!					

(40) *Upriver in* RM*-theory III: Vowel lengthening* (**?**, 146-49)

ʔíməx$_{\text{Cont}}$	*PLσ	Align	RM	IdLgth	*á	Int	Dep
a. ʔí.məx			*!				
b. ʔí.ʔə.məx	*!					**	
c. háʔ.məx	*!				*		**
d. ☞ ʔíː.məx				*			
e. ʔi.máx		*!					

(41) *Upriver in* RM*-theory IV: Stress shift* (**?**, 146-49)

ɬɛlqíCont	*PLσ	Align	RM	IdLgth	*ə́	Int	Dep
a. ɬɛl.qí		*!	*				
b. ɬɛ.lə.qí		*!				**	
c. hə.ɬɛl.qí		*!					**
d. ɬɛ:l.qí		*!		*			
e. ☞ ɬél.qi							