Applying phonology in lexicography: variant-synonym classification in Czech Sign Language
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1. Problem
This paper focuses on the variant/synonym classification in the first online lexical database of Czech SL (Dictio), as part of the lemmatisation problem. Lemmatisation issues for sign languages are more similar to those of spoken languages that lack standard writing systems than that with standard orthographies (Fenlon et al. 2015). Researches have noted that a pair of signs is likely to be variants in cases they differ in just one parameter (Fenlon et al. 2015). Parameters (in SL: hand configuration, place of articulation, movement) may act as phonemes and create minimal pairs (e.g. BAR and BINO differ only in one parameter: hand configuration -- orientation). Thus the starting point in the variant/synonym classification is to affirm that the lexemes share the same meaning. We are using the Hand-Tier (H-T) model (Sandler & Lillo-Martin 2006; S&LM) due to its fitting description of the data we are working with. Other phonological models such as Move-Hold model (Liddell & Johnson 1989) or Brentari's (1998) Prosodic model cannot accurately capture the subtle contrasts important in this lexicographic task. Our research contributes the following: a) empirical level: phonological description of Czech SL (we are building on a study of 300 phonologically related pairs of variants/synonyms; b) practical level: classification of Czech SL lexemes in Dictio (resolving a part of lemmatisation issues in the dictionary); c) theoretical level: refinement of the requirement for minimal difference in SL variants. We specify what we is covered by the "one parameter" criterion. Additionally, we work out the exact position and function of the features (rep) -- repetition and (contact) in the H-T model, and, in consequence, we update the model for the secondary movement.

2. Model


Different number of hands
We classify the pairs that result from the weak drop as having a different place. Weak drop is a postlexical process observed by non-symmetrical two-handed signs that consist in the deletion of the non-dominant hand (hand 2 -- neutral place); e.g., VIDEO_1 and VIDEO_2.

Symmetrical two-handed signs and their one-handed variants differ in the engagement of hand 2 (copy of hand 1); e.g., RAW_1 and RAW_2.

Mouthing and mouth gestures usually bear a lexical difference e.g., DINNER and BREAKFAST (signs that contain the manual part for EAT and differ by the mouthing of Czech words for dinner and breakfast). To find a phonological role is rare; e.g., different mouth gestures in RUDE_1 and RUDE_2. Mouthing exhibits idiosyncratic variation, typically in the number of syllables of the corresponding spoken equivalent, which is being silently articulated. Since the phonological status of mouthing and mouth gestures is not clear, these categories are not included in the H-T model and our analysis at the moment.

Following S&LM, we analyze circular movement as a combination of [arc] and [convex] features.

The terminal features are taken from S&LM.

In H-T model, internal movement belongs to HC, unlike Brentari’s (1998) Prosodic model, which unifies path and internal movement into a single category. There are two types of internal movements: i) opening/closing of the hand (e.g., LAMP) and ii) orientation change (e.g., TRANSLATE), which we analyze as branching of the aperture or orientation features, respectively.

Secondary movement is defined as quick repeating change of position or orientation of the hand, and finger wiggle (S&LM 2006: 197); the representation in the model is not explicitly given in S&LM (2006). We decompose secondary movement into [rep] and HC subcategories: position -- aperture (e.g., SHOWER) and orientation (e.g., NO) or place [wiggle] at selected fingers (e.g., ISRAEL).

3. Discussion
Criterions for variant/synonym distinction: equivalent meaning and minimal formal difference. One parameter changes -- variants; two and more parameters change -- synonyms. As we understand handshape, place and movement (Fenlon et al. 2015 consider also orientation while classifying the variants but in H-T model, orientation is a subcategory of handshape configuration).
