

The Oropharyngeal Character of Nasal Vowels: Raising in Brazilian Portuguese and Romanian
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Nasalization presents a particularly interesting opportunity for sound change to be “drawn from a pool of synchronic variation” (Ohala 1989). Vowels under the influence of velopharyngeal opening (whether phonemically nasal or phonetically nasalized) are well-known for their acoustic complexity; the listener’s response to this challenge is well-studied (Hawkins 1985, among others). Velopharyngeal opening increases the complexity of the vocal tract resonator, adding extra formants and anti-formants to the spectrum associated with relatively simpler oral vowels. The bandwidths of the spectral peaks also tend to widen with greater sound absorption. The sinuses may add still more resonant complexity. It has long been acknowledged that this presents challenges to the analysis of nasal and nasalized vowels and many creative solutions have recently been proposed to deal with the detection of nasality (e.g. Styler 2017; Carignan 2021).

Another question that has received increasing attention in the last decade is this: what is the oropharyngeal character of nasal vowels? Analyzing the spectrum of nasal vowels inherently yields an ambiguous result. Are the formant values detected indicative of the true position and degree of constriction in the vocal tract or of the degree of velopharyngeal opening? In truth, the formant values represent both, so special care must be taken to situate oral and nasal vowels in the same frequency space. To clarify: when we transcribe the symbol [ã], for example, what do we mean? There are two possibilities: (1) That the vowel has all the oropharyngeal characteristics of oral [a] with velopharyngeal opening; and (2) that a vowel of some unknown oropharyngeal quality sounds like [ã], because it has experienced velopharyngeal opening. The first vowel has a motor plan equivalent to [a] (plus velopharyngeal opening) and may therefore experience the same kinds of synchronic and diachronic pressures as its oral counterpart. But the second is a different vowel that merely sounds like [a].

Arai (2005) was the first to show that oral and nasal vowels manifest different tongue positions. Later studies (e.g., Engwall et al. 2006; Carignan et al. 2011; Shosted et al. 2012; Barlaz et al. 2018; Cler et al. 2021, among others) confirmed this and presented increasing evidence that oropharyngeal shape in oral and nasal vowels can differ significantly across a variety of languages, including French and Brazilian Portuguese. What ramifications does this have for our understanding of sound change in Romance?

In this talk, I will review the difficulties inherent in the phonetic study of nasalization; discuss findings on the oropharyngeal character of nasal vowels generally; and discuss vowel nasalization in two Romance languages, one for which I present articulatory data (Brazilian Portuguese) and one for which I present philological data (Romanian). In both languages, the effects of velopharyngeal opening have raised the etymological low vowel considerably. Indeed, the increase is so great that it hardly makes sense to call these vowels “low” any longer. In both cases, an influential contact language possessed a central vowel: the high central vowel in the case of Tupinambá / Língua Geral and a mid-to-high central vowel in the case of Old Church Slavonic / Bulgarian. I argue that the natural tendency to raise low vowels that experience velopharyngeal opening, coupled with the influence of a high central vowel in a contact language, brought about the extreme nasal vowel raising observed in these two Romance languages.

References

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