Cluster Concepts and Structured Lexical Entries

Cluster concepts apply when, given a set of conditions, examples that maximally satisfy the conditions are regarded as more typical than examples that satisfy fewer of the conditions. For example, climbing involves two independent conditions: (a) an individual is traveling upward, and (b) the individual is moving with effortful grasping motions (clambering). On the most likely interpretation (*Bill climbed (up) the mountain*), both conditions are met. On the other hand, the sentence *Bill climbed down the mountain* violates the first condition and *The snake climbed (up) the tree* violates the second condition. However, both examples are acceptable instances of climbing since each one of them fulfills at least one condition. The default interpretation, in which both conditions are satisfied, is judged to be more prototypical climbing, while the other acceptable sentences are judged as marginal.

Even though cluster concepts help define words in this way, the interaction between cluster concepts and lexical entries has not been explored in detail. The goal of the current paper is to fill this gap and formalize the relationship between cluster concepts and lexical entries, arguing that cluster concepts are actually instantiated in lexical entries. It is shown that while cluster concepts can be embedded in lexical entries, at the same time they can be abstracted away from them. This encoding of cluster concepts in lexical entries is done using structured lexical entries in the style of the Slot Structure Model (SSM). The SSM is a constraint-based model of morphology that is based on percolation of both syntactic and semantic features and on slot structure, which organizes the information in the lexical entries of words and affixes. The SSM is partly based on the dual-route model of morphology.

A corpus study in English and Spanish was conducted in order to determine the uses of words whose lexical entries may be defined through the use of cluster concepts, and to find out whether their use with a prototypical meaning is more or less frequent than with a non-prototypical meaning (that is, more marginal senses). The results serve as (indirect) evidence that cluster concepts are instantiated in lexical entries. The corpus results also serve as a basis to explore the consequences of the proposed analysis for word formation and compounding. For example, do words that are used as a base for derivation or as compound constituents usually have the prototypical meaning? For instance, in *climber*, the base is the prototypical sense of *climb*, not the one that means only *clambering* or *going up*. The same is the case for, say, *bird watcher*, where the person doing the watching does not typically observe penguins, but rather prototypical birds such as cardinals or robins. Finally, the paper explores the possibility that the phenomenon of "family resemblance" can be explained by or subsumed under the notion of cluster concepts. It is shown, for example, that the prototypicality of Wittgenstein's classic example, the word *game*, can be explained using only cluster concepts encoded in its lexical entry.