Agreement without similarity: the case of Chiquitano nasal (consonant) harmony

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In this paper, I discuss a previously undescribed case of Nasal Consonant Harmony (NCH), found in Chiquitano, an isolate spoken in Bolivia and Brazil. I show that it presents particularly interesting challenges for the theory of Agreement by Correspondence (ABC), as described in Hansson (2001), Rose and Walker (2004) and subsequent work, in particular for the notion of similarity.

In the environment of a nasal, voiced consonants (/j/, /r/, /β/, and /ɣ/) surface as their nasal counterparts ([ɲ], [n], [m], and [ŋ], respectively). This is a very productive pattern that occurs across any number of (short) vowels and (voiceless) consonants, as illustrated in (1)-(3). The nasal trigger can be in a suffix (1-2) or in the root (3) and can affect targets not only to its left (1-3) but also to its right (from a suffix to a later suffix (2), or from a root to a suffix (3)). NCH applies in nouns (1) and verbs (2-3) alike.

(1)	a.	kiβit͡ʃo-ʂ	‘sweet potato’	kimit͡ʃo-maʔ	‘sweet potato-DIM’
	b.	oseɣo-ʂ	‘corn’	oseŋo-maʔ	‘corn- DIM’
	c.	joːripʲakiʔo-ʂ	‘paquio tree’	ɲõːnipʲakiʔo-maʔ	‘paquio tree-DIM’
(2)		β-atopi-kʲa	‘we$_{in}$ are bathing’	m-atopi-ɲaka-ka	‘we$_{in}$ are bathing (it)’
				m-atopi-ɲaka-na = tiʔ	‘he is bathing (it)’
(3)	a.	β-akiɨɣa-ra = tiʔ	‘he hunts’	m-ãːnica-na = tiʔ	‘he speaks’
				m-ãːnica-ka	‘we$_{in}$ speak’
	b.	β-ija-βo-tiʔ	‘he laughs’	m-ano-mo = tiʔ	‘he sleeps’
				m-ano-mo-ka	‘we$_{in}$ sleep’

Based on its similarity to the familiar Bantu NCH cases, this pattern seems to be amenable to an ABC analysis like the one proposed for Kongo by Rose and Walker (2004). There is, however, one aspect of Chiquitano NCH that its difficult to reconcile with such an analysis without at least reevaluating the notion of surface similarity, namely the fact that Chiquitano has a set of contrastive nasal vowels that can also trigger NCH. Like nasal consonants, nasal vowels trigger NCH in nouns (4) and verbs (5-6), in both directions (5). Furthermore, although the relevant data is scarce, it can also be inferred that, like for consonantal triggers, the root/affix distinction does not affect the ability for nasal vowels to trigger NCH (6).

(4)	a.	jo-kipʲoru-ʂ	‘their$_F$ belly’	ɲo-tokiʔãː-ʂ	‘their$_F$ navel’
	b.	ju-patari-ʃ	‘their$_F$ elbow’	ɲu-pakaʔaː̃-ʂ	‘their$_F$ liver’
(5)	a.	ʃ-atot͡ʃẽʔ-ka	‘I stop’	m-atot͡ʃẽʔ-ka	‘we$_{incl}$ stop’
	b.	ʃ-apãː-ka	I lie’	m-apãː-ɲa = tiʔ	‘he lies’
	c.	iʃ-ãː-ka	‘I fish’	m-ãː-na-tiʔ	‘he fishes’
(6)		uβ-a-ka	‘we$_{in}$ eat’	um-a-tẽʔ	‘we$_{in}$ ate it’

Under an ABC approach where similarity between triggers and targets is what drives agreement, Chiquitano NCH is problematic, because it implies that some vowels (long vowels, nasal vowels) are “similar enough” to consonantal triggers and targets in order to be in correspondence with them, while short vowels are not. Conversely, it also implies that a voiced consonant like /β/ is “more dissimilar” to its voiceless counterpart /p/ than to a long vowel like /a:/. It is not clear how a similarity metric based on feature sharing/counting (Rose and Walker 2004, Frisch et al. 2004, Bennett 2013, Shih & Inkelas 2014, etc.) could capture these facts in an explanatory fashion. In a context where there is growing evidence that phonological processes may not always target classes of segments that are “natural”, and that at least some features may be emergent (Mielke 2008), feature-sharing cannot be taken as an *a priori* indicator of similarity. Cases like Chiquitano NCH represent a precious opportunity to reassess the role of similarity in the ABC framework and perhaps rethink how relative similarity is computed.

Finally, Chiquitano also has a handful (about 10) of so-called Trojan roots (Krämer 2003), which trigger the same affix alternation as the roots that contain a nasal segment, despite the fact that they do not contain any overt nasal (7-8).

(7)	aβ-aru	‘your$_{pl}$ lips’	(8)	am-otu	‘your$_{pl}$ tongue’
	auβ-oʔo	‘your$_{pl}$ straw’		am-oʔo	‘your$_{pl}$ teeth’
	aβ-areɣo-ka	‘you$_{pl}$ cry’		am-asɨ-ka = tɨ	‘you$_{pl}$ look at’

Given the parallel between these cases and the NCH alternations described above, a unified account is desirable yet difficult to conceive under an ABC approach. In fact, since correspondence is possible *only* if at least two eligible triggers/targets are present on the surface, the conditions for ABC are simply not met in items like (8). The behavior of the Trojan roots is relatively simple to capture, however, if one assumes that their underlying representation contains a nasal specification that generally fails to be realized on the surface (due to markedness), except when a compatible host (affix) is provided. This, however, raises the question of whether a simple input-output correspondence mechanism can also account for some —or all— of the NCH facts without appealing to surface correspondence (Finley 2009). I explore the predictions associated with this alternative, and compare them to the ones associated with an ABC approach.