

Feature setting in phonotactics: a study on Polish and English word-initial clusters

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For over a century, phonological theory has relied on the measure of sonority in determining consonant cluster well-formedness. Starting with seminal works of Sievers (1901) and Jespersen (1913), the proposed sonority hierarchies (e.g. Clements 1990, Steriade 1990, Trask 1996, Vennemann 1988, Wiese 1988) have been mainly based on a single criterion of manner of articulation, although some phonotactic models have systematically combined several phonological features beyond sonority (e.g. Dziubalska-Kołodziejczyk 2014). The analysis pursued here draws on the observation of Orzechowska & Wiese (2015) that phonological features rather segments determine phonotactics in a given language. We provide a close inspection of word-initial consonant clusters in Polish and English in terms of four features; (1) complexity, (2) place of articulation, (3) manner of articulation and (4) voicing, with the goal of determining their preferability in phonotactics.

In the evaluation of clusters, each feature (e.g. voicing) is instantiated by a range of parameters (e.g. voice in C1, voice cluster-finally, voice agreement). For each parameter, patterns (e.g. +/-voice in C1, +/-voice in C-final, no/partial/total agreement) are established. The number of clusters in a given language adhering to a particular pattern is determined, which allows to observe which patterns contribute to a preferred feature configuration in clusters. For instance, English clusters tend to start with a voiceless segment (70%) and end with a voiced one (93%), while in Polish voice agreement is preferred; the majority of clusters (69%) agree in the voicing feature [+voice].

An exhaustive inventory of initial clusters for the two languages was compiled on the basis of handbooks, dictionaries and corpora. Some clusters appearing in isolated words, e.g. English /θw [m] [n zl/ found in *thwart*, *schmalz*, *schnapps*, *złoty* were not taken into consideration due to their obviously foreign status. The resulting list of 432 and 54 clusters in Polish and English respectively was used in the analysis. We firstly broke up clusters into features, according to the IPA categories, and next searched for a preferred feature setting for each language. In such a way, we demonstrated that different sets of preferences govern the structure of word-initial phonotactics in Polish and English. Generally, place and voice features were shown to be particularly relevant for Polish; presence of one or more coronal(s) in a cluster, presence of a coronal cluster-finally and [+voice] agreement throughout a cluster. In English, preferences preserving the sonority-based profile were observed; cluster size (CC), increase in articulatory opening, and [-voice] cluster-initially.

The proposed approach constitutes an alternative to existing models of phonotactics as it is not based on a priori assumptions on cluster structure. It allows to trace idiosyncratic properties of clusters and formulate the preferred feature settings for a given language. This phonotactic measure complements other approaches by stating what clusters are like rather than what they should be like.

Words: phonological features, phonotactics, Polish, English

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