

Raimy Rules in Spokane (and Nxaʔamxcín)

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1.0 Overview

- Section 2 provides a brief review of “Raimy Rules”
- Section 3 presents our analysis of Spokane based on Bates and Carlson (1992)
- Section 4 presents our analysis of Nxaʔamxcín based on Czyakkowska-Higgins and Willet (1997) (henceforth CHW)
- Section 5 presents our analysis of Greek perfects
- Section 6 presents our conclusions

2.0 Raimy Rules

- We are assuming that phonological representations are directed graphs (Raimy 2000)
- Reduplication results from a phonological representation having a ‘loop’ in it which is remedied by *linearization*


(1) Total reduplication (Persian,

a. yek ‘one’ yek-yek ‘one each, at the rate of one per’

b. root

→ y → e → k → %

c. reduplication

→ y → e → k → %


d. linearization

→ y → e → k → y → e → k → %

- Distinct reduplication patterns are created by different descriptions of what precedence link should be added
- General schema for reduplication patterns is in (2)

(2) General schema for reduplication

“begin” anchor point → optional segmental material → “end” anchor point

- Analysis of Spokane, Nxaʔamxcín and Greek adds insights into what are *possible* anchor points

3.0 Spokane

- We follow Bates and Carlson (1992) position on syllabification in Spokane:
 - lexical syllabification only has CVC syllables
 - consonant sequences that can not be parsed into CVC syllables are unsyllabified
- Additional relevant aspects of Spokane are:
 - unstressed vowels are deleted unless adjacent to a laryngeal
 - stress assignment is sensitive to morpheme type (and will be assumed for our purposes)
 - onsets for syllables are obligatory
- ‘Repetitive’ morphology has the following surface effects:
 - a fixed vowel /e/ that either (i) infixes between an initial consonant cluster (3ab) or (ii) appears after a copy of the initial consonant (3cd)
 - all resonants are glottalized
 - fixed vowel /e/ appears as [a] if a vowel follows in the word
 - prefixes are outside of the domain for these processes

(3) Spokane ‘repetitive’ forms

a. stressed and unstressed CCVC roots

√ptax ^w	‘spit’	p-a-táx ^w -	<i>infixing</i>
√qsip	‘long time ago’	q̣-e-sp-	<i>infixing</i>
√syen	‘count’	s-e-yn-	<i>infixing</i>
√tyaq̣ ^w	‘fight’	t-e-yaq̣ ^w	<i>infixing</i>

b. unstressed CVC roots with vowel deletion

√šil	‘chop’	š-e-l-	<i>infixing</i>
√wič	‘see’	w-e-č-	<i>infixing</i>

c. stressed CVC roots

√k ^w ul	‘make’	k ^w -e-k ^w úl	<i>reduplicating</i>
√šil	‘chop’	š-e-šíl	<i>reduplicating</i>
√luč ^w	‘wood-eye, face’	l-e-lúč ^w	<i>reduplicating</i>

d. unstressed CVC root without vowel deletion

$\sqrt{q^w e?}$ ‘familiar with’ $q^w\text{-}a\text{-}q^w e?$ *reduplicating*

- (4) and (5) present the reduplication representations for both the *infixing* (4) pattern and the *reduplicating* (5) pattern

(4) infixing ‘repetitive’

→ s → y → e → n → %
 ↓ ↑
 e

(5) reduplicating ‘repetitive’

→ š → i → l → %
 ↻ ↻
 e

- The “begin anchor point”, (2), for the ‘repetitive’ /-e-/ is uniformly ‘the first segment’ in both (4) and (5)
- The “end anchor point”, (2), for the ‘repetitive’ /-e-/ varies in (4) and (5):
–in (4), “end” = ‘second consonant’ if the ‘second consonant’ immediately follows the ‘first consonant’
–in (5), “end” = ‘first consonant’
- (6a) provides ‘Raimy Rules’ schema for *anchor points*, (6b) is the specification needed for (4) and (6c) is the specification needed for (5)

(6) Raimy Rules schema

a. Anchor Point = {C, V, X} / ‘structural description’

b. “end” = C / #C_ ‘a consonant after word initial consonant’

c. “end” = X / #_ ‘word initial segment’

- (6b) and (6c) are governed by the Elsewhere Condition (Kiparsky 1973, Halle and Idsardi 19950 in that (6b) is completely contained by (6c)
–‘X’ in (6c) is ‘any segment’ and a ‘consonant’ (6b) is contained in this description
–‘#_’ in (6c) is ‘word initial segment’ and ‘#C_’ in (6b) is contained in this description

- (6b) is the most succinct and stable description of the infixing pattern because:
 - can't use syllabic information: no stability to 'before an onset' because of behavior of \sqrt{q} sip 'long time ago' when vowel is syncopated in the root- produces a sequence of 2 unsyllabified consonants at the beginning of the stem
 - can't use metrical information: stressed/unstressed distinction for stem is not stable because of unstressed vowels not deleting if next to a laryngeal, (3d)
- Conclusion is that #C_ must be a legitimate structural description for an anchor point and (7) presents the final representation for REPETITIVE in Spokane

(7) REPETITIVE morphology in Spokane

“begin” → e → “end”

“begin”	=	X / # _	ON X-TIER
“end”	=	a. X / #_	ON X-TIER
		b. C / #C _	ON X-TIER

4.0 Nxaʔamxcín

- Czyakkowska-Higgins and Willet (1997) present the data in (8) for OUT OF CONTROL reduplication
- CHW 1997 follow Bates and Carlson (1992) in arguing for 'simple' CVC syllables

(8) Out of control reduplication in Nxaʔamxcín

a. CVC roots

k'í <u>p</u> 'əp'	'get pinched'	(\sqrt{k} 'ip')
cá <u>k</u> ək	'get hit'	(\sqrt{c} ək)
q'ál' <u>l</u> 'x ^w	'something hanging'	(\sqrt{q} 'al'x ^w)

b. CCVC roots

c'q' <u>q</u> 'w'ún'l'əx ^w	'land gets named'	(\sqrt{c} 'q' ^w u-n-ul'əx ^w)
pttí <u>x</u> 'əx ^w	'spitting alot'	(\sqrt{pt} x ^w -mix)
t <u>k</u> kayi	'urinate (out of control)'	(\sqrt{t} kay)

- OUT OF CONTROL reduplication shows 'second consonant' type of calculation:
 - syllabic affiliation is not stable because reduplicated consonant in (7a) are codas and reduplicated consonants in (7b) are onsets

- Primary difference between Spokane and Nxaʔamxcín ‘second consonant’ calculation is based on what autosegmental tier the calculation is done
- Spokane calculates ‘second consonant’ on the X-tier while Nxaʔamxcín calculates ‘second consonant’ on the C-tier
- Final distinction between OOC in Nxaʔamxcín and REP in Spokane is that OOC does not have a prespecified vowel in its representation

(8) OUT OF CONTROL morphology

“begin” → “end”

“end” = C / #C_ ON C-TIER

“begin” = C / #C_ ON C-TIER

- Conclusion is that Nxaʔamxcín provides further evidence that ‘second consonant’ is a legitimate structural description and that this type of calculation can be parameterized to operate on different autosegmental tiers

5.0 Attic Greek

- Attic Greek (Kenstowicz 1994: 264) presents a distinct pattern of alternation between reduplication and prefixing in the morphology for the perfect
- Vowel of the perfect morpheme is a prespecified /e/ and we will ignore length and quality changes in the root vowel

(9) Attic Greek PERFECT morphology

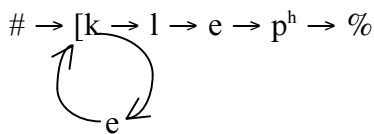
	<u>root</u>	<u>perfect</u>	<u>gloss</u>	
a.	lū	l-e-luka	‘untie’	<i>reduplication</i>
	sēman	s-e-sēmēna	‘signify’	<i>reduplication</i>
b.	klep ^h	k-e-klop ^h a	‘steal’	<i>reduplication</i>
	tlā	t-e-tlāmen	‘endure’	<i>reduplication</i>
c.	sper	e-sparmai	‘sow’	<i>prefixation</i>
	kten	e-ktōna	‘kill’	<i>prefixation</i>
d.	angel	āngelka	‘announce’	<i>prefixation</i> < e-angel
	op ^h el	ōp ^h ēlēka	‘owe’	<i>prefixation</i> < e-op ^h el

- Variation in the surface behavior in Greek is due to the specification of the “begin” anchor point

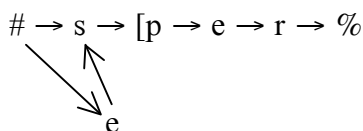
(10) Variation in Greek perfect morphology

[' marks 'core onset'

a. reduplicating



b. prefixing



- “End” anchor point for Greek perfect is always the ‘first segment’
- “Begin” anchor point is either:
 - ‘word initial onset’ = #Onset
 - ‘word initial’ = ‘#’
- We need to invoke syllabic information because of the difference in behavior of forms in (9ab) vs. (9cd) but a stable distinction can be found based
- The forms in (9ab) have a consonant that is a ‘core onset’ (Cairns and Feinstein 1982) in word initial position
- The forms in (9c) have a consonant that is not a ‘core onset’; it is either an appendix (Vaux and Wolff to appear) or a ‘pre margin’ (Cairns and Feinstein 1982) and the forms in (9d) are vowel initial

(11) Greek Perfect morphology

“begin” → e → “end”

“begin” =	a.	C / #[_	‘word initial core onset’
	b.	X / #	‘word initial position’
“end” =		X / #_	‘first segment’

- Again, we see the utility of the Elsewhere Condition:
 - ‘begin (a)’ is contained in the description of ‘begin (b)’

-in the target, C is contained in X

-in the SD, #[_ is contained in #

- Conclusion from Greek is that there are analyses of Anchor Points which require direct reference to syllable structure- most importantly some notion of ‘core onset’
- Elsewhere Condition governs Anchor Points

6.0 Summary and Conclusion

- (12) presents a table of the 3 patterns of affixation considered in this talk

(12) Variation in Affixation

Language	Begin AP	Prespecified	End AP	Behavior
<i>Spokane</i>	X / #_ x-tier	e	a. X / #_ b. C / #C_	Reduplication or infixation
<i>Nxaʔamcín</i>	C / #C_ c-tier	∅	C / #C_ c-tier	Infixing reduplication
<i>Greek</i>	a. C / #[_ b. X / #	e	X / #_	Reduplication or prefixation

- We can identify the difference in surface affixation based on differences in the specification of APs
- Nxaʔamcín has ‘stable’ infixing reduplication because both the ‘begin’ and ‘end’ APs use the same SD which will always be word internal
- Spokane varies between infixation and reduplication because:
 - ‘begin’ AP is stable and indicates an ‘infixing pattern’ (i.e. not a prefix)
 - ‘end’ AP is bifurcated and the (a) version causes the ‘begin’ and ‘end’ APs to be the same thus producing reduplication
 - (b) version of ‘end’ AP creates an infixing pattern
- Greek varies between prefixation and reduplication because:
 - ‘end’ AP is stable and indicates ‘prefixing pattern’ (i.e. before 1st segment)
 - ‘begin’ AP is bifurcated and (a) version causes the ‘begin’ and ‘end’ APs to be the same thus producing reduplication
 - (b) version of ‘begin’ AP creates a true prefix (i.e. morpheme not preceded by anything)
- The Elsewhere Condition is crucial to the understanding of these patterns

- Raimy Rules must be able to do the following things:
 - refer to syllabic information: core onset vs. other (at least)
 - be parameterized to auto-segmental tiers: x-tier vs. c-tier (at least)
 - can count to 2: #C__

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