German particle verbs are a challenge to theoretical and computational linguistics. VERB PARTICLES are highly ambiguous e.g. an-ankleben (glue on); anschaen (look at)

**Goal: Classification of an particle verbs**

Combination of theoretical knowledge with empirical methods:

How can automatic classification tasks profit from lexical semantic theory?

How can semantic theory profit from automatic classification tasks?

**Theory-based Gold Standard**

The verb particle an has about 11 different readings (DRT-based theoretical analysis (Springorum, 2009))

4 readings serve as semantic classes for the experiments:

- Topological reading:
  - Contact between direct object of the an particle verb and an implicit background
  - (1) Maria kettet den Hund an.
  - Maria chains the dog.

- Directional reading:
  - The verb event points from the subject to the direct object of the an particle verb
  - (2) Der Junge lächelt die Mutter an.
  - The boy smiles at the mother.

- Event Initiation reading:
  - an contributes a change from a non-progressive state to a progressive state
  - (3) Der Schiedsrichter pfeift das Spiel an.
  - The referee starts the game by whistling.

- Partitive reading:
  - The verb event is performed only on parts of the direct object
  - (4) Der Wurm frisst den Apfel an.
  - The worm partially eats the apple.

**Empirical Features**

- (i) Prepositional heads of subcategorized PPs
  - (5) Maria kettet den Hund an dem Fahrradständer an.
  - Maria chains the dog at the bicycle rack.

- (ii) Direct objects subcategorized by the particle verb:
  - Directional readings: communication attempt frequently comes with persons as direct objects

- Topological verbs: are likely to subcategorize physical objects because of their contact semantics

To reduce the data sparseness:

Semantic generalization of the nominal heads of the direct objects (hypoym relation of GermaNet v. 5.2)

- (iii) Baseline: Verb subjects as classification features

Expected to provide little support as many of our an particle verbs occur with agentive subjects across the classes.

**Discussion**

Gold standard is Topological

- Classified as Event Initiation:
  - anscheiden (settle)
  - Event objects: Film, history, action, ...

(7) Ich würde den Film im Fantasygenre ansiedeln.

How can automatic classification tasks profit from lexical semantic theory?

Different readings need different features

- an- contributing a topological relation:
  - an-PPs are reliable; Nominal indicators are subtle
  - More GermaNet generalizations required: Object class: „Artifacts“ (instead for example „Device“)

- an- contributing Event Initiation:
  - Nominal indicators are reliable; GermaNet class „Event“

- an- contributing Direction
  - Nominal indicators are partially reliable; GermaNet class „Higher Life Form“ for communication attempt

- No feature yet for Partitive verbs

**How can semantic theory profit from automatic classification tasks?**

Cases in which the gold standard should be refined:

- Classified as Directional; gold standard is Event Initiation: anpenden (cheer on) and anstifen (inspire)

Event initiation here: Communication to a person to make her act

Refinement: Reading with both event initiation and communication attempt meanings.

- Classified as Event Initiation; gold standard is Directional: Event-descriptions are Plan-descriptions:

Refinement: Directional sub reading with future plan meaning.
References


