Hammering out a corpus-based study without a hammer: Effects of semantic bleaching on argument structures of English denominal verbs

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A denominal verb (DNV) is the product of a syntactic category shift from noun to verb (Baeskow 2019; Bauer 2018; Clark & Clark 1979; Van Goethem 2017), such as *to **butter**$_V$ <the bread>*. While some DNVs denote only situations involving an instance of the source noun category, as in *to **butter** the bread (#with oil)*, Kiparsky (1997) observes that some DNVs denote more broadly, e.g.*, their pulp is **peppered** <u>with tiny seeds</u>*. Seed is not a subcategory of pepper, but *tiny seeds* is a licit theme argument of the DNV *pepper*, as shown by the presence in the sentence of the oblique expression *with tiny seeds*. We say that DNVs like *pepper* are semantically bleached because the selectional restrictions that they place on the oblique argument have been loosened.

This study explores the consequences of semantic bleaching for the argument structures of DNVs. It reasons, for example, that if a DNV's source noun predicts the category of the theme argument in an event of transfer, as *butter* does, an oblique expression encoding that theme argument (e.g., *with butter*) need not appear. Conversely, when a DNV's source noun does not predict the category of the theme argument, an oblique expression encoding that argument will tend to appear (e.g., *with tiny seeds*). Using corpus methods, we investigate whether bleached DNVs are more likely to occur with oblique arguments. Further, since both bleached (literal) DNVs and DNVs with figurative meanings would appear to welcome entities other than source-noun referents as their oblique arguments, we ask whether figurative meaning of a DNV (e.g., *to **pepper** the talk with humor*) counts as a type of semantic bleaching.

We compare the syntactic behavior of bleached and non-bleached DNV lexemes within the instrumental and ornative ('apply N onto x') classes, respectively, contrasting two frequent verb lemmas within each class. In the instrumental class we compared the behavior of *hammer*$_{instrumental\_bleached}$ and *ladle*$_{instrumental\_non-bleached}$. In the ornative class we compared the lexeme *pepper*$_{ornative\_bleached}$ with the lexeme *butter*$_{ornative\_non-bleached}$. We randomly sampled 200 transitive tokens of each DNV lexeme in COCA (Davies 2008) and annotated (a) the presence or absence of an oblique argument and (b) the figurativity of each token.

The results show that DNVs generally tend to occur without oblique arguments, whether bleached or not (*hammer*: 10.0%, *ladle*: 0.0%, and *butter*: 2.0%). An exception to this tendency is *pepper*, which takes an oblique theme argument in 73.5% (147/200) of the tokens examined. It is worth noting that 90.5% (133/147) of these tokens are figurative uses. However, given the similar proportion of figurative uses in *pepper* (85.0%), *hammer* (73.0%) and *butter* (42.0%), we cannot conclude that figurativity correlates with the presence of an oblique argument. Instead, these results suggest that the presence or absence of an oblique argument is a matter of verb bias, and that the argument structure of a DNV is best explained through a usage-based model.

This study also suggests that figurative DNV uses reflect the semantic frame(s) of their source nouns (Fillmore 2006; Michaelis and Hsiao 2021). The frame-semantic and broader encyclopedic knowledge associated with a source noun serves as a source domain (Lakoff & Johnson 2003) from which prominent properties, relations and entailments are mapped to the target domain. For example, figurative *hammer* tends to select entities constructed through labor as its objects (e.g., *to **hammer** out a deal/agreement/solution*), suggesting that the incremental-theme and effortful-action components of literal *hammer* are preserved in metaphorical uses. In contrast to the loose semantic selection of arguments in bleached DNVs, figurative DNVs appear to select arguments with prominent

feature(s) projected from source-noun frames. Therefore, we conclude that metaphorical meaning is distinct in character and effect from semantic bleaching.

In sum, this study suggests that a usage-based account is needed to explain the distribution of oblique arguments of DNVs and that figurative DNV uses are influenced by source-noun frames through conceptual mapping, providing further evidence for the inseparability of metaphorical structure and argument structure (Goldberg 1995).

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