

Cross-linguistically, syllables show a wide range of variation. While the unmarked syllable shape is taken to be CV, several possibilities exist beyond this: onsetless syllables, branching onsets, simple codas, branching codas, superheavy syllables, and appendices. So far, we have been a loss to explain why this precise range of possibilities exists. Phenomena that seem to refer to parts of syllables raise a distinct but related problem: what is the internal structure of a syllable? On the basis of different diagnostics, several groupings have been proposed: onset, nucleus, body, peak, coda, rime, mora, etc. Indeed, some authors (Aoun 1979, Harris 1994, and many in the Government Phonology tradition) have argued that “subsyllabic” constituents as independent phonological entities can do all of the work of the syllable node. Additionally, psycholinguistic experiments have led others to conclude that syllables are not encoded in the grammar (Ohala & Kawasaki-Fukumori 1997, Steriade 1999). In short, the syllable is full of contradictions, if it is not just a mirage.

I suggest that these contradictions dissolve when we look at what syllables are *not*: though they have been compared to syntactic phrases (see e.g. Levin 1985), syllables are quite different in that they are not well-defined (discrete) domains, and they do not have recursive structure. I propose what is in some sense a return to the SPE conception of syllables: they belong in the domain of performance (PF in the broad sense), not competence (PF in the narrow sense). In particular, lexical representations take the shape of linear strings with only precedence relationships defined among the segments (following Raimy 2000), as in (1), but some phonological processes, such as stress assignment, can utilize the sonority profile of a word, for example *tactics* as in (2). In this way, like representations in the visual system, phonological representations have different levels with different numbers of dimensions: in this case, a one-dimensional linear string and a two-dimensional sonority profile.

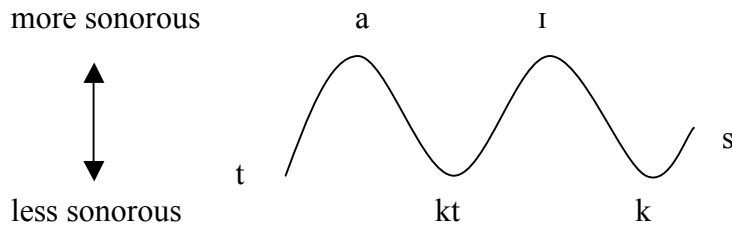
The sine wave-like sonority profile is stored in long-term memory. It is not the result of grammatical constraints such as the Sonority Sequencing Principle, but rather stems from a combination of perceptual and processing factors. The peaks—marked by a closed class of segments, usually vowels—are inherently simpler to locate than the troughs. Therefore, phonological processes cannot normally rely on the accuracy of trough location, hence why syllabification is never contrastive (Hayes 1989, Blevins 1995) and why ambisyllabicity is widespread.

Viewing lexical representations as having this dual 1-D/2-D nature thus makes correct predictions about the range of possible phonological operations, as recent investigations into the “flatness” of phonology have begun to show (Neelman & van de Koot 2006, Samuels 2007). I provide evidence to support this claim from reduplication and infixation. Though it is widely claimed that they make reference to syllables (Ultan 1975, Moravcsik 2000, Nevins & Vaux 2003, Yu 2007), unambiguous cases of syllable boundaries as “pivots” for these processes are vanishingly rare. This hole in the typology is difficult to explain if discrete syllables exist, but is expected if they do not. I argue that the handful of languages that manage to target these pivots can only do so because they have properties that engender unambiguous parsing of the 2-D sonority profile. In this vein I show that languages employ a number of strategies that make the task of finding the peaks & troughs easier. Onset/coda asymmetries are among these strategies, and are best understood in this way rather than as consequences of syllabic structure; though there is a sense in which phonological representations are crucially flat, other properties of phonology make the most sense in light of the understanding that maintaining an alternating sonority profile is also quite important.

With regards to other aspects of cross-linguistic typology, I show that the limited number of syllable shapes results from the need to avoid self-similarity within a domain and is linked to George Miller’s (1956) “magical number seven.” I argue that these same concerns are also responsible for the local nature of phonotactic restrictions and many phonological rules. Thus, the combination of both 1-D and 2-D representations explains many of phonology’s complexities, as well as why syllables have proven so elusive.

(1) % → α → β → γ → #

(2)



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