

Paradigmatic Levelling in English: The Influence of Phonological Neighbours

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Levelling in the English strong verb paradigm can proceed in two possible directions: Preterite Shift, levelling from the preterite (i.e. past tense) to the past participle, such as *I have drunk it*; or Participial Shift, levelling from the past participle to the preterite, such as *I drunk it*. Previous studies have largely focused on Participial Shift (cf. Bybee & Slobin 1982; Bybee 1995; Anderwald 2009), although some studies have found evidence for Preterite Shift (cf. Eisikovits 1987; Geeraert & Newman 2011). Interestingly, a group of verbs (e.g. *drink, sing, ring, swim, shrink*), which Anderwald refers to as “Bybee verbs”, has been observed to occur with both Participial Shift and Preterite Shift. Moreover, it has been suggested in these previous studies that the phonological similarity of this particular class of verbs influences analogical levelling. This study explores the influence of phonological neighbours and uses graph theory to measure analogical structure.

Phonological neighbours are defined as a one-phoneme difference (e.g. *go* is neighbours with *show* and *mow*), which we extracted from the English Lexicon Project (Balota et al. 2007). In order to measure the network structure of the lexicon, we utilize graph theory, which quantifies the inter-connectedness of phonological neighbours. Specifically, we include three measures in this study: degree (i.e. number of phonological neighbours), clustering coefficient (i.e. whether the neighbours are neighbours), and closeness (i.e. a measure of the average paths of a verb to all other nodes in the network).

We explored levelling through an eye-tracking experiment, which included 120 irregular verbs. The sentences for each verb were manipulated for the preterite and past participle (e.g. *I drove you there* vs. *I have driven you there*). Half of the sentences contained the standard form of the verb (e.g. *Mary ate breakfast* or *He had grown up in Seattle*), and the other half contained the non-standard form of the verb (e.g. *Mary eaten breakfast* or *He had grew up in Seattle*). The fifty-four participants saw each verb once, in either the preterite or past participle and in either the standard or non-standard form.

The data were analyzed using mixed-effects regression models. The results show significantly longer fixation durations for the non-standard form in the preterite (i.e. Participial Shift) than in the past participle (i.e. Preterite Shift), indicating that Preterite Shift is faster to process. Bybee verbs show shorter fixation durations in both the preterite and past participle regardless if they are in the standard or non-standard form. The phonological neighbours measures show a significant influence in paradigmatic levelling. First, the tighter the cluster of neighbours, the longer the fixation durations. Second, all verbs, and especially Bybee verbs, are processed faster in the preterite, and slower in the past participle, when the paths to all other nodes are shorter. Lastly, there are shorter fixation durations when the verb has more phonological neighbours, especially with the non-standard form in the past participle. Thus, this study shows that Preterite Shift is easier to process and that phonological neighbours significantly facilitate levelling in this direction.

References

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