The Footprint of Lexical Organization in Morphological Change

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The proper description of the mental lexicon and its organizational properties is a longstanding topic of debate. We investigate this with computational simulations of the phenomenon of 'externalization of inflection' (EoI) [1]. This change traps an inflectional morpheme by the grammaticalization of new material, such that the inflectional morpheme becomes stuck inside the word. The trapped morpheme may then externalize, as seen in (1). This sequence of change is in line with a widespread preference for inflectional material to follow derivational material [1].

The logic of the simulations is simple: more frequent inflection is more likely to be parsed in comprehension [2] and by hypothesis more likely to be combined online during production. Conversely, more infrequent affix and stem combinations have a greater probability of being retrieved as whole words from the lexicon (see similar ideas in [3]). This contrast is reflected in acquisition, where frequent inflectional morphemes are mastered early and less frequent derivational morphemes come later [4]. Adopting the logic of similar simulations [5], we hypothesize that the preference for EoI relies on how these facts interact with an iterated learning process. The change reflects a tension between faithfulness to the input to acquisition (i.e. trapped forms) and language internal pressures to extend general combinatorial routines (e.g. suffixation in Basque) over time. Material that elsewhere in the language is frequently suffixed will tend to be suffixed 'erroneously' with a certain probability, which in turn would alter the input data for the next generation. The result of iterated learning, then, is an increase in the probability of externally inflected forms across generations, until reaching a fully suffixing ceiling.

Preliminary results suggest that the current approach is correct. This suggests that EoI reflects not a hard preference for inflection to follow derivation, but rather the entrenchment of certain combinatorial routines over the course of generational time. Furthermore, the results suggest that a 'hybrid' lexicon in which whole words, stems, and inflectional material are all stored side by side may best account for these changes.

[1] Haspelmath, M. 1993. The diachronic externalization of inflection. *Linguistics* 31.2: 279-309.

[2] Hay, J. 2002. From Speech Perception to Morphology: Affix-ordering Revisited. *Language* 78.3, 2002: 527-555.

[3] Marslen-Wilson, W.D. 1990. Activation, competition, and frequency in lexical access. In G. Altmann (Ed.), *Cognitive models of speech processing: Psycholinguistic and computational perspectives.* Cambridge, MA: MIT Press

[4] Anglin, J. M. Vocabulary Delevopment: A Morphological Analysis. *Monographs of the Society for Research in Child Development*, 1993, 58(10, Serial No. 238)

[5] Pearl, L. and Weinberg, A. 2007. Input Filtering in Syntactic Acquisition: Answers from Language Change Modeling, *Language Learning and Development*, 3(1), 43-72.

(1) Basque [cf. 1]

hone-tan → *hone-tan-txe* → *hone-xe-tan*

this-LOC → this-LOC-emph → this-emph-LOC