

### **Prominence and anti-prominence in pronoun resolution**

In addition to (personal) pronouns, languages like German and Finnish have so-called d-pronouns. Whereas the former go for prominent antecedents, d-pronouns prefer anti-prominent antecedents (see (1)). Recent research has shown that anti-prominence for d-pronouns is not simply the opposite of prominence for pronouns. For Finnish, Kaiser & Trueswell (2008) found that pronouns prefer subjects as antecedents (independently of position) whereas d-pronouns choose the non-topical postverbal NP (independently of grammatical function). Similar results were found for German (summarized in Ellert, 2013). In the theoretical literature (Bosch & Umbach, 2007; Hinterwimmer, in press), a consensus has emerged that d-pronouns avoid topical antecedents.

We will present experimental findings and corpus counts that confirm the subject-orientation of pronouns but challenge the view that d-pronouns prefer non-topical antecedents. We will show that this view derives from evidence conflating topichood and linear position.

### **Evidence**

We ran four sentence completion experiments that independently varied *grammatical function*, *position* and *givenness*. Participants read short contexts and then completed a sentence starting with a (d-)pronoun. In Experiment 1—a replication of Kaiser & Trueswell, 2008—and Experiment 2, the second context sentence introduced a male character using an indefinite NP (see Table 1). The third sentence, which had either SO or OS order, contained a definite NP referring back to this character and an indefinite NP introducing a second male character. In Experiment 1, the definite NP preceded the indefinite NP; this was reversed in Experiment 2.

Experiment 1 (see Figure 1) replicates the finding that pronouns prefer subjects whereas d-pronouns prefer the final/discourse-new NP. In Experiment 2 (see Figure 1), the pronoun again showed an order-independent subject preference. For the d-pronoun following an SO sentence, the final antecedent is again preferred, although it is now the topic. Following an OS sentence, the d-pronoun shows a preference for the initial, non-topical antecedent.

Experiments 3 and 4 had two discourse new or two discourse old NPs in sentence three. Among others, the d-pronoun again showed a preference for the final NP in SO sentences and no preference in OS sentences. The experimental results are corroborated by an ongoing corpus study investigating the internet-based deWaC corpus. Preliminary results confirm the importance of position additionally to grammatical function.

### **Conclusion**

Our results confirm a subject preference for pronouns. D-pronouns behave more complex. For SO contexts, the object is the preferred antecedent independently of discourse status. For OS contexts, a discourse-new antecedent is preferred if there is a unique one; otherwise, there is no particular preference. The following generalization captures this behavior, where topic features derive from the pronoun heuristics in (2)–(4).

A d-pronoun refers to the antecedent with the least topic features, where topic features are +subject, +initial and +discourse-old.

Since the object in SO sentences has less topic features than the subject, it is always the preferred antecedent for a d-pronoun. In OS sentences, grammatical function and position are irresolute and topichood decides. In sum, our results suggest a multi-dimensional definition of anti-prominence for the purpose of anaphora resolution.

- (1) Peter wollte einen Freund besuchen. Aber er/der ist krank geworden.  
P. wanted a friend visit But he/d-pron is sick become  
'Peter wanted to visit a friend. But he became sick.'
- (2) *The Subject Heuristic*  
A personal pronoun prefers a subject/a d-pronoun prefers a non-subject as antecedent.
- (3) *The First-Position Heuristic*  
A personal pronoun prefers an initial/a d-pronoun prefers a non-initial NP as antecedent.
- (4) *The Givenness Heuristic*  
A personal pronoun prefers a discourse-old/a d-pronoun prefers a discourse-new NP as antecedent.

Table 1: Experimental design for Experiments 1 and 2

Context sentences 1 and 2, common to experiment 1 and 2:

Maria war am Sonntag im Zirkus. Vor der Aufführung sah sie schon einen Clown herumlaufen.  
'Maria visited a circus on Sunday. Before the show, she saw a clown walking around.'

Experiment	Order	Context sentence 3				Target pronoun
1	SO	<b>Der</b>	<b>Clown</b>	umarmte	<i>einen Mann</i>	Er hat .../Der hat ...
		the-NOM	clown	hugged	a-ACC man	
1	OS	<b>Den</b>	<b>Clown</b>	umarmte	<i>ein Mann</i> 1	Er hat .../Der hat ...
		the-ACC	clown	hugged	a-NOM man	
2	SO	<i>Ein</i>	<i>Mann</i>	umarmte	<b>den Clown</b>	Er hat .../Der hat ...
		a-NOM	man	hugged	the-ACC clown	
2	OS	<i>Einen</i>	<i>Mann</i>	umarmte	<b>der Clown</b>	Er hat .../Der hat ...
		a-ACC	man	hugged	the-NOM man	

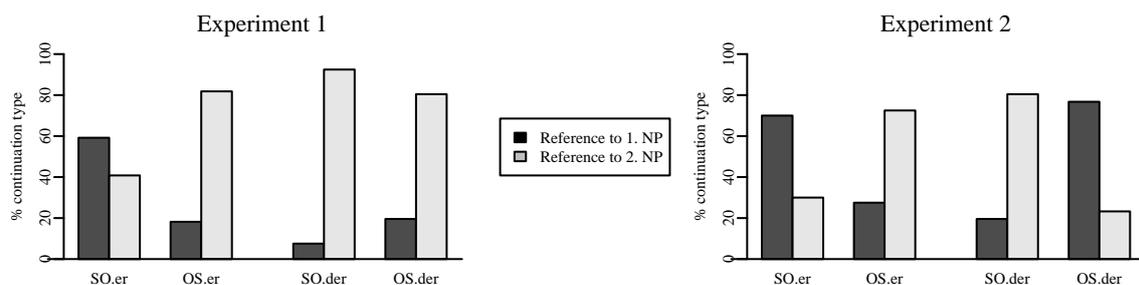


Figure 1: Percentages of completions referencing either NP1 or NP2 of context sentence 3.

## References

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