The typology of contrastive nasality: The case of Kwa

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The vast majority of languages across the world make use of the feature [NASAL] contrastively within some domain. There are four logically possible ways in which a language may use the feature [NASAL] in its segment inventory[1, 2], represented in Table 1 with a language which exemplifies each type. Nasality may be contrastive for (A) neither vowels nor consonants, (B) vowels but not consonants, (C) consonants but not vowels, or (D) both vowels and consonants.

Table 1: Possible ways for languages to exploit the feature [NASAL]

C \ V	**No**	**Yes**
No	A. Quileute[3]	B. Ewe[4, 5]
Yes	C. English[6, 7]	D. French[8, 9]

Traditionally, in the literature, it has been assumed that every language may be categorized as either Type C or Type D. Ferguson (1963:44), for instance, claimed that 'Every language has at least one PNC [Primary Nasal Consonant] in its inventory'. With regards to vowel nasality, he said, 'No language has Nasal Vowels unless it has also one or more Primary Nasal Consonants' (Ferguson 1963:46), reasoning that assimilation in which vowels adjacent to nasal consonants become nasalized must be the source of vowel nasality. Ferguson's universals therefore predict that Type A and Type B languages should not exist. Clearly, however, such systems *are* present in the world's languages, and analyses of nasal assimilation must be able to account for such patterns, both synchronically and diachronically.

In this talk, I take up the case of Kwa, a branch of Niger-Congo consisting of around 50 languages spoken between Côte d'Ivoire, Ghana, Togo and Benin[10]. Based on a typological survey of 45 Kwa varieties, I show that languages of Types B, C, and D are all attested within Kwa, making it an ideal case study for examining the synchrony and diachrony of contrastive nasality. In the Type B languages, including Attié, Atchan, Nghlwa, Krobou and Akan (among others), nasal vowels are phonemic, while nasal consonants surface as allophones of a certain set of consonants before a nasal vowel nucleus. Across Type B languages in Kwa, the set of oral consonants with which nasal allophones alternate varies, and, in some cases, does not form a natural class. In Atchan, nasal consonants are surface realizations of approximants /l j w/ and the implosive /ɓ/ (which patterns phonologically as a sonorant[11]), while in Krobou nasal consonants are allophones of voiced stops /b d ɟ g g͡b/[12], and in Akan the set is split between stops /b d/ and approximants /j w/[13]. In all Type B languages, the reflexes of historical implosives */ɓ/ and */ɗ/[14] form part of the set which alternates with nasal allophones: e.g. /ɓ/ and /l/ for Atchan, and /b/ and /d/ for both Krobou and Akan.

Based on evidence from synchronic phonological patterns and lexical cognates, I argue that, in the ancestor of all Kwa languages, nasality was a property of the syllable, which typically had the shape CV. Vowels and sonorant consonants, including the implosives /ɓ/ and /ɗ/, would surface as nasal within a syllable specified as [+NASAL]. In some Kwa languages, nasality was re-interpreted as a feature of the consonant, resulting in today's Type C languages. In a subset of these languages, vowel nasality was re-innovated from the phonologization of phonetic assimilation in the environment adjacent to a nasal consonant, resulting in today's Type D languages. In other languages, syllable-level nasality has been re-interpreted as a nasality contrast on vowels, resulting in today's Type B languages. In systems like Krobou and Akan, the reflexes of historical implosives are obstruents, but the nasal alternation is maintained (and extended to other voiced obstruents in the case of Krobou).

By zooming in on one language family in which multiple different types of contrastive nasality are attested, this work contributes to an understanding of the possible pathways by which phonological systems change over time and enriches our picture of the cross-linguistic typology of contrastive nasality.