All gradience is not created equal
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In recent years, the idea that manner of articulation is a structural property (e.g. Steriade 1993, Golston & van der Hulst 1999, Pöchtrager 2006) has occasionally been offered for more widespread consumption, but remains outside the mainstream. In this presentation, I will discuss the conceptual merits of this viewpoint for modeling the phonetics-phonology interface, and present a framework in which this claim may be implemented on a larger scale.

Much has been made of the gradient properties of speech, which have been used as evidence both for and against abstract phonological representations. The traditional line of reasoning is that abstraction serves as an information reduction strategy to help learners cope with an overload of gradient information. More recent work (e.g. Flemming 2001) has suggested that gradience does not preclude the derivation of categorical phonological entities, or even that phonological categories are not primitive but eventually emerge on the basis of gradient input (e.g. Bybee 2001).
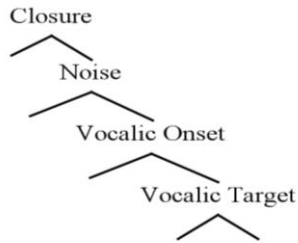
While gradience is an inherent aspect of speech that phonological models choose either to incorporate or ignore, little attention has been given to its characterization and, if possible, categorization. In the acoustic domain, we may distinguish two types of gradience. Gradient spectral information may be found in the resonance properties of the vocal tract as well as voice source characteristics. For instance, two instances of a vowel such as /u/ may show a difference in F2 frequency resulting from contextual variability, speech rate, prosodic position, or other factors. Temporal gradience may be observed in largyngeal contrasts and quantity distinctions; voice onset time (VOT) in stops shows differences on the basis of consonant place of articulation and vocalic context, among countless other factors. Gradience in both the spectral and temporal domains is readily quantifiable and transfers easily to descriptions of both place and laryngeal features.

In the case of manner contrasts however, the acoustic signal appears to be somewhat more categorical in nature, characterized by acoustic 'landmarks' (Stevens 2002). Consider stops, which are perceived on the basis of a (near) silent closure period. Although stops may be realized with incomplete closure (Crystal & House 1988) that is quantifiable on a gradient continuum, this does not necessarily entail sufficient frication noise for the perception of another manner category (fricatives). That is, despite gradient realization, stop closure is inherently privative. While place, laryngeal, and manner contrasts may all be associated with gradient phonetic detail, the phonetics of manner has unique consequences with regard to the categorization of the speech signal. Manner is an inherently more 'phonological' specification. Since prosodic structure has also been claimed to be 'phonological' rather than phonetic (e.g. Steriade 1997), equating manner with structure restricts the primary domain of the phonetics-phonology interface to place and (some languages') laryngeal contrasts.
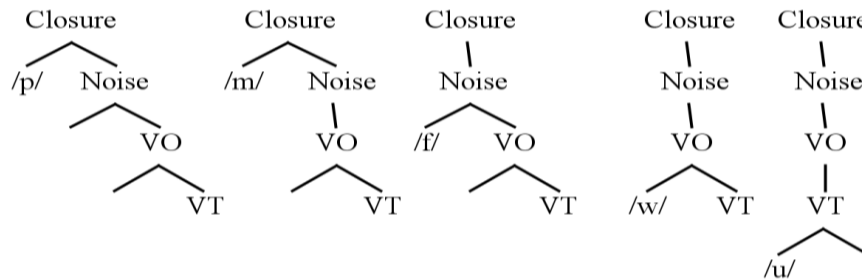
A structural view of manner is implemented in the Onset Prominence representational environment (OP; Schwartz 2013), in which prosodic constituents and segmental representations are constructed from the same representational materials. In (1) we see the primitive building block of OP structures, a hierarchy of phonetic events derived from a stop-vowel sequence. Manner of articulation, incorporating sonority and consonantal strength, is

encoded in terms of the active (binary) nodes in the a given segmental tree. This is shown in (2), which provides structures for a labial stop, nasal, fricative, approximant, and vowel. The segmental symbols are shorthand for place and laryngeal specifications, which we claim to be a primary locus of gradience in the phonetics-phonology interface.

(1) The Onset Prominence representational hierarchy

(2) Manner of articulation in the OP environment

We will explore the empirical implications of this model for a variety of phonological issues, including (time permitting) consonant strength and lenition, phonotactics, place perception, and the realization of laryngeal contrasts, which are ambiguous with regard to the melody-structure divide (Pöchtrager 2006, Topintzi 2010). The OP framework allows for a purely phonological perspective on what is often called 'phonetic implementation', allowing for a minimalist phonetics-phonology interface (Harris 2004) in which phonetic detail may nevertheless be expressed.

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