Resolving Contradictions in the Puerto Rican Spanish Syllable Coda

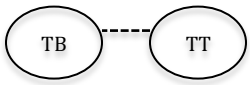
Mairym Lloréns Monteserín, University of Southern California

Coronals don't surface in the Puerto Rican Spanish (PRS) coda outside careful speech. Among other processes that target coda coronals, stops and word-final nasals velarize (1-2) while coda coronal fricatives debuccalize (3). Laterals are the only coronal segments to appear freely in the coda, surfacing both faithfully (4) and as a result of coda tap lateralization (5). The presence of a lateral's coronal component in the coda conflicts with the restriction against coronals in that position.

	PRS	*Other Spanish*	*Gloss*	
1.	pik.sa	pit.sa	pizza	Morgan 2010
2.	paŋ	pan	bread	Navarro 1948
3.	ah.ma	as.ma	asthma	Navarro 1948
4.	al.ma	al.ma	soul	Navarro 1948
5.	al.ma	aɾ.ma	weapon	Navarro 1948

I propose that a single markedness constraint (OT; Prince and Smolensky 1993/2004) can account for the different ways coda coronals are repaired in PRS. Coda laterals are spared in my analysis because it references the representational primitives developed in Articulatory Phonology (AP; Browman and Goldstein 1992). The highly-ranked constraint against tongue tip (coronal) gestures in anti-phase coupling with a preceding vocalic tongue body (dorsal) gesture drives the processes documented above (1-3) and others that have as a combined result the lack of coronals in coda position. Coda laterals do not violate the proposed constraint, accounting for their abundance in PRS codas. They are not protected; they simply do not violate the constraint, which defines markedness over the *coupling relations* or temporal coordination between gestural primitives. A key insight of AP is to assume that patterns of temporal coordination or coupling do form part of phonological knowledge. It is not clear how accounts of lateral representation couched in traditional featural terms (cf. Rice and Avery 1991, Blevins 1994, Rice 1996, Walsh-Dickey 1997) will allow for laterals to be shielded from a unified coda condition which bans coronals in that position, given that in the feature/segmental view, laterals are assumed to be [+coronal] and segments atomic.

The Spanish-speaking subjects in Proctor (2009) consistenly produced the coda lateral with a bi-gestural pattern where the tongue body gesture preceded the tongue tip gesture. That author proposed anti-phase coupling as the stable relation between the components of Spanish laterals. In (6), ovals surround the tongue body (TB) and tongue tip (TT) components of the segment and a dashed line represents anti-phase coupling between them.

6. Simplified AP representation of Spanish laterals: 

I define the PRS markedness constraint as follows:

7. *TB---TT : Assign a violation mark to <u>any tongue tip</u> gesture that is coupled anti-phase to a <u>vocalic tongue body</u> gesture.

(7) amounts to high-ranked markedness of the structure TB_V --- TT_C , where subscripts on each gesture signal whether it composes part of a vocalic or consonantal segment. This structure is acceptable to other Spanish varieties, as illustrated in (1-3), but does not surface in PRS. Because the TT gesture in (6) is coupled anti-phase to the lateral's own TB gesture rather than the TB gesture of a preceding vowel, laterals do not violate (7), accounting for their presence in the PRS coda (4-5).

Speech production studies (Browman and Goldstein 1995, among others) concur that an anti-phase coupling relation captures the sequential triggering of gestures characteristic in syllable rhymes. PRS exhibits a dispreference for coda TT gestures, but only if those TT gestures are anit-phase coupled to the vocalic TB gesture. Laterals have a TT gesutre that is anti-phase coupled to their own TB gesture. Their TT gesture does not enter into a coupling relation with the vowel gesture. Etymologically expected TT gestures in PRS whose available coupling relation would result in a violation of *TB---TT, such as those forming part of coronal coda stops, fricatives and nasals, can be **supplanted** by TB gestures (1-2); they they can also be **removed** without concomitant replacement (3). Other processes are further shown to result from high-ranked (7) as well. Work is underway to explain the preference for laterals over taps in this position, which is not accounted for here.

1. Blevins, Juliette (1994). “A place for lateral in the feature geometry.” *Journal of Linguistics 30*.
2. Browman, Catherine and Goldstein, Louis (1992). "Articulatory Phonology: An Overview". *Phonetica* 49.
3. _____ (1995). "Gestural Syllable Position Effects in American English" in Bell-Berti, F. and Raphael, L.J. (eds.) Producing Speech: Contemporary Issues. For Katherine Safford Harris. AIP Press: NY.
4. Morgan, Terrell (2010). Sonidos en contexto: una introducción a la fonética del español con especial referencia a la vida real. Yale University Press.
5. Prince, Alan and Smolensky, Paul (1993/2004). "Optimality Theory: Constraint Interaction in Generative Grammar". ROA version.
6. Proctor, Michael (2009). Gestural Characterization of a Phonological Class: the liquids. PhD dissertation, Yale University.
7. Rice, Keren and P. Avery (1991). “Laterality and coronality.” In Paradis and Prunet (eds.) The special status of coronals: internal and external evidence. Orlando Academic Press.
8. Smith, Caitlin (2013). "Consonant Mutation as Gestural Affixation: a Gestural Optimality Theoretic Account". Unpublished screening paper, University of Souther California.
9. Walsh-Dickey, Laura (1997). The Phonology of Liquids. PhD Dissertation. UMASS, Amherst.