Psycholinguistic Evidence for DATR-based Descriptions of Inflection

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The goal of our work is to develop an empirically based theory of German inflection, using both psycholinguistic and computational-linguistic tools. For our representations we employ DATR (cf. Evans & Gazdar 1996), a formal language for computational descriptions of inflectional morphology, where nodes typically describe lexemes and inflectional types, while inheritance relations capture the features common to distinct types. With its nonmonotonicity DATR can represent default relations between regular and irregular inflectional classes regarded as abstract linguistic entities and can express hierarchical markedness relations of forms within the paradigms of individual classes.

But since DATR-based descriptions so far have not made empirical claims going beyond descriptive correctness of the inflected word forms predicted by the analysis, we want to capture generalizations about language acquisition or change which might shed light on the mental organization of inflectional systems.

We express the findings of psycholinguistic studies formally so that we can establish whether overgeneralizations and patterns of variation are systematic and constitute a partial ordering of the inflectional types which can appropriately and adequately be expressed in the nonmonotonic inheritance hierarchies of DATR. If hierarchical ordering of this kind can be supported empirically, it would speak against a simple dichotomy of regular versus irregular inflection; if not, and if irregularities prove to be unstructured, then DATR would appear to be overly expressive from the viewpoint of empirical linguistics.

Furthermore, we intend to determine whether the overgeneralizations found for a lexeme always constitute a systematic shift to another existing inflectional type (e.g. *singen –* singte – *gesingt* analogically to regular *lachen*), whether new paradigm types can arise (e.g. *singen – sang – *gesingt*), or whether paradigms are not yet established in the speech of young children. The latter question is directly relevant for the formal issue as to whether DATR-based morphological descriptions should allow virtual nodes for inflectional types not corresponding to concrete lexemes.

We have chosen DATR as our representation language because it is more expressive than other frame-based formalisms such as typed feature structures, which is due in particular to DATR's rich variety of means for stating nonmonotonic inheritance relations.

In sum, we aim to establish an integrative approach in which we conduct psycholinguistic and CL studies of clearly defined phenomena and relate the results to each other.