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Prominence Hierachies and Word Order: From Grammar to Usage

We present an overview of our recent research into the role of prominence hierarchies for word order phenomena in German, focusing on the Extended Animacy Hierarchy (1) and the Semantic Role Hierarchy (2). The evidence comes from acceptability experiments and language production experiments. Prior research showed that both hierarchies affect word order in German (Verhoeven, 2014). However, the evidence is still limited and restricted to special verb-classes (psych verbs). We present new evidence on the interplay of animacy and semantic roles for run-of-the-mill action verbs with either an animate or an inanimate causer argument (see (3)). The leading questions were:

- Do the Extended Animacy Hierarchy and the Semantic Role Hierarchy have independent effects on word order?
- How well are constraint-based grammar formalisms like Optimality Theory suited for modeling prominence effects on acceptability and language production?

Figure 1 shows the results of a magnitude estimation experiment investigating sentences as in (3). SO sentences received high acceptance scores, with no difference between animate-animate and inanimate-animate sentences. Thus, violating the animacy constraint (animate before inanimate) incurred no penalty. This is predicted by Standard OT where constraints can be violated without costs in order to avoid the violation of higher ranked constraints ('agent before non-agent' in the case under consideration). Conversely, this result contradicts certain numerical variants of OT like Linear Optimality Theory according to which each constraint is associated with a fixed penalty.

OS order decreased acceptability substantially. The decrease was less pronounced for animate-inanimate sentences than for animate-animate sentences. This is unexpected in OT because neither order violates the animacy constraint and OT only considers whether constraints are violated or not. Here, however, it matters whether a constraint is fulfilled vacuously or not. Non-vacuous fulfillment increases the acceptability of an otherwise highly marked structure.

Two further experiments investigated how animacy and semantic roles affect speakers' choice of word order. One experiment used the constrained production task (Ferreira, 1994) for investigating the production of sentences with action verbs (4) or psych verbs (5). Participants had to produce sentences from words they had read before. Figure 2 shows that sentences with OS order were rarely produced. A non-negligible amount of OS sentences was only produced when animacy and semantic role cumulatively favored OS order.

In a second production experiment, participants had to describe pictures corresponding to the stimulus material of the first production experiment. In this experiment, participants did not produce sentences with OS order, but produced a substantial number of (mainly adjectival) passive clauses (see Figure 2). This also has the effect that the two arguments of the verb switch their linear position. The passivization rate was higher for psych verbs than for action verbs and higher for inanimate subjects than for animate subjects.

In sum, our results show that animacy and semantic roles affect word order in an interactive way. Neither Standard OT nor OT variants with numerical weights (Pater, 2009) capture the complete result pattern. We explore alternative accounts incorporating language production mechanisms (Ferreira & Engelhardt, 2006) thereby focussing on the complex interplay between referents' conceptual prominence and their actual realization in on-line processing.

(1) Extended Animacy Hierarchy (Croft, 2003: 130)
First/Second person pronouns > Third person pronoun > Proper names > Human common noun > Nonhuman animate common noun > Inanimate common noun

(2) The Semantic Role Hierarchy (Bresnan & Kanerva, 1989: 23)
Agent > Benefactive > Recipient/Experiencer > Instrument > Theme/Patient

(3) a. Mir ist erzählt worden, dass das Feuer / der Spekulant den Winzer ruiniert hat.
me is told was that the fire / the speculator the vintner ruined has
b. Mir ist erzählt worden, dass den Winzer das Feuer / der Spekulant ruiniert hat.
me is told was that the vintner the fire / the speculator ruined has

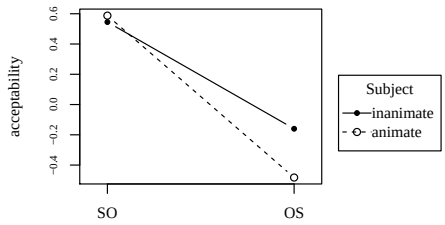

Figure 1: Mean acceptability scores in magnitude estimation experiment

(4) a. Fels – Wanderer – erschlagen (stone – wanderer – kill)
b. Räuber – Wanderer – erschlagen (robber – wanderer – kill)

(5) a. Gedicht – Lehrer – amüsieren (poem – teacher – amuse)
b. Clown – Lehrer – amüsieren (clown – teacher – amuse)

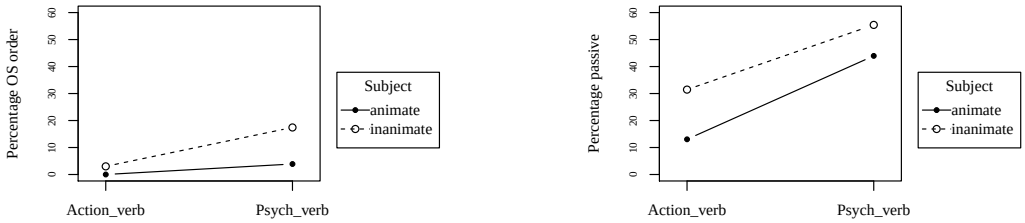

Figure 2: Left side: Percentage OS order in the constrained-production experiment
Right side: Percentage passive clauses in the picture-description experiment

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