

When phonetics is not enough: Syllable parsing and laryngeally-complex nuclei

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The sonority hierarchy has long been a source of controversy in phonology. Inquiry into the nature of sonority and the quest to explain recurring sound patterns that appear to draw from the sonority hierarchy have highlighted the stark contrast between the theoretical assumptions of scholars in the field. Phonetic and phonological approaches to this problem have come to opposing conclusions as to what sonority is, and what the implications are for language as a whole. This talk seeks to address extant theoretical assumptions about sonority, as well as presenting preliminary phonetic data about a recurring sound pattern that may shine some light on how sonority fits with synchronic grammar.

There are two main approaches to sonority and its status in the synchrony: those that treat sonority as a primarily phonetic phenomenon, and those that see it as phonological. Approaches to sonority from a phonetic standpoint are mainly concerned with finding a single phonetic correlate that matches the relative sonority values of segments as proposed by phonologists. If such a phonetic correlate exists, then there is no need for any innate knowledge about the scale: speakers can access this acoustic/articulatory property without specialized knowledge, and sonority-based sound patterns such as syllable parsing emerge from facts about their phonetic environment.

Phonological approaches to sonority, at their most extreme, have proposed quantifiable sonority values for specific phonological categories, which are stored and accessed synchronically by algorithms that govern sonority-based sound patterns such as well-formedness of clusters and segments at syllable contact (Berent et al. 2007, Venneman 1988). These scholars claim that the hierarchy is universal but may not represent a single phonetic correlate. Thus, sonority must be phonological in nature, and as newborn infants are sensitive to sonority-based patterns, it must also be innate (Gomez et al. 2014).

One promising lead in the hunt for phonetic correlates to sonority is intensity. Parker (2002) tested the segments of English and Spanish speakers, finding that their position on the sonority hierarchy correlated best with amplitude, and thus syllables have peaks in intensity where they have peaks in sonority. Equating intensity with sonority would be problematic given a language where low intensity is found in the middle of a syllable where a peak is expected. This talk demonstrates that languages with *laryngeally-complex nuclei* (LCN) show just such a pattern. Languages such as Vietnamese (Nguyen & Edmonson 1988), Yuhup (Epps 2008) and Mixtec (Macaulay & Salmons 1995) have vowels that are ‘interrupted’ by laryngeal segments [ʔ] or [h], but are considered by speakers to be part of a single syllable. Danish has a similar pattern caused by a suprasegmental feature called *stød*. *Stød* is realized as glottalization on sonorants or sometimes as a full glottal stop. Tokens of *stød* have dips in intensity within the syllable nucleus that reach 0 dB (for example, see Figure 1). This talk will present preliminary data from running speech in Danish comparing intensity dips from *stød* with those at syllable boundaries.

If intensity is used as a cue for syllable parsing, then why should a phonological environment that lowers to 0 dB and then rises be parsed as a single syllable? I propose that language-specific phonology can ‘override’ this parsing. Danish has a complex system of *stød*-assignment rules that are sensitive to morphological structure; thus a word may or may not show up with this glottalization depending on its syntactic environment (Basbøll 1985). Similarly, Vietnamese (Nhàn 1992), Yuhup and Mixtec all have synchronic alternations between LCN and modal voice or another tone/register. Additionally, LCN may share properties with non-LCN syllables within a language other than intensity contours, for example duration (Lopes & Parker 1999). From these facts it seems clear that ‘sonority’ may be part of a larger system of parsing that does not hinge on a single phonetic correlate. In this way, sonority can be fully accessible from its phonetic correlates while also holding a place in synchronic phonology.

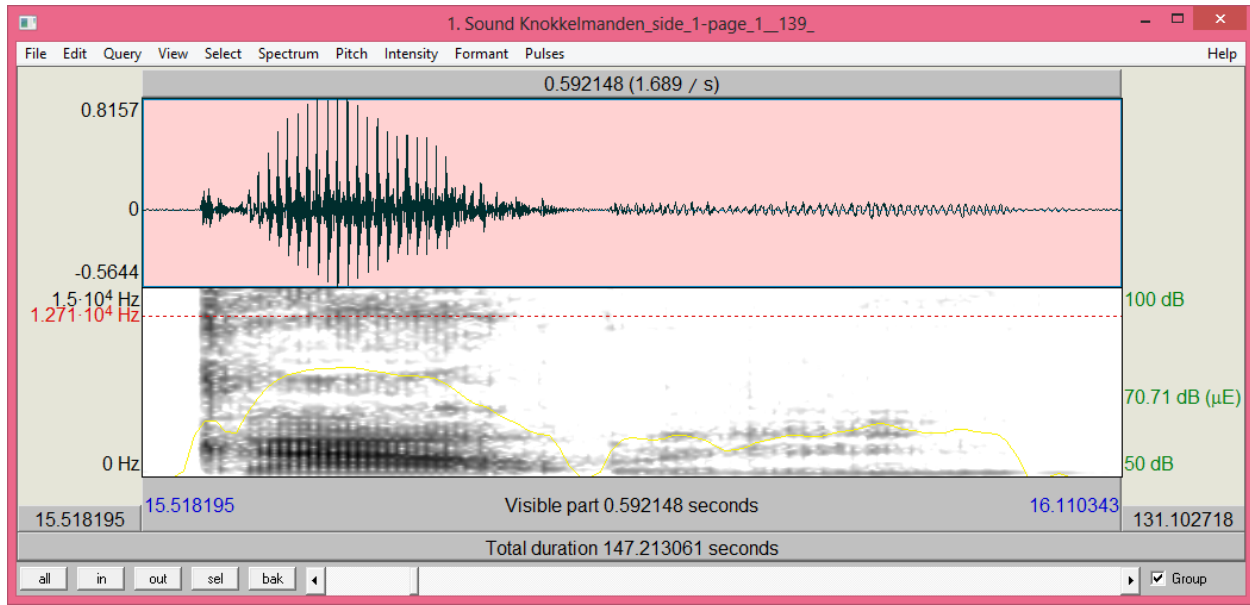


Figure 1: Token of Danish [ˈgɑ²w.løn] *gavlen* ‘the gable’ in running speech. Intensity dips from 78.8 dB to 0dB during the *stød*.

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