Reconsidering Nasality in Nasal Clicks

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While the existence of click consonants widely known, the existence of nasal clicks is frequently overlooked in phonological theory. These segments are generally assumed to be phonologically nasal, i.e. [n] (a nasal dental click) is the ‘click equivalent’ of [n]. This talk argues that the general view is incorrect: nasal clicks are not phonologically nasal.

True, synchronic phonological alternations involving clicks are rare. As such, previous work on nasal clicks ascribes a [+Nasal] feature specification to them either on the basis of audible nasal airflow (Ladefoged & Traill, 1984), or by inference from the classification of non-click consonants in a given language (Sagey, 1986; Müller et al., 2007). Cross-linguistic investigations have generally taken the latter approach (Güldemann, 2001), though this often results in phonetically nasalized clicks being classified differently in languages with different non-click inventories.

All of these previous analyses fail to note an important universal: if a language has any clicks at all, then it has nasal clicks. This suggests that nasal clicks are somehow phonologically less marked than oral clicks. That conclusion is further supported by Dahalo, a language which has nasal clicks, but no oral clicks; and Sandawe, which requires clicks in word-medial positions to be nasalized. (Similar patterns appear in ritual speech (Hale & Nash, 1997) and language games (Nathan, 2001), as well.)

Explaining the implicational relationship between oral and nasal clicks is problematic if nasal clicks are phonologically nasal. Under this assumption, any implication would be expected to go in the opposite direction, since nasal segments are normally more marked than non-nasals (nasal vowels are more marked than oral vowels, e.g.). Thus, the intuitive analysis of nasal clicks as [+nasal] makes their behavior cross-linguistically very puzzling. This puzzle has a straightforward solution, though, if we abandon the assumption that clicks are phonologically nasal.

The phonetic nasality of clicks can be derived independently of the phonological feature [nasal], as the result of an aerodynamic interaction. Clicks are unique among consonants in utilizing a lingual (ingressive) airstream mechanism. The main articulatory closure combines with a second dorsal closure to form a sealed cavity of air in the mouth, and suction applied to this cavity provides the energy for the click’s burst. An important consequence of this process is that the oral cavity is sealed during click production. It follows, then, that pulmonic airflow during a click can only escape the vocal tract by going through the nasal cavity. If the velum is raised during a click, pulmonic air gets confined in the pharyngeal tube; this results in a rise in pharyngeal pressure. Lowering the velum during a click avoids increased pharyngeal pressure by venting pulmonic airflow through the nasal cavity. Viewed in this way, click nasality can be re-interpreted in terms of airflow, controlled by two phonological features. Clicks are distinguished from non-clicks by the airstream feature [+lingual]. The contrast between nasal and oral clicks is represented by the feature [+pulmonic]: oral clicks are [+pulmonic], and nasal clicks are [-pulmonic]. This [+pulmonic] specification requires pulmonic airflow to continue, which forces lowering of the velum in nasal clicks (thereby allowing airflow to continue through the nasal cavity). Once nasal clicks are reanalyzed as [-lingual, +pulmonic], an explanation of the oral → nasal click implication follows automatically: nasal clicks are less marked than oral clicks because [+pulmonic] segments are less marked than [-pulmonic] ones. This idea is formalized using the constraint $ \text{AGREE}=[+\text{pulmonic}], $ which favors nasal clicks over oral clicks anytime they occur next to [+pulmonic] segments (such as vowels). $ \text{AGREE}=[+\text{pulmonic}] $ interacts with a set of IDENT constraints (which preserve underlying values of [+lingual] or [+pulmonic]) & $ [[+\text{lingual}]] $ (a constraint which militates against clicks) to derive the fact that every language with oral clicks also has nasal clicks, and capture the typology of nasal vs. oral click distribution patterns attested cross-linguistically.

Examples: (Hunziker et al. 2008, Wright et al. 1995)

1. Contrastng oral and nasal clicks in Sandawe:
   a. lô: ‘path’
   b. ìlô: ‘child’

2. Word-medial clicks in Sandawe must be nasal:
   a. /mâl’â/ [man’â] ‘louse’
   b. /û’ê/ [û̃’ê] ‘kidney’
   c. /nînâl’â/ [nînâl’â] ‘to cut’
   d. /gîl’ô/ [gîn’ô] ‘(type of) finch’

References:


