Compounding in the Slot Structure Model

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1 Introduction

An account of the semantics of compounding has been one of the most elusive undertakings in morphological research. As Jackendoff (2010) points out, scholars have despaired at finding the range of possible relations (or semantic functions) between the constituents of a compound. The current paper presents a fully developed model of compound formation, set within the framework of the Slot Structure Model (SSM) (Benavides 2003, 2009, 2010, 2022), 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 (Pinker 2006, Pinker 1999, Pinker & Ullman 2002). The goal of the paper is to demonstrate how the meaning of a compound is built from that of its constituents, and the relations between them, using the SSM framework.

It is shown that analyzing compound formation using SSM brings with it several advantages, including a more comprehensive explanation of how the semantics of compounding works; a principled, more systematic way to determine the headedness of a compound, regardless of the language; the ability to explain the generativity of compounds on the basis of the actual and potential information contained in the lexical entries of the constituents; and the simplification of the interpretation of compounds, not only because of the notation, but also due to the structure of the lexical entries involved in the determination of compound meaning. Importantly, SSM achieves all this employing the same machinery that is already used for derivation, with some enhancements, including the enrichment of lexical entries, to produce a flexible, generative mechanism that accounts for the semantics of a wide range of compounds types. These include NN, NA, AN, VN, and AA compounds. The analysis is based on English, Spanish and German compounds, but it should be applicable to compounds in other languages. The paper thus achieves a wider coverage of the data than other current approaches that deal with the semantics of compounding, including Jackendoff (2009, 2010, 2016) and Toquero-Pérez (2020), who restrict their analysis to NN compounds, and Schlücker (2016), who discusses AN compounds.

According to Jackendoff (2010), the class of possible meaning relations between the two nouns in a compound is the product of a generative system. This paper shows how the lexical entries of the two constituents of a compound provide the basic information that gives rise to the generativity of compound meaning. An indefinite number of semantic functions can be generated based on the lexical information of the compound constituents. The unification of the two lexical entries contributes to making it a generative process.

Example compounds to support the analysis have been obtained from the Corpus del Español (CDE, Davies 2016), the iWeb corpus (Davies 2018), Jackendoff (2010), Toquero-Pérez (2020), Lang (2013), Moyna (2011), and Schlücker (2016).

2 The Slot Structure Model (SSM)

The SSM is an approach to morphology based in part on Lexical Conceptual Structure (LCS) (Jackendoff 1990, 2002, Rappaport & Levin 1988, 1992) that explains the process of [base + affix] unification in regular word formation in Spanish (e.g. *demoli + cion* [*demolición* 'demolition']) and other languages, and is crucially based on the notion of lexical entries instantiated in a slot structure. Employing the mechanisms of subcategorization/selection (subcat/select) and percolation, already available in the generative framework (cf. Lieber 1992, 1998, Pinker 2006, Pinker 1999, Pinker & Ullman 2002, Huang & Pinker 2010), the model unifies all the processes that take place during the formation of a complex word (e.g. *plega + ble* [*fold + able*] 'foldable').

Crucial to the SSM is that percolation, subcat/select, and slot structure, acting in concert determine the structure and content of the lexical entries of derivatives and allow for predictions to be made about the behavior of groups of features in the formation of a word. Percolation in particular, as shown by Pinker (1999) and Pinker & Ullman (2002), is key to account for compositionality in word formation. Huang & Pinker (2010) call percolation *information-inheritance* and stress the need for this mechanism in morphology, both in inflection and word formation.

In addition to accounting for regular derivation, the SSM adequately accounts for regular inflection (e.g. *libro + s* 'book + s', *beb + o* [drink-1sg, pres.] 'I drink'), as well as the regular derivational morphology of several languages genetically unrelated to Spanish (Mam, Turkish, Swahili). In addition, the SSM has been extended (Benavides 2003, 2009, 2022), using the exact same tools and mechanisms, to other types of affixes (in Spanish and other languages), namely, derivational prefixes, passives, expressive suffixes (e.g. diminutives), inflectional affixes, and parasynthetics, as well as to causatives and applicatives in Chichewa, Madurese, Malayalam, Chimwi:ni, and Choctaw. This suggests that the notions of percolation, subcat/select, slot structure and the LCS may be universal constructs.

Diagrams presented in the paper demonstrate how the semantics of compound formation is implemented with an adapted SSM formalism, and show that predictions can be made about the organization of information, including argument structure, in the resulting compound. For example, Diagram 1 shows the formation of the compound *plastic bag*. Each column represents a lexical item, with its respective slots, and the arrows indicate that a feature from *plastic* has percolated to the COMPOSITION (COMP) slot of the entry for *bag*, the head of the compound, resulting in *plastic bag* as an item with a unified meaning.

Diagram 1

plastic	bag
CATEGORIAL [THING] N	**CATEGORIAL** **[THING]** **N**
	CORE **ARTIFACT** **BAG**
	PF **HOLD CONTENT**
CORE MATERIAL PLASTIC →	**COMP** → **PLASTIC**

This type of representation has an advantage over Jackendoff's (2009, 2010, 2016) functions (e.g. COMP (X_1,Y_2) 'N_2 is composed of N_1') in that it enables the basic functions to be integrated into the lexical entries of the constituents, thus allowing for an easier interpretation. It also allows for more accurate predictions to be made about the meaning of compounds, because information inside the lexical entries of the constituents compose with each other inside the entries.

3 Conclusion

This paper shows that an analysis of compounding that employs the SSM framework brings about several important advantages, as outlined in §1. This is the case because the information related to the semantic functions is shown in the context of the rest of the semantic information of the lexical entries of the compound constituents. Importantly, all this is accomplished with the same machinery that is already used for derivation. The key innovation of the model is the enrichment of lexical entries to produce a flexible, generative mechanism that accounts for the semantics of a wide range of compounds. The generativity comes from the pieces of information inside the lexical entries of the constituents, which interact with pragmatics and compose with each other inside the entries, not detached from them as in Jackendoff (2009, 2010, 2016), Toquero-Pérez (2020) and Schlücker (2016).

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