

Auditory cues determine allomorphy: Vocalized and non-vocalized prepositions in Czech

Previous research Czech consonant-final primary prepositions can occur either non-vocalized (e.g. *s máslem* ‘with butter’), or vocalized, i.e. the vowel *e* is appended to the plain form (e.g. *se sýrem* ‘with cheese’). The widely held assumption has been that prepositional vocalizations are dependent on the phonetic context (i.e. the structure of the following-word onset) and that the main motivation for the vocalized form to occur is the facilitation of articulatory effort (Hruška 1976). Importantly, even in one and the same phonetic context, we observe large variation in whether the preposition is or is not vocalized, which previous research has not been able to account for. Previous studies only explained vocalizations in a limited number of contexts, assumed different mechanisms for non-syllabic and for other prepositions, presented analyses with an otherwise unattested syllabic pattern of ‘pre-syllables’, or had to assume a derivational analysis to account for some of the prepositional forms (Kučera 1984, Dickins 1998, Kučera 1961, Rubach 2000).

The present analysis I propose an Optimality Theoretic and Harmonic Grammar analysis of the prepositional vocalizations. The grammar proposed in this study is created within the framework of Bidirectional Phonetics and Phonology (Boersma 2007) and formalized by a model that operates on five levels of representation between the morpheme and the articulatory form. This study overcomes the limitations of previous studies by showing that *all phenomena* concerning prepositional vocalizations can be explained using the *simplest principles* widely attested in the language. Crucially, the long-held belief that prepositional vocalizations occur to lessen speakers’ articulatory effort is replaced by a more plausible explanation. My model is *listener-oriented* and correctly predicts all of the attested vocalization patterns as well as the variation. By having multiple levels of representation interact in parallel, I show how cue constraints that handle the mapping between the lower levels, i.e. the auditory form and the surface form, cause vowel insertion in phonological production. Interestingly, it is seen that not only phonetic context but also language-specific preferences for particular prosodic structures determine the vocalizations. Eventually, I show that vocalizations in other than non-syllabic prepositions do not at all require a separate mechanism but can well be explained by the mechanisms presented in this paper.

All claims that the present analysis makes are supported by results of simulations with virtual learners. The simulations also resolve several issues, in which multiple formal analysis would be possible, e.g. the results indicate that Czech speakers might prefer to store one underlying form of the preposition only and insert the vowel during phonological production, rather than to have two allomorphs underlyingly.

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