Nasalization in Atchan: Sensitivity to morpheme identity

Katherine Russell, UC Berkeley, katherine.russell@berkeley.edu

Nasal harmony, a phonological pattern in which nasalization is transmitted at long distance, is found in languages around the world (Walker 2011). Systems of nasal harmony have been characterized in the literature based on whether both consonants and vowels undergo nasalization, as well as whether any segments are transparent to harmony. In this paper, however, I present the case of nasal harmony in Atchan [Kwa: Côte d'Ivoire], and demonstrate that it does not fit neatly into this categorization schema.

Nasalization in Atchan is unusual in that it is highly sensitive to morpheme identity. The domain of nasal spreading is dependent on the identity of the triggering morpheme. Only subject pronouns trigger the nasalization of following material: other morphemes with nasal vowels, like proper nouns or possessive pronouns, never do (1). Following some nasal morphemes, like the second person plural subject pronoun, the domain of nasal spreading is a single segment to the right (2). Following other morphemes, however, the domain of nasalization is much larger and involves the entire verb complex, including both auxiliaries and verbs (3). Following a nasal subject pronoun, progressive nasalization takes place: whether that nasalization applies locally or iteratively, however, depends on the identity of the trigger.

(1) akrã ɓa le ɓá
Akran FUT NEG come
'Akran will not come.'

(2) **ɔ̃́** **m**a le ɓá
2PL FUT NEG come
'You will not come.'

(3) **ã** **mã** **nɛ̃** **m**á
3SG FUT NEG come
'He will not come.'

Additionally, whether nasalization applies only to consonants, or to both consonants and vowels, is dependent on morpheme identity. Nasality is contrastive for vowels in Atchan, but not for consonants: nasal consonants are in complementary distribution with oral sonorants. The bilabial implosive alternates with [m], the lateral approximant with [n], and the labiovelar approximant with [ŋʷ]. When a verb follows a nasal subject pronoun, its initial consonant nasalizes, but the vowel remains oral. The vowel is pronounced as oral even when the following consonant is nasal (4). When an auxiliary, like FUT or NEG, follows a nasal subject pronoun, the consonant nasalizes as expected. However, the vowel also nasalizes when in between two nasal consonants (5-6). In the case of NEG, doing so involves a change in vowel quality: its underlying form is /le/ (cf. examples 1 and 2), but since mid and high +ATR vowels do not have nasal counterparts in Atchan, the vowel itself lowers to [ɛ̃].

(4) **ɛ́́** **m**á ni
3SG.PFV come.PFV here
'He came here.'

(5) **ã** **mã** **m**á
3SG FUT come
'He will come.'

(6) **ɛ́́** **nɛ́́** **m**a
3SG.PFV FUT come
'He did not come.'

In constructions involving multiple verbs, we again see differences based on the identity of the triggering morpheme. Following a second person plural subject pronoun, nasalization is strictly local (8). If the initial segment is an obstruent, pre-nasalization results. After a third person singular subject pronoun, however, we observe what I term long-distance nasalization: the initial segment of each item within the verb complex nasalizes (9). The voiced obstruent [g] of the verb 'can' does not block nasalization of following consonants, and none of the vowels within the verbs nasalize.

(7) akrã gɛ lo wrɔ ndu
A. can go swim water
'Akran can go swim.'

(8) **ɔ̃́** **ŋ**gɛ lo wrɔ ndu
2PL can go swim water
'You can go swim.'

(9) **ã** **ŋ**gɛ **n**o **ŋ**^{w}rɔ ndu
3SG can go swim water
'He can go swim.'

The system of nasal harmony in Atchan involves several typologically rare features which are challenging for many accounts of nasal harmony. First, whether or not progressive nasalization occurs depends on the

morphosyntactic features of the trigger: namely, harmony proceeds only if the trigger is a nasal subject pronoun. An analysis of harmony which involves autosegmental feature spreading (e.g. McCarthy 2011) fails to account for such a situation, since it would predict that all segments bearing the feature [nasal] would behave identically.

Second, the domain of nasalization is dependent on the identity of that triggering morpheme. Following a second person plural subject pronoun, nasalization spreads only one segment to the right. Following a first person or third person singular subject pronoun, however, each item in the auxiliary-verb complex is affected. Systems involving unbounded, or iterative, feature spreading are relatively common cross-linguistically, and have formed the basis for many frameworks in phonology: in such systems, a feature spreads and applies to all possible targets within a given domain (e.g. van der Hulst 1995). Recently, more attention has been paid to bounded spreading patterns, in which the spreading of a feature is limited in some way (e.g. Jurgec 2011, Kavitskaya & McCollum 2017). Such analyses, though, do not predict the coexistence of both iterative and non-iterative patterns involving the same feature within a single language: yet this is precisely what we find in Atchan.

Third, the effect of nasalization is dependent on the identity of the target morpheme. Both consonants and vowels within auxiliaries are susceptible to nasalization, while only consonants are affected within verbs. A mid or high +ATR vowel in an auxiliary will show a change in vowel quality in a nasalization context, but we never see an instance of such a change in a verb. It is not the case that these differences in nasalization can be attributed purely to the phonology: for instance, the auxiliary FUT and the verb 'come' share an identical underlying representation /ɓá/, but diverge in their behavior in nasal harmony contexts (cf. examples 4 and 5).

This data supports a view in which the presence of a certain morpheme triggers a particular constraint reranking or reweighting. In the case of Atchan, this results in the application of harmony across distinct amounts of material, with effects beyond the word level. In this paper, I propose that the difference in domains of nasalization is best accounted for using Cophonologies by Phase (Sande et al. 2020), a framework of the phonology-syntax interface in which particular morphemes can trigger specific operations at syntactic boundaries. This work contributes to the current discussion of iterative and non-iterative harmony: prior literature (e.g. Kaplan 2008) has argued that non-iterative harmony is epiphenomenal, and can instead be derived from independent phonological constraint interactions. In this work, though, I demonstrate that the source of apparent non-iterativity in nasal harmony in Atchan must be the identity of the triggering morpheme, necessitating an approach with makes reference to morphosyntactic features as well as phonological ones. Drawing on an ongoing collaboration with native speakers of Atchan, I investigate the morpheme specificity of nasalization patterns in the language and conclude that the surface realization of this phonological process is deeply tied to morphosyntactic features of both the trigger and target.

References

Jurgec, Peter. (2011). Feature spreading 2.0: A unified theory of assimilation. Dissertation. Tromsø: University of Tromsø.

Kaplan, Aaron. (2008). Noniterativity is an emergent property of grammar. PhD dissertation, University of California, Santa Cruz.

McCollum, Adam G. & Darya Kavitskaya. (2017). Non-iterative vowel harmony in Crimean Tatar. paper presented at the 35th West Coast Conference on Formal Linguistics, University of Calgary.

Sande, Hannah, Peter Jenks & Sharon Inkelas. (2020). Cophonologies by Ph(r)ase. Nat Lang Linguist Theory 38, 1211–1261.

Hulst, H.G. van der (1995). Vowel harmony. In: J.A. Goldsmith (ed.). The Handbook of phonological theory. Basil Blackwell, Oxford, 495-534.

Walker, Rachel. (2011). Nasal harmony. The Blackwell Companion to Phonology, ed. by Marc van Oostendorp, Colin J. Ewen, Elizabeth Hume, and Keren Rice, pp. 1838-1865. Oxford: Wiley-Blackwell.