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Formalizing evaluative morphology in Frame Semantics

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The problem

- Modification in word formation
 - Interaction of affix and base semantics
- Modeling the semantics of evaluative morphology
 - Is evaluative morphology additive or relational in nature?
 - Could modification be considered as the addition of a semantic component (e.g. SMALL, BIG) to the base lexeme?
 - What is the nature of this semantic component?
 - Is it a semantic primitive?
- Is *midi-* really augmentative?

Evaluative morphology

Evaluation along two axes:

- the quantitative axis, covers the descriptive characteristics of an item.
- the qualitative axis, expresses the subjective feelings and opinions of the speaker towards the item in question.

The quantitative axis (SIZE)

In this study, we focus on the category of SIZE:

- SIZE is of paramount importance in the way we categorize the world (Barsalou 1999; Schwarzkopf et al. 2011).
- SIZE is considered as the starting point for the meaning of evaluatives (Jurafsky 1996; Prieto 2005, 2015). The qualitative function of evaluative affixes (GOOD, BAD) is secondary, in that it derives from the quantitative one (SMALL, BIG) via figurative extensions (Wierzbicka 1984; Jurafsky 1996).

The traditional “additive” view

- “the suffix does not change the word class of the base, nor does it crucially change the meaning of the base. The meaning of the base is merely modified by adding the semantic component SMALL” (Schneider 2013: 138).
- A formalization of the additive view can be sketched as in (1).

(1) base + affix[SEM: *small*] → base[SEM: *small*]

Things to consider

How does modification work?

- Under the “additive” approach, there is no real interaction between the base and the semantics of evaluative morphology.
- “The meaning of the base is merely modified by adding the semantic component SMALL”:
 - What is the nature of this semantic component?
 - Is it a semantic primitive?
 - By which mechanism is it added to the base?

Things to consider

How can we model evaluative morphology?

- Wierzbicka (1996): semantic primitives SMALL, BIG
- Lieber (2016: 39)
 - [+/- scalar] With respect to SUBSTANCES/THINGS/ESSENCES [scalar] will signal the relevance of size or evaluation. This will be the feature which characterizes augmentative/diminutive morphology in those languages which display such morphology.
 - Lieber introduces [scalar] in her set of universal semantic features but does not show how this feature interacts with the semantics of the base.

Things to consider

- SIZE is a relative notion and not an absolute notion (Jurafsky 1996; Wierzbicka 1996).
- A *book*, for example, is not absolutely small or big. It is smaller than a *table* but bigger than a *die*.
- Crucially, a *booklet* is bigger than a *die*, despite that *booklet* has a marker of diminution.

Things to consider

- What is the meaning of *booklet*?
- A *booklet* is a book that is smaller on the scale of SIZE than the stereotypical exemplar of the category *book*.
- The additive view does not capture the relational nature of evaluative morphology.

Summing up

- Under the additive view there is no real interaction between the base and the semantics of evaluative morphology.
- The status of the SMALL/BIG/±SCALAR component is not clear.
- The mechanism by which this component is added to the base is not clear either.
- The pipeline in (1) cannot capture the relational nature of evaluation.

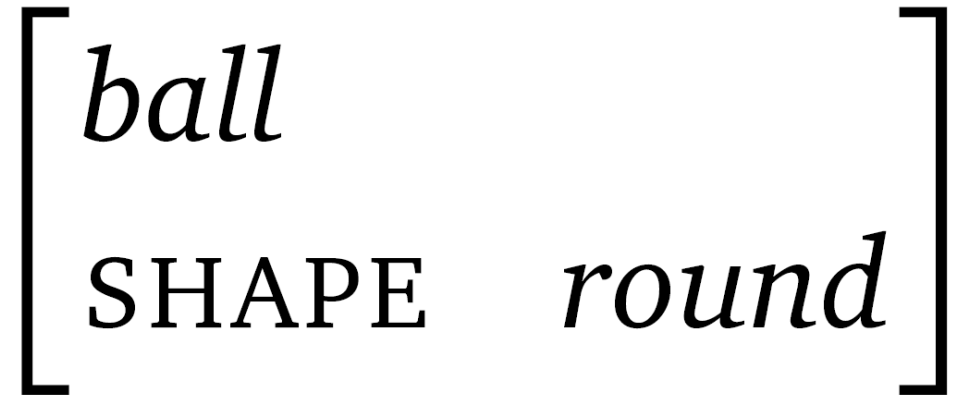
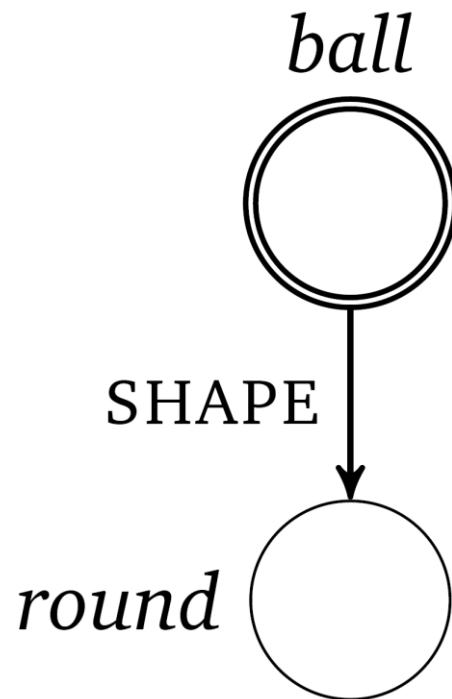
(1) base + affix[SEM: *small*] → base[SEM: *small*]

Frame Semantics

- Barsalou (1992a,b; 1999): Frames are formats for describing concepts.
- A decompositional model with recursive attribute-value structures, where the attributes are functional relations, assigning values to the concept they describe (Petersen 2007, Löbner 2014).

Frame Semantics

- Frames can be represented as either directed graphs or as attribute-value matrices.



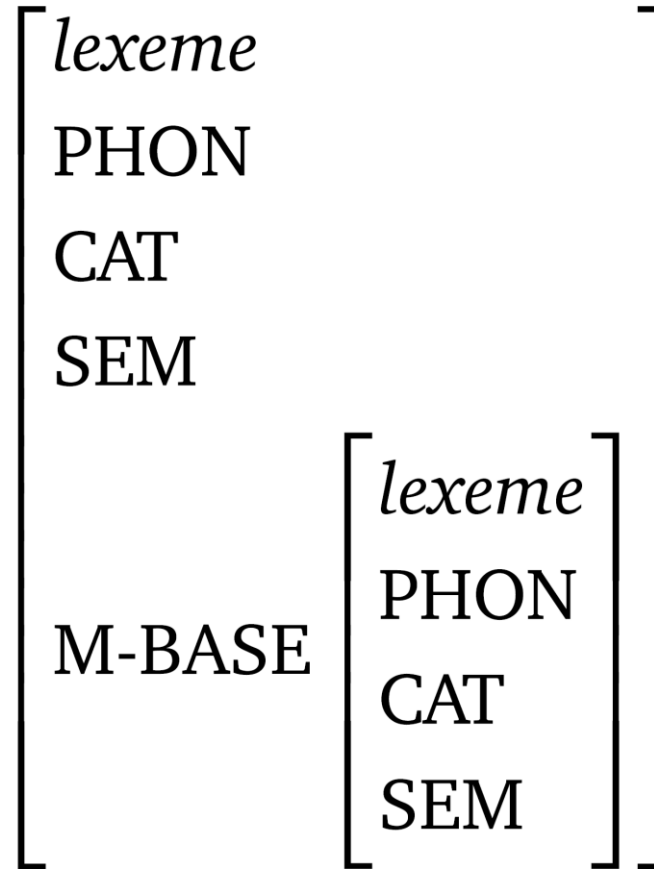
Lexical rules

Lexical rules (among others Bresnan 1982; Pollard and Sag 1994; Briscoe and Copestake 1999; Sag 2012; Bonami and Crysman 2016):

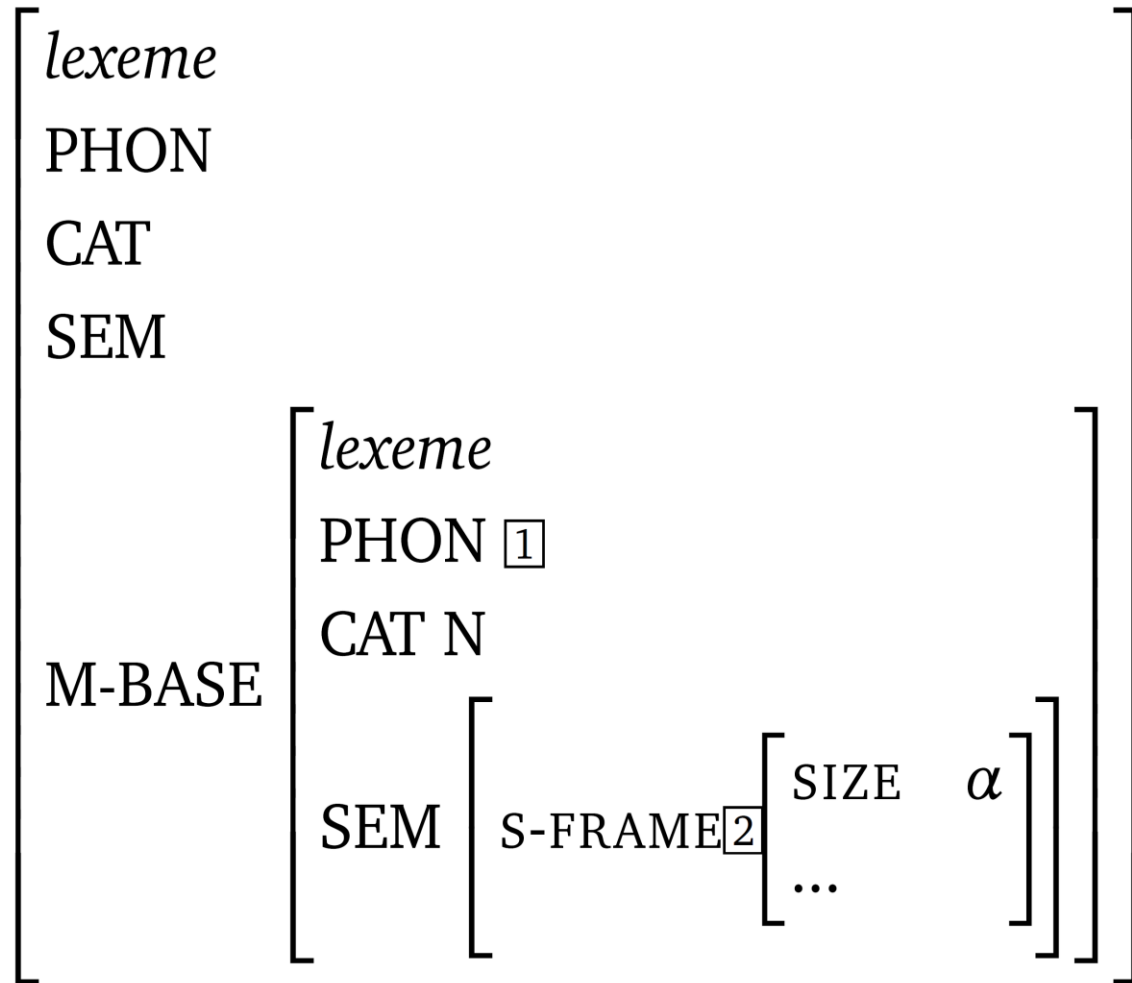
- capture generalizations and
- serve as descriptions of possible lexical entities.

- The proposed rule overwrites the value of an attribute that is already present in the frame of the base. The rule does not add a component of meaning to the base.

Rule for diminution



- Structure sharing: information in feature structures is identical; boxed numerals (*tags*).



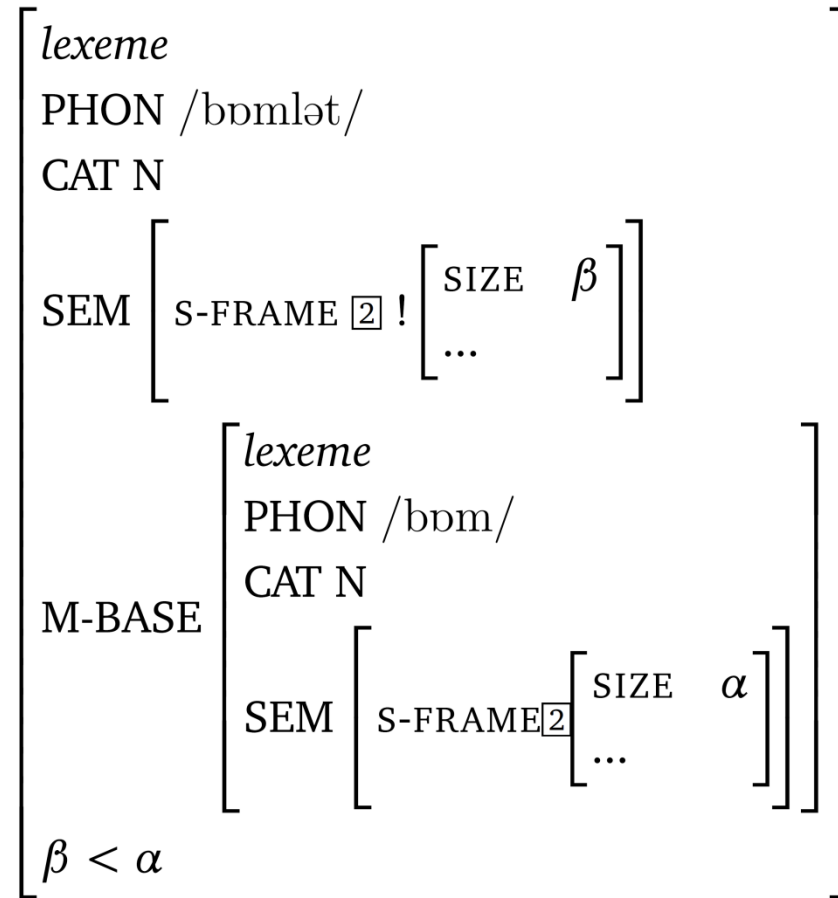
Rule for diminution

$$\left[\begin{array}{l} \textit{lexeme} \\ \text{PHON } / \boxed{1}\text{-suffix}/ \\ \text{CAT N} \\ \text{SEM} \left[\text{S-FRAME } \boxed{2} ! \left[\begin{array}{l} \text{SIZE } \beta \\ \dots \end{array} \right] \right] \\ \text{M-BASE} \left[\begin{array}{l} \textit{lexeme} \\ \text{PHON } \boxed{1} \\ \text{CAT N} \\ \text{SEM} \left[\text{S-FRAME } \boxed{2} \left[\begin{array}{l} \text{SIZE } \alpha \\ \dots \end{array} \right] \right] \end{array} \right] \end{array} \right]$$

Rule for diminution

$$\left[\begin{array}{l} \textit{lexeme} \\ \text{PHON } / \boxed{1}\text{-suffix}/ \\ \text{CAT N} \\ \text{SEM} \left[\text{S-FRAME } \boxed{2} ! \left[\begin{array}{l} \text{SIZE } \beta \\ \dots \end{array} \right] \right] \\ \\ \text{M-BASE} \left[\begin{array}{l} \textit{lexeme} \\ \text{PHON } \boxed{1} \\ \text{CAT N} \\ \text{SEM} \left[\text{S-FRAME } \boxed{2} \left[\begin{array}{l} \text{SIZE } \alpha \\ \dots \end{array} \right] \right] \end{array} \right] \\ \\ \beta < \alpha \end{array} \right]$$

bomblet



Rule for augmentation

$$\left[\begin{array}{l} \textit{lexeme} \\ \text{PHON } /sʊ:pə-1/ \\ \text{CAT N} \\ \text{SEM} \left[\begin{array}{l} \text{S-FRAME } 2 ! \left[\begin{array}{l} \text{SIZE } \beta \\ \dots \end{array} \right] \end{array} \right] \\ \\ \text{M-BASE} \left[\begin{array}{l} \textit{lexeme} \\ \text{PHON } 1 \\ \text{CAT N} \\ \text{SEM} \left[\begin{array}{l} \text{S-FRAME } 2 \left[\begin{array}{l} \text{SIZE } \alpha \\ \dots \end{array} \right] \end{array} \right] \end{array} \right] \\ \\ \beta > \alpha \end{array} \right]$$

Classifying *midi-*

- Lexemes derived by *midi-* are of medium size.
- *midi-* stands in a paradigmatic contrast with the diminutive *mini-*
 - it could be classified as an augmentative prefix (Bauer et al. 2013: 406)

Some problems:

- it is not clear how paradigmatic contrast is defined with respect to evaluative prefixes.
- the criterion to be used must apply to all affixes and should not have local application.

Evaluation is relational

- Criterion: the relation of the respective derived lexeme to the stereotypical exemplar of the category denoted by the base lexeme.
- For *midi-*, we need to examine the relation of *midi*-lexemes to their respective bases (and not the relation between *midi*-lexemes to *mini*-lexemes).

Example

- *midibus* denotes something bigger than *minibus*
- Does this render *midi-* an augmentative?
- NO

- *Midibus* denotes something smaller than the stereotypical *bus*
- ... < *mini-* “smaller than X” < *midi-* “smaller than X” < X “stereotypical exemplar” < ...

Looking forward

- Evaluative morphology in Frame Semantics
- Evaluative morphology is relational and not additive
- Lexical rules and constraints (e.g. on the relation between values)
- Frame Semantics allows us to reevaluate the way word formation processes manipulate the base lexeme.
- This line of research offers new perspectives on the modeling of modification in the semantics of word formation.

- Thank you for your attention!

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