A'INGAE REDUPLICATION IS PHONOLOGICALLY OPTIMIZING

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In this paper, I describe and analyze reduplication in A'ingae (ISO 639-3: con), an understudied and endangered Amazonian isolate. The reduplicant is a suffix -$\text?\sigma$, where $\text?$ is a fixed segment and σ is a syllable copied from the right edge of the word. Only disyllabic roots can be reduplicated, and the disyllabic root is parsed as a trochaic foot in the surface form. If the second syllable of the root is a diphthong, it undergoes monophthongization in the base. Thus, the shape of the base and the reduplicant together (henceforth *reduplicated stem*) can be schematized as $(\text'\sigma_1\breve\sigma_2\text?)\sigma_2$.

I model these properties with a reduplicant-specific *cophonology* (e. g. Orgun, 1996), which consists of a ranking of constraints motivated elsewhere in the language's grammar (Dąbkowski, 2022). Thus, I demonstrate that A'ingae reduplication is highly phonologically optimizing. Finally, I consider an alternative subcategorization-based account and argue that the alternative misses the phonologically optimizing nature of A'ingae reduplication. All the data were collected by the author.

DESCRIPTION AND ANALYSIS   The A'ingae reduplicative suffix -$\text?\sigma$ can attach only to disyllabic roots (1). The disyllabic root can be underlying stressless (1b.i-ii) or stressed (1b.iii-iv). (Both stressless and stressed roots surface with penultimate stress in isolation. In morphologically complex forms, penultimate default stress is assigned to underlyingly stressless forms /*fe.tʰa-hi*/ 'open-PRCL' → [*fe(ˈtʰahi)*], but underlying stress surfaces faithfully /(ˈ*kati*)-*hi*/ 'cast-PRCL' → [(ˈ*kati*)*hi*].) The reduplication of a verb expones subject superplurality (i.e. a large number of entities).

(1)   a. MONOSYLLABIC   b. DISYLLABIC   c. TRISYLLABIC

	ROOT	REDUPL		ROOT	REDUPLICATED		ROOT	REDUPL
i.	*pʰi* 'sit'	—	i.	*fetʰa* 'open'	(ˈ*fetʰa*ʔ)*tʰa*	i.	*otiʃi* 'wash hands'	—
ii.	*ã* 'eat'	—	ii.	*fiite* 'help'	(ˈ*fiite*ʔ)*te*	ii.	*opatʰɨ* 'pick'	—
iii.	ⁿ*do* 'split'	—	iii.	(ˈ*kati*) 'cast'	(ˈ*kati*ʔ)*ti*	iii.	*aviha* 'rejoice'	—
iv.	*kʰe* 'get lost'	—	iv.	(ˈ*ãnã*) 'sleep'	(ˈ*ãnã*ʔ)*nã*	iv.	*siforo* 'fart'	—
v.	*kɨ* 'get warm'	—	v.	*fĩⁿdɨi* 'sweep'	(ˈ*fĩⁿdɨ̃*ʔ)ⁿ*dɨi*	v.	(ˈ*kõⁿda*)*se* 'tell'	—
vi.	ⁿ*dʒai* 'sit'	—	vi.	*opɨi* 'shelter'	(ˈ*opɨ*ʔ)*pɨi*	vi.	(ˈ*afa*)*se* 'offend'	—

In reduplicated stems, stress falls on the second syllable to the left of the reduplicant (in this case, the word-initial syllable) (1b.i-iv). This is an independently attested effect in A'ingae, observed by Dąbkowski (2022) to occur with any ʔ-initial suffix (2b-c, cf. default penultimate stress in 2a), and modeled with the constraint AL?) : *Every glottal stop is right-aligned with a foot* (tableau in 4).

(2)   a. /*fiite -hi*/   b. /*fiite -ʔhe*/   c. /*fiite -ʔ�gi*/   d. /*fĩⁿdɨi -ʔhe*/   e. /*fĩⁿdɨi -ʔ�=gi*/
       [*fii*(ˈ*tehi*)]   [(ˈ*fiite*ʔ)*he*]   [(ˈ*fiite*ʔ)ᵑ*gi*]   [*fĩ*(ˈⁿ*dɨiʔhe*)]   [*fĩ*(ˈⁿ*dɨ̃ʔᵑgi*)]
       help -PRCL   help -IPFV   help -VEN   sweep -IPFV   sweep -VEN

When the root is diphthong-final (1b.v-vi), the second vowel of that diphthong is truncated in the base but preserved in the reduplicant. I attribute the truncation to an independently attested restriction on A'ingae foot shape, Dąbkowski's (2022) FTSH : *Feet are binary trochees with monomoraic (i.e. light; non-diphthongal) right branches.* Dąbkowski motivates FTSH with (2d-e), where the high ranking of FTSH results in a violation of AL?). In reduplication, the violated constraint is MAXV : *For every vowel in the input, there is a corresponding vowel in the output* (tableau in 6). Thus, regular ʔ-initial suffixes and -$\text?\sigma$ both avoid violations of FTSH, but they do so in different ways.

I assume that reduplication involves a violation of INTσ : *No syllable in the input has multiple correspondents in the output.* Since reduplication is modeled as input-output correspondence, the input diphthong is faithfully rendered in the reduplicant, avoiding a gratuitous violation of MAXV.

Finally, mono- and trisyllabic roots cannot be reduplicated (1a,c). I attribute this to Dąbkowski's (2022) AL[ω f : *Every foot is aligned with the left edge of the word.* In the cases considered by Dąb-

kowski, AL[ωf ranks low and breaks the tie between two ʔ-initial suffixes: ALʔ) requires right-alignment of a foot with ʔ, but since there can be only one primary stress, one ʔ has to delete. AL[ωf favors (3a), where the foot is closer to the left edge of the word, over (3b). In the cophonology of the reduplicative -ʔσ, AL[ωf ranks above the Empty Output Constraint (EOC): *Assign a violation mark to the empty output* (Prince and Smolensky, 1993). Other constraints which outrank EOC include MAXσ : *Input syllables have correspondents in the output*, which prevents the truncation of trisyllabic stems, and the previously introduced ALʔ) and FTSH. This ranking captures the impossibility of reduplicating mono- and trisyllabic roots (5, 7).

(3) / atapa -ʔhe -ʔᵑgi /
  a. [a(ˈtapaʔ)hẽᵑgi]
  b. *[ata(ˈpahẽʔ)ᵑgi]
   breed -IPFV -VEN

(4) fetʰa -ʔσ

	ALʔ)	FTSH	AL[ωf	MAXσ	EOC	MAXV	INTσ
i. ∅					*		
ii. fetʰaʔtʰa	*						*
☞ iii. (ˈfetʰaʔ)tʰa							*

(5) pʰi -ʔσ

	ALʔ)	FTSH	AL[ωf	MAXσ	EOC	MAXV	INTσ
☞ i. ∅					*		
ii. pʰiʔpʰi	*						*
iii. (ˈpʰiʔ)pʰi		*					*
iv. (ˈpʰiʔpʰi)	*						*

(6) fiⁿdɨɨ -ʔσ

	ALʔ)	FTSH	AL[ωf	MAXσ	EOC	MAXV	INTσ
i. ∅					*		
ii. fiⁿdɨɨʔⁿdɨɨ		*					*
iii. (ˈfiⁿdɨɨʔ)ⁿdɨɨ			*				*
☞ iv. (ˈfiⁿdɨʔ)ⁿdɨɨ						*	*
v. (ˈfiⁿdɨʔ)ⁿdɨ						**	*

(7) atapa -ʔσ

	ALʔ)	FTSH	AL[ωf	MAXσ	EOC	MAXV	INTσ
☞ i. ∅					*		
ii. atapaʔpa	*						*
iii. a(ˈtapaʔ)pa			*				*
iv. (ˈtapaʔ)pa				*		*	*

ALTERNATIVE ANALYSIS   The account above models the shape of the reduplicated stem with a reduplicant-specific ranking of constraints which are independently attested in the A'ingae grammar. An alternative analysis could make use of a subcategorization frame, such as (8).

(8)   SUBCATEGORIZATION FRAME FOR -ʔσ: #σσ _   (i.e. -ʔσ selects for a disyllabic stem)

The frame in (8) allows for dispensing with the EOC, since (8) does the job of ruling out the reduplication of mono- and trisyllabic roots. However, subcategorization is an arbitrary selectional requirement and need not be phonologically optimizing (Paster, 2007). As a consequence, (8) misses the phonological motivation behind the root size restriction: The root must be disyllabic because it is parsed as a foot. This is in turn because -ʔσ is ʔ-initial and the A'ingae glottal stops, as per ALʔ), must be right aligned with a foot. Finally, the phonology of reduplicated stems differs from other affixes in a way not captured by (8): Diphthongs in weak branches of a foot are avoided by truncating the diphthong in reduplication (FTSH ≫ MAXV, as in 1b.v-vi), but by misaligning the glottal stop with the foot elsewhere (FTSH ≫ ALʔ), as in 2d-e). In sum, the subcategorization analysis misses the phonologically optimizing aspect of A'ingae reduplication and still requires associating the reduplicative -ʔσ with a morpheme-specific cophonology.

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