Productivity of compounds: an application of construction morphology

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This paper demonstrates that productivity of compounds can be best captured by using the idea of construction morphology (Booij 2005), based on a simulation study of Japanese verbal compounds.

While productivity of derivational affixes has been extensively studied, productivity of compounds has received less attention. Although quantitative measures for productivity of derivational affixes (Baayen 1992) can be naively applied to compounds, this cannot be a sufficient description because productivity of compounds does not conform with a one-dimensional scale.

The lack of a rigorous method of describing productivity of compounds has been caused serious confusion in the classification of Japanese compounds. For example, compound verbs like (1a) have been considered rule-based because their first constituents are open-ended, while deverbal compounds like (1b) have been considered lexical because their second constituents are lexically restricted.

(1) a. tabe-hazimeru (eat-begin, ‘begin eating’)
   b. inaka-zumai (countryside-live, ‘rural life’)

In fact, both classes behave in the same way: their first constituents are open-ended and their second constituents are lexically restricted.

Such confusion, however, is easily resolved if we assume that each compound is an instance of a morphological construction. For example, the fact that -hazimeru ‘begin’ can productively yield compound verbs in Japanese, as in (1a), can be described by positing the construction \[
[[V] -hazimeru].
\]
In this view, the productivity of -hazimeru can be equated with the strength or degree of entrenchment of the corresponding construction. In the same vein, the existence of the construction \[
[[N] - [N]]
\] suggests not just that noun compounds are productive, but also that both first and second constituents are open-ended in noun compounds. In short, construction morphology offers a concise way to describe the set of possible and probable compounds in a given language.

A number of studies suggest that a construction is acquired in a bottom-up way. This paper tests this idea with a simple simulation model using actual frequency data of Japanese verbal compounds. Compounds are exposed to the model one after another, and the model gradually grows constructions based on similarity among them. It will be shown that the results well reflect the intuition of native speakers as to which compounds are likely to be productively created.

Methods shown in this study could be extended to more general computational models of how constructions are acquired and used in language.

Reference


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