Non-Concatenative Allomorphy and Realize Morpheme

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Main Claim:
➜ different non-concatenative allomorphs = one (abstract) phonological representation for the morpheme

➜ an alternative OT approach based on Realize Morpheme (Kurisu (2001)) is:

1. neither necessary (reanalysis in terms of abstract prosodic entities: section 1)
2. nor adequate (empirical mispredictions: section 2)

Data

(1) *NCA in Saanich* Montler (1986), Montler, Kurisu (2001)

	Non-Cont	Cont	
a.	*Metathesis*		
	q'p'ə́t	q'ə́p't	"patch"
	sxə́t	sə́xt	"push"
	t'sə́t	tə́st	"break"
b.	*Reduplication*		
	qə́n	qə́qən	"steal"
	q^{w}ə́l	q^{w}ə́q^{w}əl	"say"
	k^{w}úl	k^{w}úk^{w}əl	"school"
c.	*/ʔ/-infixation*		
	ʔíɬən	ʔíʔɬən	"eat"
	ʔámət	ʔáʔmət	"sleep"
	wéqəs	wéʔqəs	"yawn"

(2) *NCA in Upriver Halkomelem* Galloway (1993), Kurisu (2001), Urbanczyk (1999)

	Non-Cont	Cont	
a.	*Reduplication*		
	wíqəs	wíwəqəs	"yawn"
	t'íləm	t'ítələm	"sing"
b.	*hə-epenthesis*		
	méqət	héməqət	"swallow"
	wéq'^{w}	héwq'^{w}	"drown"
c.	*Vowel lengthening*		
	ʔ'iməx	ʔ'i:məx	"walk"
	háq^{w}ət	há:q^{w}ət	"smell"
d.	*Stress shift*		
	ca:léx^{w}əm	cá:ləx^{w}əm	"bleed"
	ɬəlqí	ɬélqi	"soak"

1 Analysis I: morphemes as empty prosodic categories

1.1 Affixation of a morphological mora

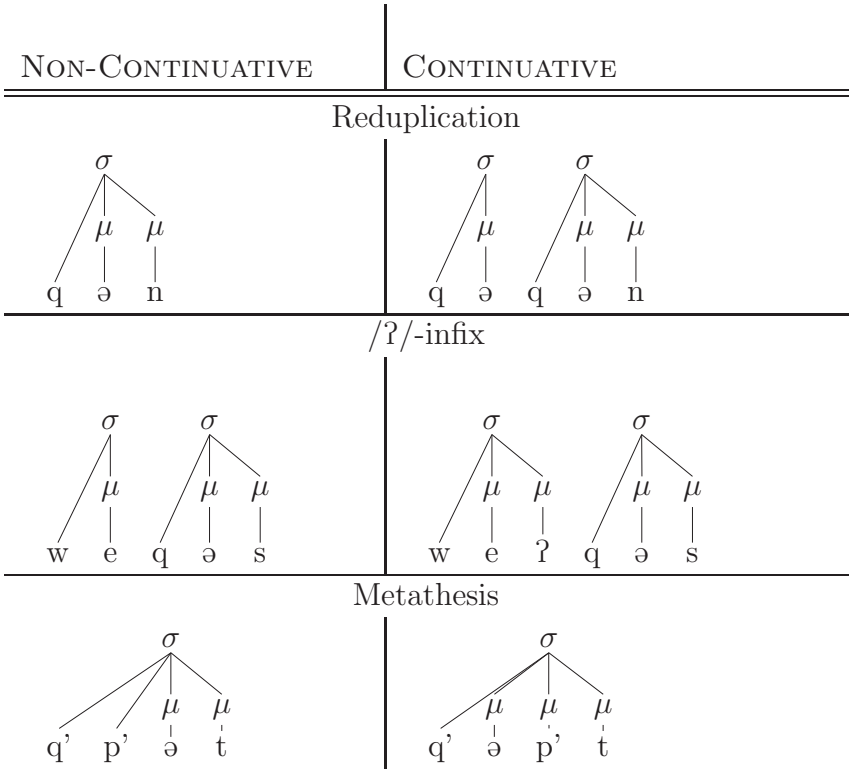
- affixation of a mora in e.g. Alabama (Grimes (2002)): imperfect is formed via vowel lengthening or consonant gemination (cf. also Samek-Lodovici (2002), Haugen and Kennard (1992))

(3) *Context for allomorphs: Saanich*

Non-Cont	Cont
Metathesis	
CCVC	CVCC
q'p'ét	q'ép't
Reduplication	
CVC(C)	CVCVC(C)
qén	qéqən
/ʔ/-infixation	
elsewhere	
ʔíɬən	ʔíʔɬən

→ different strategies to realize a morphemic mora, i.e. prosodic weight adjustment (e.g. (Stonham (1994), Stonham (2007), Buckley (2002))

(4) *Mora affixation in Saanich*



Note:

- /ʔ/ is an underlying infix (no epenthetic C) that is placed after the stressed vowel
- stress in Saanich is lexical: underlying structure is parsed into prosodic structure (otherwise a morphological mora would not have any phonological effect at all)

Which strategy is chosen in which context?

- ranking of faithfulness constraints demands preference order for allomorphs
- this follows since every non-concatenative morpheme violates some faithfulness constraint:

(5) *(Non-concatenative) morphemes and faithfulness constraints* Kurisu (2001)

metathesis	*Linearity
insertion	*Dep
subtraction	*Max
fusion (haplology)	*Uniformity
reduplication	*Integrity
infixation	*Contiguity
umlaut, mutation, suppletion	*Ident

e.g. Saanich:

(6) Preference for allomorphs :
ʔ-insertion ≫ reduplication ≫ metathesis

$\Longrightarrow$ Ranking of faithfulness constraints:
Lin ≫ Integ ≫ Contig

- and markedness constraints penalize certain strategies in certain contexts, i.e. for certain bases: a less preferred allomorph surfaces

1.2 Affixation of a morphological foot

- proposed by van Oostendorp (2006) for Modern Greek: stress is the only exponent for past

(7) *Contexts for allomorphs in Upriver*

Non-Cont	Cont
Stress shifting	
Stress on non-initial σ	
ləwə́ls	lə́wəls
Reduplication	
#CV.	CV.CV.
wíqəs	wíwəqəs
hə-prefixing	
#C$_{[+son]}$ə	həC$_{[+son]}$
mə́qət	hə́mqət
Vowel lengthening	
#C$_{\text{Laryngeal}}$V	#C$_{\text{Laryngeal}}$V:
ʔ'i məx	ʔ'i: məx

➜ a morphemic foot overwrites underlying prosodic structure: different strategies to form a "good" trochaic foot

(8) *(Unmarked) Foot in Upriver* Kager (1999)

a. RhT:T Feet have initial prominence.
b. AllFtLeft Every foot stands at the left edge fo the PrWd.
c. FtBin Feet are binary under moraic or syllabic analysis.
d. Stressed-Vowel-to-Foot Every output vowel that corresponds to a stressed input vowel must be parsed into a foot.
e. Weight-To-Stress A heavy syllable within a foot must be prominent.

- Prosodic weight is irrelevant for stress in Upriver (=lexical) but visible in this (morphological) context ➔ a prediction, Optimality Theory makse
- a morphological foot may overwrite underlying prosodic structure (MAX-FT), but underlyingly stressed vowels are at least parsed into the (morphemic) foot

(9) *Repair strategies to form an optimal foot*

λɛlqí	✔	(λél.qi)	
	✘	(λɛl.qí)	*RHT:T
wíqəs	✔	(wí.wə.)qəs	
	✘	(wí.qəs)	*WEIGHT-TO-STRESS FOOT
máqət	✔	(hám.)qət	
	✘	(má.qət)	*WEIGHT-TO-STRESS FOOT
ʔíməx	✔	(ʔí:.)məx	
	✘	(ʔí.məx)	WEIGHT-TO-STRESS FOOT

Which repair strategy is chosen?

(10) Preference for allomorphs :
stress shift ≫ hɛ-insertion ≫ reduplication ≫ vowel lengthening

⟹ Ranking of faithfulness constraints:
IDENT-LENGTH ≫ INTEG ≫ DEP

(11) Markedness constraints

a. *PLACELESS σ Syllables must have a place feature.
b. *STRESS-ə Only full vowels bear stress.

(12) *An example: /hə/-insertion in Upriver*

máqət, $()_{Ft}$	RHT:T	FTBIN	WTS	*ə	IDL	INT	DEP
a. (má.qət)			*!	*			
b. (má.)qət		*!		*			
c. (má:.)qət				*	*!		
d. (má.mə.)qət				*		*!*	
☞ e. (hám.)qət				*			**

2 Analysis II: Realize Morpheme

2.1 Kurisu's RM

- morphemes may consist of no phonological content at all: a general constraint demands that morphologically different forms must be phonologically different as well

(13) *Realize Morpheme* (Kurisu, 2001, 39)
Let α be a morphological form, β be a morphological category, and F(α) be the phonological form from which F(α+β) is derived to express a morphosyntactic category β. Then RM is satisified with respect to β iff F(α+β) $\pm$ F(α) phonologically.

➜ a morpheme can be realized by any conceivable phonological operation a language's phonology provides

- the choice for one (non-concatenative) allomorphs in a certain context follows from the same ingredients as above:

  1. a preference order for allomorphs
  2. markedness constrainst penalizing certain strategies for certain bases

(14) *Example: epenthesis in Upriver*

mə́qət$_{\text{Continuative}}$	Align	RM	IdLength	*ə́	Int	Dep
a. mə́.qət		*!		*		
b. mə́:.qət			*!	*		
c. mə́.mə.qət				*	*!*	
☞ d. hə́mqət				*		**
e. mə.qə́t	*!			*		

Difference between the two analyses?

Realize morpheme vs. Max-Ft/Max-μ

Empirical problems in Kurisu's approach:

1. there are too many ways to "do anything": Kurisu's approach mispredicts unattested non-concatenative allomorphs in a language
2. there are too many ways to reorder segments in a string: Kurisus's approach mispredicts unattested types of morphological metathesis
3. a stem's choice for a certain allomorph can be made with reference to its underlying representation (=impossible output form) – but in Kusrisu's system, the input into a RM competition must be a possible phonological output of the language

2.2 Too many ways to do anything

➜ subtraction is predicted to become exponent of the continuative in Upriver

- unattested allomorphs in a a language are excluded in Kurisu's system through high-ranked (=above RM) faithfulness constraints[1]

- but in Upriver, an independent deletion-process in the continuative (stem-/ə/ is deleted if epenthetic /hə/ is prefixed, triggered by some markednes constraint MC) shows that MAX (at least for stem-/ə/) must be ranked at least under INTEG

(15) *Max-/ə/ must be ranked at least under Integ*

mə́qət$_{\text{Continuative}}$	INT	MC	MAX-ə	DEP
a. mə́.mə.qət	*!*			
☞ b. hə́m.qət			*	**
c. hə́.mə.qət		*!		**

- but then, deletion of /ə/ (= one strategy to "do anything" and therefore to satisfy RM) is predicted for some stems:

(16) *Mispredicted subtraction*

wíqəs$_{\text{Continuative}}$	ALIGN	RM	IDLENGTH	*ə́	INT	MAX-ə	DEP
a. wí.qəs		*!					
☛ b. wí.wə.qəs					*!*		
c. hə́w.qəs				*!		*	**
d. wí:.qəs			*!				
e. wi.qə́s	*!						
☞ f. wíqs						*	

2.3 Too many ways to reorder

➜ a metathesizing allomorph is only specified as LINEARITY-violating: (non-adjacent) CC-metathesis becomes a possible morphological exponent

- generalizations about metathesis:

  1. no non-adjacent metathesis (Cf. e.g. Hume (2004), Mielke and Hume (2001), Carpenter (2002), McCarthy (b) for discussion)
  2. only CV-metathesis is attested as morphological exponent

[1] In his approach, all faithfulness constraints must be indexed for a certain morphological category.

Examples: morphological metathesis

a. *Clallam, Thompson and Thompson (1971)*
   šč́ə́ "pull" š**ə́č** "pulling"
b. *Rotuman, e.g. McCarthy (1989), McCarthy (2000), Hume*
   hula "moon"(Compl.) hu**al** "moon"(Incomplete)
c. *Sierra Miwok, Hume (2004)*
   kaláŋ "to dance" kal**ŋá** "a dance"
d. *Alsea, Buckley (1989), Buckley (2002)*
   tums-a "(don't) close it" t**mu**s-x̣ "is closed"

- if the metathesizing allomorph is not specified any further, both kinds of unattested morphological metathesis are predicted to become exponents of the continuative in Saanich:

(17) *Unattested instances of metathesis*

x^hwq'p'ət, $ʔ_{\text{Continuative}}$	RM	*ComplOns	*ComplexCoda	Lin
a. x^hwq'p'ət	*!			
☛ b. x^hwq'əp't		*	*!	*
☞ c. x^hq'wp'ət		*		*

2.4 Context for an allomorph is an impossible output form

➔ the choice for a continuative allomorph in Saanich depends on the lexical form of the stem, i.e. the context is masked in the non-continuative output form.

- Kurisu must assume: the phonological base that serves as input into the derivation of a morphologically complex form must be a possible output form of the language
- otherwise, phonologically predictable changes (e.g. assignment of syllable structure) would satisfy RM as well
- recall Kurisu's generalization for the metathesizing continuative allomorph:

(18)

surface form in the non-continuative:		continuative:
CCVC	→	CVCC
(q'p'ə́t	→	q'ə́p't)

This is empirically wrong:

(19) *CVCVC non-continuative forms surface as CVCC in the continuative* (Montler, 1986, 186)

t'ə́m'ət	t'ə́mt	"hit"
q'ə́m'ət	q'ə́m't	"cut"
čə́nət	čə́n't	"bury"

- Kurisu predicts /ʔ/-infixation as continuative form for those stems
- the correct generalization: **vowelless CC/CCC-stems undergo metathesis** (last C of the stem and first V of a suffix like /ət/ "control transitive" metathesize)
- some of those stems surface as CəC in the non-continuative since initial obstruent – resonant clusters are prohibited: phonologically conditioned /ə/ -ephenthesis that masks the context for metathesis

3 Conclusion

➜ non-concatenative allomorphs are different strategies ot realize a morphemic empty prosodic categories (mora, foot)

➜ this restricts allomorphs to certain phonological operations and avoids the mispredictions illustrated for a RM-based approach as Kurisu (2001)

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