Revisiting the Binarity Effect in Kosraean Reduplication

Directional Harmonic Serialism (DHS) Lamont (2022) proposes that for quantity-insensitive footing in *Harmonic Serialism* (HS; McCarthy 2000), FTBIN (Prince & Smolensky 1993/2004) and ALIGN (McCarthy & Prince 1993) can be covered, respectively, by *directionally evaluated* foot-type constraints and PARSE(σ) (Prince & Smolensky 1993/2004). Several attempts have followed suit and extend Lamont's theory to quantity-sensitive phenomena in Axininca (Lin & Wang 2024), Bunun (Huang et al. to appear; Lin & Lin to appear), Paiwan (Ho & Lin to appear), and Rukai (Lin to appear). **Serial Template Satisfaction** (STS) Couched in HS, McCarthy et al. (2012) propose that, rather than holistic transformations, reduplication involves reduplicative templates (Marantz 1982) being stepwise satisfied by INSERT(X), which inserts an empty prosodic constituent, or COPY(X), which copies a string of *continuous* prosodic constituents. Notably, constraint interaction may lead a template, be it a syllable or a foot, to end up with reduplicants of various sizes (Lin 2012, 2022). **Kosraean Reduplication** In Kosraean, primary stress occurs on the penultimate syllable, with secondary stress on the antepenult in three-syllable forms (Lee 1975: 33). Kennedy (2005) shows that stress assignment plays an important role in Kosraean reduplication (1)-(4), wherein each reduplicative affix is sensitive to the form of the stem, giving rise to multiple prosodic variants. Specifically, while both affixes show curious effects of vowel-initial stems (3)-(4), the prefix, in contrast to the suffix, illustrates a *lookahead* effect, cf. (1a-c) vs. (1d), and (3a) vs. (4), wherein the reduplicant is binary, bearing secondary stress, if and only if the base is binary. This is significant as coda consonants do not contribute to syllable weight in the language; they are moraic only in prefixed reduplicants (Kennedy 2005). Also noteworthy is that glide insertion only applies to suffixed vowel-initial disyllables (3b). The reduplicative pattern in Kosraean begs critical questions for HS. *First*, can HS's *gradualness* resolve the lookahead binarity effect? *Second*, can DHS tackle the pattern while maintaining its simplicity by keeping FTBIN and ALIGN out of the game? *Third*, can STS account for the contextual binarity effect without stipulating weight conditions on the template. We will show that the answers to these questions are all positive. **DHS/STS Analysis** We offer an HS analysis of Kosraean reduplication that utilizes both directional evaluation and template satisfaction. Rather than lookahead, the binarity effect in Kosraean reduplication can be achieved stepwise. The analysis neither resorts to FTBIN and ALIGN, nor stipulates any weight conditions on the template. Assuming the template is a syllable, tableaux (5)-(7) demonstrate that undominated PARSE(σ)$^{<=}$ forces footing to apply before COPY(seg) at the expense of HD(σ)$^{=>}$, which penalizes empty syllables.[1] Crucially, TROCHEE$^{=>}$ penalizes a syllable that dominates a stressed, foot-final mora. Thus, as TROCHEE$^{=>}$ outranks *CODA(μ)$^{=>}$, the result of COPY(seg) is a bimoraic monosyllable when the stem is disyllabic and the prefix is independently footed. In contrast, (8) shows that when the stem is disyllabic with adjacent vowels, the result is a CV reduplicant because both HD(σ)$^{=>}$ and *VV$^{=>}$ dominate TROCHEE$^{=>}$. In suffixal reduplication (9), the CVC reduplicant displays no binarity effect since TROCHEE$^{=>}$ is satisfied via footing the suffix with the stem-final syllable in the first iteration. In reduplication of vowel-initial monosyllables (10), the VC variant emerges with the consonant syllabified as the onset of the stem. This because σ-R$^{=>}$, which bans every morpheme whose rightmost segment is not rightmost in a syllable, is lower ranked, below ONSET$^{=>}$.[2] However, σ-R$^{=>}$ must rank above both DEP(j)$^{=>}$ and *CODA$^{=>}$ to derive the glide insertion in suffixal reduplication (11).[3]

(1) *Initial reduplication*

a. ˈ**fo**.-foʃ 'to emit smoke' ˈ**kæ**.-kæl 'to touch repeatedly' ˈ**ʃɨ**.-ʃɨk 'very small'

b. ˌ**mo**.-ˈmo.ul 'not completely dead ˌ**fo**.-ˈfo.ul 'to emit smell'

c. ˌ**fi**.-ˈfi.jɔ 'sweating' ˌ**fi**.-ˈfi.jɛ 'to turn grey'

d. ˌ**fur**.-ˈfu.rok 'to turn gradually' ˌ**mɨs**.-ˈmɨ.sɛ 'being frayed' ˌ**pʌʃ**.-ˈpʌ.ʃæk 'slopping'

(2) *Final reduplication*

ˈpʌk.-**pʌk** 'sandy' ˌkɨ.ˈpat.-**pat** 'broken' ˌmɨ.ˈsɛ.-**sɛ** 'frayed'

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[1] The indices indicate syllabic boundaries, loci of constraint violation. Moreover, moraic coda consonants are in bold.

[2] Note that σ-R$^{=>}$ isn't an alignment constraint; it doesn't require every segment to align with the morpheme's edge.

[3] [(ˈa$_1$f-af$_2$)] is not a possible candidate in the second iteration if resyllabification of segments counts as a single operation.

(3) *Reduplication of vowel-initial monosyllables*

a. ˈ**e.k**-ek 'to rub repeatedly' ˈ**o.n**-on 'to keep on singing' ˈ**i.p**-ip 'in pieces'

b. ˈaf.-**jaf** 'rainy' ˈek.-**jek** 'to keep on changing' ˈeŋ.-**jeŋ** 'windy'

(4) *Prefixed vowel-initial disyllables*

ˌ**ew**.-ˈʌwʌ 'to lift gradually' ˌ**ol**.-ˈolaŋ 'to open repeatedly' ˌ**ip**.-ˈi.pɨs 'to roll bit by bit'

(5) Initial reduplication (1st/2nd iterations): cf. (1a)

σ-foʃ	PARSE(σ)$^{<=}$	HD(σ)$^{=>}$	TROCHEE$^{=>}$	*CODA(μ)$^{=>}$	*CODA$^{=>}$
☞ a. (ˈσ$_1$-foʃ$_2$)		$0_1 1_2$			$0_1 1_2$
b. (σ$_1$-ˈfoʃ$_2$)		$0_1 1_2$	W$0_1 1_2$		$0_1 1_2$
c. fo$_1$-foʃ$_2$	W$1_2 1_1$	L			$0_1 1_2$
d. (ˈσ$_1$-foʃ$_2$)		W$0_1 1_2$			$0_1 1_2$
e. (ˈfo**ʃ**$_1$-foʃ$_2$)				W$1_1 0_2$	$0_1 1_2$
f. (ˈfoʃ$_1$-foʃ$_2$)					W$1_1 1_2$
☞ g. (ˈfo$_1$-foʃ$_2$)					$0_1 1_2$

(6) Initial reduplication (2nd/3rd iterations): cf. (1d)

σ$_1$-(ˈfu$_2$rok$_3$)	PARSE(σ)$^{<=}$	HD(σ)$^{=>}$	TROCHEE$^{=>}$	*CODA(μ)$^{=>}$
☞ a. (ˌσ$_1$)-(ˈfu$_2$rok$_3$)		$1_1 0_2 0_3$		
b. fu$_1$-(ˈfu$_2$rok$_3$)	W$1_1 0_2 0_3$	L		
c. (ˌσ$_1$)-(ˈfu$_2$rok$_3$)		W$1_1 0_2 0_3$		L
d. (ˌfur$_1$)-(ˈfu$_2$rok$_3$)			W$1_1 0_2 0_3$	L
☞ e. (ˌfu**r**$_1$)-(ˈfu$_2$rok$_3$)				$1_1 0_2 0_3$
f. (ˌfu$_1$)-(ˈfu$_2$rok$_3$)			W$1_1 0_2 0_3$	L

(7) Prefixed vowel-initial disyllables (3rd iteration): cf. (4)

(ˌσ$_1$)-(ˈi$_2$pis$_3$)	*VV$^{=>}$	HD(σ)$^{=>}$	TROCHEE$^{=>}$	*CODA(μ)$^{=>}$	ONSET$^{=>}$
☞ a. (ˌi**p**$_1$)-(ˈi$_2$pis$_3$)				$1_1 0_2 0_3$	$1_1 1_2 0_3$
b. (ˌσ$_1$)-(ˈi$_2$pis$_3$)		W$1_1 0_2 0_3$		L	L$0_1 1_2 0_3$
c. (ˌi$_1$)(p-ˈi$_2$pis$_3$)			W$1_1 0_2 0_3$	L	L$1_1 0_2 0_3$
d. (ˌi$_1$)-(ˈi$_2$pis$_3$)	W$0_1 1_2 0_3$		W$1_1 0_2 0_3$	L	$1_1 1_2 0_3$

(8) Initial reduplication (3rd iteration): cf. (1b)

(ˌσ$_1$)-(ˈmo$_2$ul$_3$)	*VV$^{=>}$	HD(σ)$^{=>}$	TROCHEE$^{=>}$
☞ a. (ˌmo$_1$)-(ˈmo$_2$ul$_3$)			W$1_1 0_2 0_3$
b. (ˌmou$_1$)-(ˈmo$_2$ul$_3$)	W$1_1 0_2 0_3$		L
c. (ˌσ$_1$)-(ˈmo$_2$ul$_3$)		W$1_1 0_2 0_3$	L

(9) Final reduplication (2nd/3rd iterations): cf. (2)

kɨ$_1$(ˈpat$_2$-σ$_3$)	PARSE(σ)$^{<=}$	HD(σ)$^{=>}$	TROCHEE$^{=>}$	ONSET$^{=>}$	*CC$^{=>}$
☞ a. (ˌkɨ$_1$)(ˈpat$_2$-σ$_3$)		$0_1 0_2 1_3$	$1_1 0_2 0_3$		$0_1 1_2 0_3$
b. kɨ$_1$(ˈpat$_2$-pat$_3$)	W$0_3 0_2 1_1$	L	L		W$0_1 0_2 1_3$
c. (ˌkɨ$_1$)(ˈpat$_2$-σ$_3$)		W$0_1 0_2 1_3$	$1_1 0_2 0_3$		L
☞ d. (ˌkɨ$_1$)(ˈpat$_2$-pat$_3$)			$1_1 0_2 0_3$		$0_1 0_2 1_3$
e. (ˌkɨ$_1$)(ˈpat$_2$-at$_3$)			$1_1 0_2 0_3$	W$0_1 0_2 1_3$	L

(10) Reduplication of vowel-initial monosyllables (2nd iteration): cf. (3a)

(ˈσ$_1$-on$_2$)	*VV$^{=>}$	HD(σ)$^{=>}$	ONSET$^{=>}$	σ-R$^{=>}$
a. (ˈon$_1$-on$_2$)			W$1_1 1_2$	L
b. (ˈσ$_1$-on$_2$)		W$1_1 0_2$	L$0_1 1_2$	L
c. (ˈo$_1$-on$_2$)	W$0_1 1_2$		W$1_1 1_2$	L
☞ d. (ˈo$_1$-non$_2$)			$1_1 0_2$	$0_1 1_2$

(11) Reduplication of vowel-initial monosyllables (2nd/3rd iterations): cf. (3b)

(ˈaf$_1$-σ$_2$)	HD(σ)$^{=>}$	ONSET$^{=>}$	σ-R$^{=>}$	DEP(j)$^{=>}$	*CODA$^{=>}$
☞ a. (ˈaf$_1$-af$_2$)		$1_1 1_2$			$1_1 1_2$
b. (ˈaf$_1$-σ$_2$)	W$0_1 1_2$	L$1_1 0_2$			L$1_1 0_2$
c. (ˈaf$_1$-af$_2$)		W$1_1 1_2$		L	$1_1 1_2$
d. (ˈa$_1$f-af$_2$)		$1_1 0_2$	W$0_1 1_2$	L	L$0_1 1_2$
☞ e. (ˈaf$_1$-jaf$_2$)		$1_1 0_2$		$0_1 1_2$	$1_1 1_2$