A Q-THEORETIC SOLUTION TO A'INGAE POSTLABIAL RAISING

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I document and analyze the typologically unusual process of postlabial raising (PLR) in A'ingae (or Cofán, an Amazonian isolate, ISO 639-3: `con`), whereby postlabial *a* raises to *ɨ* or *o* if it is a part of a diphthong. Monophthongal *a* is not affected. I account for this pattern in Q-Theory, where one vocalic target of a diphthong corresponds to fewer subsegments than a monophthong. This predicts that diphthongs might show an emergence-of-the-unmarked (TETU) effect, while monophthongs surface faithfully. The prediction is borne out by the A'ingae PLR. Data were collected by the author.

1 DESCRIPTION A'ingae has 5 monophthongal vowels (*i*, *ɨ*, *e*, *a*, *o*) and 10 diphthongs: *ao̯*, *o̯a*, *o̯e*, *o̯i*, *ai̯*, *i̯a*, *ɨi̯*, *ei̯*, *i̯e*, *i̯o*.

(1)	a.	b.	c.	d.
	/ *ko̯ehefa-ite* /	/ *bai̯lar* /	/ *sema-ẽ* /	/ *sema* /
	[*ko̯ehefɨi̯te*]	[*ᵐbɨi̯ra*]	[*semõ̯ẽ*]	[*sema*]
	summer-PRD	dance	work-CAUS	work

Any diphthong may follow a non-labial C, including *ai̯* (e.g. *ʤai̯* 'sit') and *ao* (e.g. *ʦao̯ʔpa* 'nest'). The *a*-initial diphthongs may not follow B (*m*, *pʰ*, *p*, *ᵐb*, *f*, *v*), i.e. sequences *B*aV̯* are not licit. Underlying /B*ai*/ and /B*ae*/ in derived (1a,c) and borrowed (1b) words surface as [B*ɨi̯*] (1a-b) and [B*o̯e*] (1c), respectively. However, monophthongal /*a*/ surfaces faithfully as [*a*] (1d).

2 ANALYSIS I model PLR with a language-specific markedness constraint $\boxed{\text{*BA}}$, which *assigns a violation mark for each low vowel* (A) *after a labial consonant* (B). (The phonetic motivation for *BA is not obvious, perhaps articulatory: The relatively closed jaw of B may be incompatible with the open jaw of A. Alternatively, A'ingae postlabial raising may be a phonetically unnatural phonological process, such as postnasal devoicing, e.g. Hyman, 2001.) Yet, as it stands, *BA penalizes diphthongs and monophthongs equally. To address this challenge, I adopt Q-Theory (Inkelas and Shih, 2017), which holds that each segment (Q) consists of multiple (commonly three) subsegments: closure (q^1), hold (q^2), and release (q^3). E.g., the low vowel *a* (Q) has three q's: (a^1,a^2,a^3). I model diphthongs with four q's, two for each vocalic target, e.g. *ai̯* = (a^1,a^2,i^3,i^4). This correctly predicts that while diphthongs are longer than monophthongs, one vowel of a diphthong is shorter than a monophthong. *BA interacts with $\boxed{\text{ID}}$ENTITY$\boxed{\text{F}}$ constraints, which *assign a violation mark for each unfaithfulness to feature* F. The assumed vowel features are given to the right.

	i	*ɨ*	*e*	*a*	*o*
H(igh)	+	+	−	−	+
B(ack)	−	+	−	+	+
R(ound)	−	−	−	−	+

I propose that unfaithfulness to a feature of one q incurs only ⅓ of an IDENTITY violation. I.e., unfaithfulness to a feature of a monophthong incurs a full violation (3×⅓=1), but unfaithfulness to a feature of one target of a diphthong incurs only ⅔ of a violation (2×⅓=⅔). This predicts that a monophthongal vowel may surface faithfully (3), while the same vowel in a diphthong exhibits a TETU effect (4-5). The prediction is borne out by the A'ingae PLR. Lastly, PLR has different outcomes depending on the input: /B*ai*/ → [B*ɨi̯*] (4) but /B*ae*/ → [B*o̯e*] (5). This is modeled with relative weights of IDH and IDR (as determined with the Maxent Grammar Tool). (I assume that (i) candidates where identical input q's differ in the output, e.g. B(*ɨ*,*a*,*a*) in (3), are ruled out by ABC (Rose and Walker, 2004) and (ii) that candidates where different input q's are identical in the output, e.g. B(*e*,*e*,*e*,*e*) in (4-5), are ruled out by OPC.) Thus, Q-Theory successfully captures the facts of the A'ingae PLR.

(3)	B(*a*,*a*,*a*)	*BA 11.8	IDH 14.2	IDR 6.9	IDB 3.6	$\mathcal{H}$
☞ i.	B(*a*,*a*,*a*)	1				11.8
ii.	B(*o*,*o*,*o*)		1	1		21.1
iii.	B(*ɨ*,*ɨ*,*ɨ*)		1			14.2

(4)	B(*a*,*a*,*i*,*i*)	*BA 11.8	IDH 14.2	IDR 6.9	IDB 3.6	$\mathcal{H}$
i.	B(*o*,*o*,*e*,*e*)		1⅓	⅔		23.5
ii.	B(*a*,*a*,*i*,*i*)	1				11.8
☞ iii.	B(*ɨ*,*ɨ*,*i*,*i*)		⅔			9.5
iv.	B(*e*,*e*,*i*,*i*)	1			⅔	14.2

(5)	B(*a*,*a*,*e*,*e*)	*BA 11.8	IDH 14.2	IDR 6.9	IDB 3.6	$\mathcal{H}$
☞ i.	B(*o*,*o*,*e*,*e*)		⅔	⅔		14.1
ii.	B(*a*,*a*,*i*,*i*)	1	⅔			21.3
iii.	B(*ɨ*,*ɨ*,*i*,*i*)		1⅓			19.0
iv.	B(*e*,*e*,*i*,*i*)	1		⅔	⅔	18.8