

Stochastic time analysis of syllable-referential intervals

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This talk pursues an analysis of the relation between qualitative syllable parses and their quantitative phonetic consequences. We begin by expressing the statistics of a symbolic organization corresponding to a syllable parse in terms of continuous phonetic parameters which quantify the timing of the consonants and vowels that make up syllables: consonantal plateau durations, vowel durations, and their variances. These parameters can be estimated from continuous phonetic data. This enables analysis of the link between symbolic phonological form and the continuous phonetics in which this form is manifest. Pursuing such analysis, we illustrate the predictions of different syllabic organizations and derive a number of previously experimentally observed and simulation results. Specifically, we derive the canonical phonetic manifestations of different syllabic organizations but also the result that, under certain conditions we can make precise, the phonetic indices of one organization can change to a range of values characteristic of the other, phonologically distinct organization. We also explore the behavior of phonetic indices for syllabic organization by progressively increasing the size of the lexical sample and concomitantly diversifying the phonetic context over which these indices are taken.

Two conclusions are drawn. First, instead of a nuisance, variability can be a tool for elucidating the relation between symbolic form (here, syllable structure) and its continuous instantiations; and, second, qualitative organizations do not dictate specific values of behavioral indices. Rather, they constrain patterns of change of these indices.