Syntactic Competence and Performance Based Variation: The Case of German Particle Verbs

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Abstract

This study investigates the reasons for the heterogeneous syntactic behaviour of separable verbal particles in German, which is often regarded as a paradox: they look like heads if they are in their default positions but occur as phrases in SPEC/CP. The central hypothesis, which has inspired two statistically evaluated empirical experiments with 76 participants, is that particles are in SPEC/CP only if they head a phrase and they do so only under specific (discourse-)semantic conditions. The first experiment investigated the difference in acceptability of particles and clearly phrasal constituents in three topological positions: the prefield, a derived position in the middlefield, and the default position. The second experiment explored whether the modification of the particle by an intensifier improves the acceptability in the derived positions. One result tentatively confirmed the central role of the formal criteria above. Another result was that deviant particle movement is very often judged as grammatically marked but not as ungrammatical. This is explained here as the speakers' tendency to marginally accept movement on the grounds of performance-based factors overriding the formal criteria. The remaining paradox – why the particles sometimes behave like heads, sometimes like phrases – is finally given a tentative solution claiming that the head of a phrase in SPEC/CP can form a dependency with V°. The default position of particles, however, is a head in the V-Cluster.

1. Introduction

The so called *particle verbs* (henceforth PTC-Vs) are quite common in the Germanic languages, e.g. German (Gm.; Stiebels & Wunderlich 1994; Lüdeling 2001; Zeller 2001; Heine & al. 2010), Dutch (Dt.; Booij 2002), English (Eng.; Olsen 1998; McIntyre 2001).

(1) anrufen (Gm.) – opbellen (Dt.) – call up (Eng.)[1]

They consist of at least two parts: a full verb and a particle that, as a rule, has a homophonous counterpart which is a word with full lexical semantics. In languages like German, the *verbal particles*, can, in principle, be recruited from any lexical class[2], though restricted by the general constraints on idiomisation and word formation like the blocking of synonyms (cf. Stiebels & Wunderlich 1994: 931f.).

(2) a. preposition: (i) *unter+gehen* 'to go under', (ii) *an+kommen* 'to arrive'

b. adjective: (i) *leer+trinken* 'to drink empty', (ii) *frei+sprechen* 'to absolve'

c. adverb: (i) *zusammen+kommen* 'to come together', (ii) (sich) *zusammen+rotten* 'to form a mob'

d. noun: (i) *teil+nehmen* 'to take part', (ii) *preis+geben* 'to reveal'

e. verb: (i) *spazieren+gehen* 'to go for a walk', (ii) *kennen+lernen* 'to get to know',

The semantics of the complex PTC+V can be rather transparent (like *unter+gehen* 'to go under' and the other examples in (2) instanced under a (i) – e (i)). However, in many cases PTC-Vs are not decomposable due to the semantic bleaching or the desemantification of one or both parts, neither of them being interpretable as a full semantic predicate in this combination (for more examples see McIntyre 2002).

(3) a. als der Zug an dem Bahnhof an.kam
when – the – train – at – the – station – at.came
(i.e. 'arrived'; *an* is desemanticised)

[1] On the correlation between the order V - PTC and SVO word order in Eng., cf. Olsen (1998).
[2] Note that this categorial diversity neglected by many authors treating all V-PTCs as heads of prepositional phrases, in our view indicates that they are items of their own right, though categorially related to other word classes.

b. weil sie ihn frei.sprachen
because – they – him – free.spoke
(i.e. 'absolved'; *sprech-* is semantically bleached)

c. dass sich die Menge im Hof zusammen.rottete
that – REFL – *the – crowd – in.the – cort – together.ROTT*-PST
(*rott-* is not a verbum simplex)

d. wenn sie das Geheimnis preis.geben
if – they – the – secret – price.give
(i.e. 'reveal'; neither part is fully semantically specified)

e. als sie ihn damals kennen.lernte
when – she – him – then – know.learned
(i.e. 'got to know'; *lern-* is semantically bleached)

It is unclear whether these particles have been grammaticalised (i.e. whether they have a lexical entry as a separate category *verbal particle*) or whether they are just lexical words that are specified as being able to form a complex with certain verbs (cf. Stiebels & Wunderlich 1994: 950ff.; Olsen 1997). Moreover, the scientific discourse has produced many proposals as to how the formation may best be modelled. Using transparent particle verb constructions as a database, the *small clause model* of PTC-V-constructions has often been referred to in generative analyses.

(4) a. weil sie damals beinahe [$_{AP}$ die Kneipe leer] tranken
because – they – then – almost – the – pub – empty – drank
('small clause results'; cf. Hoekstra 1988)

b. als dann [$_{PP}$ das Schiff ganz unter] ging
when − then − the − ship − completely − under − went
('intransitive prepositions'; cf. Dikken 1995: 33)

Even though this analysis may work with transparent particles (we are not intending to discuss the *pros* and *cons* of the small clause analysis in principle, here), a certain lack of plausibility may be raised considering the numerous cases where the verb cannot form a complete predicate by its own, i.e. without the particle.

(5) a. als vorhin [$_{?P}$ der Zug an] kam

b. weil sie damals [$_{?P}$ das Geheimnis preis] gaben

Moreover, at least in German., these 'small clauses' hardly ever behave like constituents: neither desemanticised nor semantically fully specified particles can clearly be shown to move together with the phrases that are assumed to be their complements, meaning that a number of additional assumptions are necessary to support their constituency:

(6) a. *Eine Kneipe leer haben sie noch nie trinken können.

b. *Ein Schiff ganz unter ist schon oft gegangen.

Note that this is not due to a general constraint making the arguments move out of these phrases to case positions. It is well known that in principle, predicate phrases containing an argument may be positioned in SPEC/CP of Gm. clauses.

(7) a. [Eine Kneipe finden] haben sie nicht können.

'They couldn't find a pub.'

b. [Ein Schiff ganz untergegangen] ist hier schon oft.

'There has often a ship gone under completely, here.'

There are several more reasons, which we do not have the room to discuss here (for discussion cf. Capelle 2004), why we prefer to follow the research assuming the base generation of German. PTC-Vs as complex predicates (cf. Olsen 1997; Stiebels & Wunderlich 1994; Lüdeling 2001; Zeller 2001; 2003). To this, we would like to contribute some insights.

One main point of discussion in the work by these authors is the categorial status of the V-PTCs: are they syntactic heads (Olsen 1997) or even parts of words (Stiebels & Wunderlich 1994) treated as phrases by syntax only sometimes? Are they hybrids that are conceptualised both as heads and as phrases (Zeller 2003: 190)? Do they form a category of a third kind (Ackermann & Webelhuth 1998: 336f) or are they even a borderline case between words and phrases (Jacobs & Heine 2008: 3ff; Heine & al 2010: 55ff) in a transitional area between word- and sentence-grammar (Eisenberg 1998: 268)?

The reasons for these discussions are well known and can be summarised in short, here: firstly, even though they appear to have lexical entries as complex constructions, the particles may be separated from their verbs and in fact must be in infinitive verb forms

and in V2-clauses. This property distinguishes them from morphologically complex prefixed verbs.

(8) a. Sie haben dort Waren an**ge**boten.
they − AUX − *there* − *goods* − PTC-*offered*

b. Sie haben dort Waren ver(***ge**)kauft.
they − AUX − *there* − *goods* − *sold*

(9) a. Sie wurden gebeten, dort Waren an**zu**bieten
they − *were* − *asked* − *there* − *goods* − PTC-*to-offer*

b. Sie wurde gebeten, dort Waren **zu** verkaufen.
they − *were* − *asked* − *there* − *goods* − *to* − *sell*

(10) a. Sie **boten** dort Waren **an**.
they − *offered* − *there* − *goods* − PTC

b. Sie **verkauften** dort Waren.
they − PREF-*sold* − *there* − *goods*

However, in contrast to phrasal constituents like the directional argument in (b) below, V-PTCs seem to be blocked from movement within the middle field:

(11) a. *...weil sie **ein** nie zuvor gereist sind

...because − they − in*(PTC)* − never − before − travel.*PTCP.PERF* − *AUX*

(adapted from Zeller 2002: 243)

b. ...weil sie **in dieses Land** nie zuvor gereist sind
...because − *they* − *in* − *this* − *country* − *never* − *before* − *travel*.PTCP.PERF − AUX

That the PTC is not just a morphological leftover stranded in the V-position of V2-clauses is shown by particles that appear in the prefield (Lüdeling 2001: 53f; Heine & al. 2010; Zeller 2001; 2003).

(12) a. **Auf** ging die Tür, **zu** ging das Fenster.
open(PTC) − *went* − *the* − *door,* − *closed*(PTC) − *went* − *the* − *window*

b. **An** sind die Lichter gegangen.
on(PTC) − AUX − *the* − *lights* − *go*.PTCP.PERF

The discrepancy between the options of movement in the middle field vs. movement to the prefield (which we, for the sake of simplification, henceforth identify with the position SPEC/CP) is striking and leads us to one of the main points of this article: if they are phrases, why can they not move but to the prefield? If they are heads, why can they move to a SPEC position at all?
Another striking point often observed in the literature is that not all V-PTCs can move to the prefield and that even those that cannot do so in all contexts (for the discussion of more examples cf. Öhl 2009).

(13) a. **Zurück** kehrten sie erst am nächsten Tag.
back − *turned* − *they* − *only* − *on-the* − *next* − *day*

(Jacobs & Heine 2008: 2)

b. ***Wieder** kehrten sie erst am nächsten Tag.
back − *turned* − *they* − *only* − *on-the* − *next* − *day*

(*wiederkehren* 'to return')

The criteria determining the movement of a particle to the prefield that are often mentioned in the literature are semantic transparency – the PTC-V is decomposable with neither of the components remaining semantically unspecified (Jacobs & Heine 2008: 8; Zeller 2003: 174) – and discourse semantic markedness – movement of the particle expresses focus or contrastiveness (cf. Müller 2002; Zeller 2003; Jacobs & Heine 2008: 5ff.). Together with the assumption that only phrases can stand in SPEC/CP, the criteria can be summarised as follows:

(14) ***Criteria for movement of V-PTCs to SPEC/CP***

a. semantic transparency

b. phrasal status

c. discourse semantic markedness

Our assumption – and we think this is supported by the results of our experiments – is that semantic transparency is the basic condition here. Only if the particle verb is

decomposable can the particle head a phrase, which then can be fronted if it is discourse semantically marked.
The third point of interest is the fact that movement of the PTC to SPEC/CP is often judged as neither fully grammatical nor as ungrammatical but just as grammatically marked, as in the following minimal pair. One could hypothesise that there is at least semantic transparency if not discourse semantic markedness fulfilled in (a), whereas in (b), speakers consider the predicate not to be decomposable in the first place.

(15) a. ?**Lieben** hatte sie ihn nun doch noch gelernt.
love − had − she − him − now − yet − still − learned
(*liebenlernen* 'to learn to love')

b. ***Kennen** hatte sie ihn nun doch noch gelernt.
know − had − she − him − now − yet − still − learned
(*kennenlernen* 'to get to know')

That fronting is possible in sentences like (a) above in our view just shows that speakers tend to marginally accept movement on the grounds of performance-based factors overriding the formal criteria.
In sections 3 and 4, we present the theoretical arguments for our hypotheses. To give them some empirical support, we first present the results of our empirical experiments testing the acceptability of PTC-V-constructions and their distributional variation in section 2. Following from the assumptions presented above, there were three factors we found to be tested: first, is there really a significant difference between the positioning of clearly phrasal constituents (like adverbials or resultative arguments) and V-PTCs, especially if related to the different kinds of landing sites in the middlefield vs. SPEC/CP? Second, how significant is the difference between the judgements of sentences fulfilling all criteria in (14) and of those that do not? Third, under what circumstances are sentences judged as grammatically marked, if contrasted to those judged as grammatical and those judged as ungrammatical? In fact, the participants in our experiments seemed to quite willingly assign a sentence intermediate values of acceptability if the criteria we assume were not fulfilled very obviously.

2. Description of the Experiments

To our knowledge, no empirical evidence has been presented in the literature, showing how the movement of particles is restrained or allowed by listeners in online processing. Therefore, we started out exploring the empirical correlates of the distinction between autonomous phrasal constituents and particles belonging to the predicate in terms of their topological position and semantic interpretation. We used a self-paced reading paradigm in combination with an acceptability judgement task, in order to find out whether reading times reflect the distinction and/or are correlated with the (grade of) acceptability. Two experiments of this kind are reported in this section. In the first experiment, we compared the movement of phrasal constituents to the movement of particles in a sentence. The results show that there are clear differences between particles and phrasal constituents in terms of acceptability in different topological positions. In the second experiment, we test whether the acceptability – especially in the prefield – improves when the particle combines with an intensifier emphasising the phrasal status and the discourse markedness of the particle. Even though we could find no significant difference between the behaviour of modified and bare particles (which basically shows that the formal constraints in (14) do not depend on additional material in the phrase or clause), there was a trend indicating that different ways of modifying particles could yield more promising results in testing those aspects of particle topology that are performance-based .

2.1 Experiment 1: Particles vs. Phrasal Constituents

Regarding the question as to whether particles should be interpreted as phrases or as syntactic heads, we compared the topological constraints applying for particles vs. phrasal constituents in simple declarative transitive sentences. Two hypotheses were tested: (1) Phrasal constituents should be more acceptable in fronted positions within the middlefield than particles which are blocked from that position. Overall, higher processing costs are predicted for the derived vs. the default positions of either phrasal constituents or particles (Bader & Meng 2000; Bader, Meng & Bayer 1999; Bornkessel & Schlesewsky 2006). (2) Concerning movement to the prefield position, we expect that particles should be comparable to phrasal constituents as long as the criteria listed in (14) apply.

2.1.1 Materials, Participants, Procedure

The stimuli were constructed as follows: the particles used in this first experiment are adjectival and semantically transparent. They are part of an analytic predicate form (AUX.1st sg/*haben* + PTCP.PERF) in a simple transitive declarative sentence. All particles were combined with the positional verb *halten* ('hold'). This verb was chosen because it can be used with a modal adverbial (phrasal constituent) instead of the particle. 16 particles were used in this experiment: *warm, hoch, still, feucht, dicht, frisch, wach, rein, frei*, *bereit, gesund, sauber, ruhig, heilig, trocken, geheim*[3]. The 16 adjectival modal adverbials were: *vorsichtig, lässig, zitternd, mühelos, mühsam, achtsam, behutsam, unbeholfen, zärtlich, sanft, stolz, liebevoll, ungeschickt, geduldig, widerwillig, lustlos*[4]. Test sentences were created by moving the particle/phrasal constituent to different topological positions:

(16) ***Topological conditions implemented in the first experiment***

a. Base/Default Position (Df): Ich habe die Fahne **hoch**(PTC)/**stolz**(adverbial) gehalten.
I – have – the – flag – high/proudly – held

b. Middlefield Position (Mf): Ich habe **hoch/stolz** die Fahne gehalten.

c. Prefield Position (Pf): **Hoch/Stolz** habe ich die Fahne gehalten.

16 test sentences were created on the basis of two factors (Syntactic Status, Topology) with 2 conditions (particle, phrase) and 3 conditions (Df, Mf, Pf) respectively. Overall, we created 96 test sentences. Furthermore, we added 102 filler sentences. In a pretest the default test sentences were judged for their semantic comprehensibility by two people. The material was organised in 4 lists, each containing 150 sentences in three blocks of 50 sentences which were internally randomised per participant. Each participant was tested on 48 test sentences to avoid repetition priming.
32 students at the Ludwig-Maximilians-University in Munich performed the test. The procedure was a word-by-word self-paced reading paradigm (moving window, Just et al., 1982). The sentences were presented word-by-word using the DMDX software (Forster & Forster, 2003). This allowed us to record the individual reading time of particles and phrasal constituents. After the last word of the sentence, either the next

[3] Translation: *warm, high, calm, humid, leak-proof, fresh, awake, clean, free, ready, sane, neat, quiet, holy, dry, secret*.
[4] Translation: *carefully, casually, trembling, effortlessly, drudgingly, attentively, cautiously, awkwardly, tenderly, gently, proudly, lovingly, clumsily, patiently, grudgingly, half-heartedly*.

sentence began or a question appeared asking the participant to judge the acceptability of the previously read sentence (4-point scale: 1 = very acceptable, 2 = acceptable, 3 = less acceptable, 4 = not acceptable). Before the test started, participants went through 12 training sentences to become acquainted with the procedure. Overall, the test lasted between 15 and 25 minutes depending on individual performance.

2.1.2 Results and Discussion

Concerning acceptability judgements, a repeated-measures ANOVA (Analysis of Variance) yielded significant results for each factor (Syntactic Status: $F=272.29$, $df=1$, $p<0.001$; Topology: $F=123.23$, $df=2$, $p<0.001$) and also for the interaction between Syntactic Status*Topology ($F=77.36$, $df=2$, $p<0.001$). Separate ANOVAs were conducted for each Syntactic Status condition: we found highly significant differences in the acceptability rating of topological position in the particle condition, but not in the phrasal constituent condition (see figure 1), where all three positions were rated as very acceptable. In the particle condition ($F=128.51$, $df=2$, $p< 0.001$), all three topological positions differed significantly from one another with the lowest acceptability rates for the middlefield (mean (Df): 1.6 (between very acceptable and acceptable), mean (Mf): 3.1 (less acceptable), mean (Pf): 2.4 (acceptable).

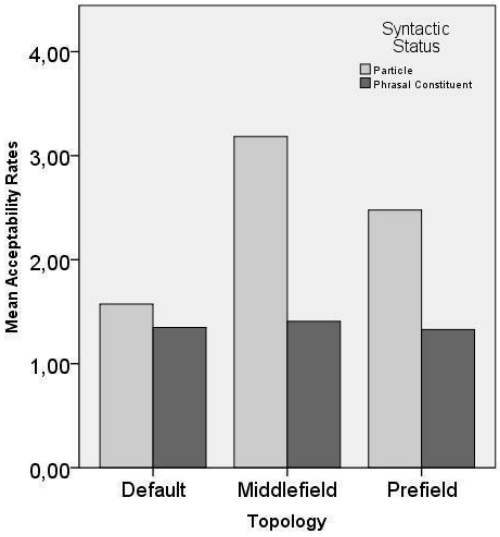

Figure 1: Mean acceptability ratings for particles and phrasal constituents in different topological positions. Significant differences were found for particles, but not for phrasal constituents.

Additionally, we calculated residual reading times (e.g. Ferreira & Clifton 1986) on the basis of each subject's performance on the test sentences. This procedure allows to control the effect of word length. On particle verbs, we performed a correlation analysis between mean acceptability ratings and mean verbal base/particle residual reading time per test sentence in each topological condition. The correlation was significant for the verbal base reading times which increased with decreasing acceptability ($r=0.308$, $p<0.05$, Spearman-Rho). Furthermore, we compared residual reading times of the particles/phrasal constituents and verbal bases. For phrasal constituents and particles alike, the longest reading times were found in the prefield. Most interestingly (see figure 2), residual reading times for the verbal base also increased significantly when the particle was placed in the prefield (repeated-measures ANOVA with dependent variable residual reading time, only for particle verbs, $F=3.402$, $df=2$, $p<0.05$) whereas this was not the case with phrasal constituents. This indicates that at the point of sentence integration, the particle placement in the prefield yielded larger processing costs.

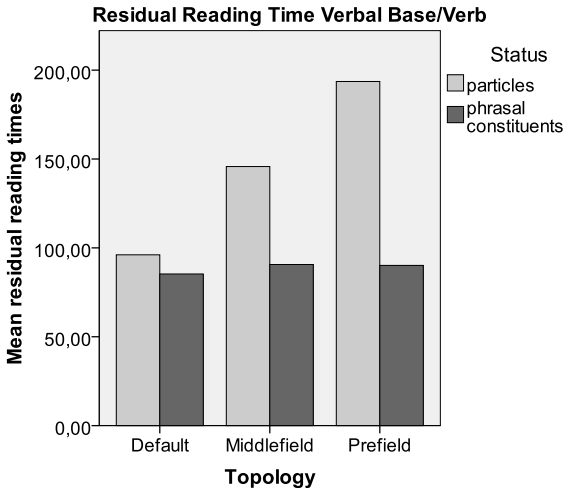

Figure 2: Mean residual reading time calculated for the verbal base/verb in the three topological conditions. Particle verb reading times increase significantly in the prefield. A positive residual reading time means that words have been read slower than expected for words of the same length (a negative value would indicate that it has been read faster than expected.)

The results of this experiment show that particles, in contrast to phrases, are rated variously with respect to acceptability and show a different pattern of reading times. Our initial hypothesis is confirmed that particles cannot be moved to any position in the middlefield whereas phrases are very acceptable in either topological position.
Our second hypothesis concerned movement to the prefield position. Whereas clearly phrasal constituents appear in all positions without any significant difference, particles in the prefield are significantly more acceptable than in the middlefield but still less acceptable than in default position. Moreover, participants seemed somehow uncertain about their status. This is also reflected in the fact that they spent more time on reading the verbal base in sentence-final position indicating larger processing costs. One reason for this pattern could be that the discourse semantic markedness – i.e. what the particle should be contrasted to – was not obvious to them. Another explanation for these results could be that the particles are not parsed as having a clear phrasal status in the prefield and that they are still interpreted as part of the predicate that follows at the end of the sentence. Added to that, complex predicates with the semantically bleached verb *halten*

are not easily decomposable, thus the readiness of speakers to front the particle may also vary.

For these and other reasons we had to modify the database in our second experiment. First, we found we had to drop some of the particles because they showed patterns of acceptability rates deviant from that of other particles (figure 3).

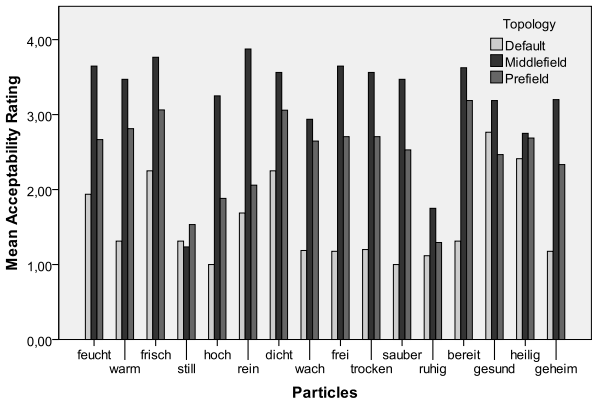

Figure 3: Individual particle acceptability ratings (mean) in different topological positions, experiment 1.

The particles *still* and *ruhig* ('calm'), which had overall high acceptability rates in all topological positions, seemed to be ambiguous: they might have been interpreted as modal adverbials in those positions that were inconvenient for a particle reading. The different pattern found with the particle verbs *gesund halten* and *heilig halten* could be due to the fact that they are relatively infrequent and therefore might have been judged as rather unacceptable due to non-familiarity of the participants with the construction.

Second, we replaced some of the PTC-V-constructions with the bleached verb *halten* by sentences with semantically more specified verbal bases like *trinken, bügeln*, *binden, schlagen, klopfen, kochen*[5]. Third, since the possibility had to be tested that particles are judged as more acceptable in the prefield (and maybe even in the middlefield) if this enhances their phrasal status, we modified the particles to form a larger, phrase-like unit with higher potential of discourse semantic markedness.

[5] Translation: *drink, iron, bind, beat, knock, cook*.

2.2 Experiment 2: Modified particles

Modifying a particle might enhance its prosodic saliency in the sentence due to greater prosodic weight (thus underpinning its phrasal status) and also its semantic saliency (underlining discourse status). In a second experiment, we therefore investigated whether modification of the particle might lead to improvement in acceptability ratings. The following hypothesis was tested: we expected that acceptability ratings for the modified semantically transparent particles should improve in the pre- and even in the middlefield compared to non-modified bare particles, if speakers perceive them as more likely to form a phrase and/or as more marked in the discourse.

2.2.1 Materials, Participants, Procedures

The sentences in experiment 2 were simple transitive declarative sentences containing an analytic predicate (see experiment 1) that contained either a bare or a modified adjectival, semantically transparent particle. We chose the intensifier-particle *ganz* 'totally, very' for modifying the particle. This intensifier implies a gradual semantic quality of the particle; therefore we expected that focussing of the constituent might be more plausible for the speaker/listener if the discourse semantic markedness were enhanced. As in experiment 1, 16 test sentences were constructed. Eight of the test sentences were taken from experiment 1. Additionally, we constructed 8 test sentences with new particles that were chosen depending on their semantic compatibility with the intensifier. The particles used in this second experiment were: *warm, hoch, feucht, fest, frisch, leer, frei, glatt, steif, sauber, trocken, geheim, heiß, klein, flach, hart*[6]. In order to implement the topological condition, particles (modified, bare) were moved to middlefield and prefield positions respectively as in experiment 1:

(17) ***Topological conditions implemented in the second experiment***

a. Default Position (Df): Ich habe die Fahne **hoch**/**ganz hoch** gehalten.
I - have - the - flag - high / very high – hold.

b. Middlefield Position (Mf): Ich habe **hoch/ganz hoch** die Fahne gehalten.

c. Prefield Position (Pf): **Hoch/Ganz hoch** habe ich die Fahne gehalten.

[6] Translation: *warm, high, humid, firm, fresh, empty, free, smooth, stiff, clean, dry, secret, hot, small, flat, hard*.

Overall, we constructed 96 test sentences (16 sentences x 2 x 3) implementing the factors Modification (2 conditions: bare vs. modified), and Topology (3 conditions, Df, Mf, Pf). The material was arranged in 6 lists, each of them containing 16 test sentences and 60 fillers. 42 students at the Ludwig-Maximilians-Universität in Munich were tested[7] using the same procedures as in experiment 1.

2.2.2 Results, Discussion

A repeated-measures ANOVA with the two factors Modification and Topology and dependent variable acceptability revealed significant results only for the factor Topology ($F=242.70$, $df=2$, $p<0.001$). No significant differences were found between the acceptability ratings for modified and bare particles (figure 4). However, we found a significant interaction between Modification*Topology ($F=4.694$, $df=2$, $p<0.05$) which means that the acceptability judgements in different topological positions are influenced by the modification of the particle. Reading times for particles did not differ in the modified and bare particle condition, however, we confirmed the same pattern already found in the former experiment, that reading times were longer in the prefield for bare particles.

[7] Thanks to the participants of my summer class (SF) Syntax and Speech Processing that helped in testing.

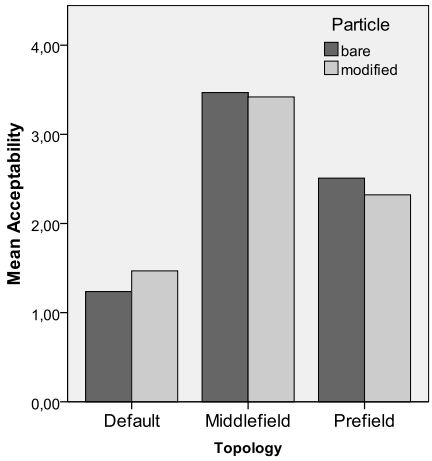

Figure 4: Mean acceptability ratings for bare and modified particles in different topological positions. Significant differences persist between the topological positions, but modification of the particles did not induce significant improvement of acceptability ratings.

Firstly, this second experiment shows the reliability of the results of the first experiment: the particle ratings differed significantly in all three topological conditions as was shown in experiment 1. Particles were rated very homogeneously (see figure 5), thus we were successful in avoiding deviant patterns in this experiment.

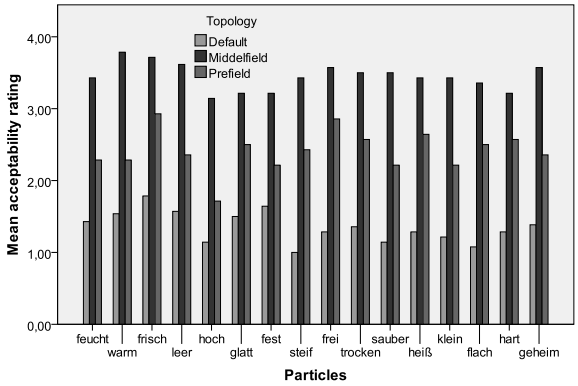

Figure 5: Individual bare particle acceptability ratings (mean) in different topological positions, experiment 2.

Secondly, the modification of those particles did not improve the acceptability in the prefield or the middlefield in a way that could have been expected. Obviously, the way we modified the particle did not induce greater discourse semantic markedness or underline the phrasal status of the particle. However, there is a trend visible in figure 4 whereby the judgements for prefield and middlefield positions improve. It seems that the combination of the two factors Modification and Topology slightly influence the acceptability ratings, after all. Moreover, when considering the base of the particle verbs, we found that this result may be attributed to the eight particle verbs with semantically more specified bases in comparison to the bleached verbal base *halten* 'hold' used in experiment 1 (see figure 6).

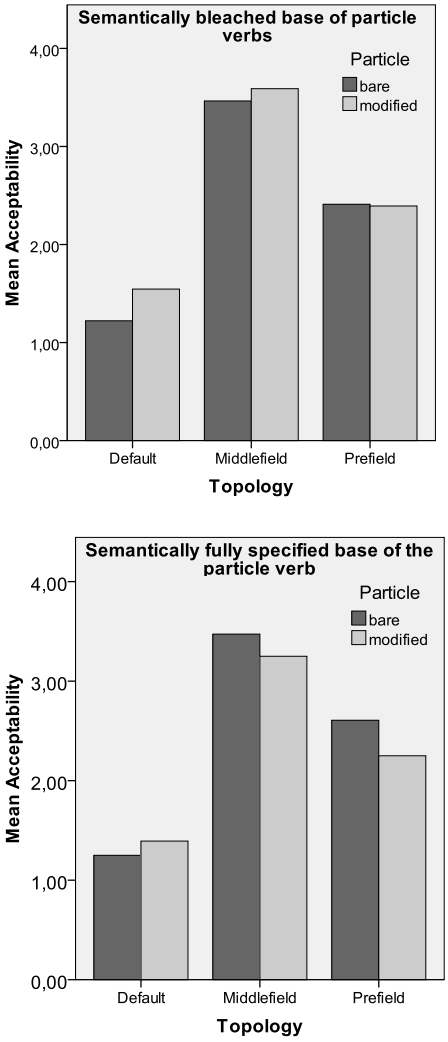

Figure 6: Acceptability ratings of bare and modified particles in relation to semantics of the verbal base. It can be seen that modification with the intensifier induces improvement of acceptability in the pre- and middlefield if the verbal base is also semantically transparent (fully specified) in contrast to a verbal base that is semantically bleached.

These preliminary results indicate that speakers are more willing to accept movement of a modified particle to the prefield and middlefield if both the particle and the verbal base preserve their semantic specification. The concept of semantic transparency as a prerequisite for particle movement is thus very promising for further testing. Better results may also be expected if the saliency of these particles is further enhanced. This might be possible by using polysyllabic words or whole phrasal constituents as modifiers or by adding a contrastive context to the sentence (e.g. *Ganz hoch habe ich die Fahne gehalten, nicht nur halb hoch* 'I've held the flag very high up in the air, not only halfway up') that might lead to higher saliency of the discourse semantic status than the context-free sentences used in our first two experiments.

Thus, the generalisation seems plausible that the acceptance of derived particle positions improves when semantic transparency, as defined above, is granted and if focus or contrastiveness is made explicit. Altogether, we find the criteria in (14) to be confirmed by the speakers' judgements about the grammatical and ungrammatical distribution of V-PTCs, which is phrasal status, semantic transparency and discourse semantic markedness. However, in many cases speakers are obviously uncertain about the grammaticality of sentences. The striking number of judgements as intermediate is, in our view, a clear sign of factors of performance playing a role in these judgements: speakers tend to marginally accept movement on the grounds of performance-based factors overriding the formal criteria. This question is pursued from a theoretical standpoint in the following section.

3. Competence and Performance

Looking at more opaque constructions like the so-called 'pars-pro-toto' movement of PTC-Vs (Fanselow 2004: 25), we find that speakers marginally allow focussing of the whole predicate by positioning only the PTC in SPEC/CP. This is not possible with all PTCs, but only if they are (more or less) semantically transparent.

(18) a. ?Vor haben sie es nicht gehabt.
PTC('*before*') − AUX − *they* − *it* − NEG − *have*.PTCP.PERF
(≈ Vorgehabt haben sie es nicht; *vor*+*haben* = 'to intend')
'They did not INTEND it.'

b. *Auf ist ihm überhaupt nichts gefallen.
PTC('*up*') − AUX − *him* − *at-all* − *nothing* − *fall.*PTCP.PERF
(≈ Aufgefallen ist ihm gar nichts; auf+fallen = 'to attract attention')

'His attention was not attracted by anything at all.'

c. *Aus sind wir schon oft gegangen.
PTC*('out')* – AUX – *we* – *already* – *often* – *go*.PTCP.PERF
(≈ Ausgegangen sind wir schon oft; out+go = *'to go out')*

Speakers seem to tolerate constructions that are not fully correct according to grammatical rules if decoding them is facilitated by certain factors existing besides grammar. In (18a) above, we think that it is the fact that the meaning of *vor* in the sense of '(having sth.) before oneself' is at least comprehensible, even though it is not its real intensional meaning. In contrast, there is not any isolated piece of meaning that can be attributed to the PTC 'auf' in (18b). Even in (18c), *aus* can get its intended meaning only in the idiomatic combination with certain verbs. Speakers have to analyse the whole sentences in order to reconstruct the meanings of the particle verbs, which may just be too much of a cognitive effort to judge them as even marginally acceptable.
The kinds of sentences that are viewed as grammatically marked are various, and especially in these cases, the speakers' judgements vary a lot.[8] Another striking example is the case of prefield placement found to be restricted in quite a telling way by Heine & al. (2010: 43ff.), who used newspaper material as their database.

(19) a. An fing alles am 2. Januar 1889, als . . . (Heine & al. 2010: 41f.)
(an+fangen *'to start'*)
PTC('*on*') − *cought* − *everything* − *on* − *2nd* − *January* − *1889* − *when*

b. Kennen lernten sich die beiden Mitte der 80er Jahre (…)
PTC('*know*') − *learned* − *each-other* − *the* − *both* − *middle* − *of-the* − *80's* − *years*

[8] The judgements presented in this section result from an earlier inquiry undertaken at the University of Wuppertal (Germany); this one was not statistically evaluated, which has to be left for future research. We are sorry that we cannot present significant statistics here but only the judgements of an estimated majority of the test persons; above all, I (PÖ) would like to thank my morphology class of the summer semester 2009, as well as some anonymous friends and colleagues.

PTC movement to SPEC/CP not fulfilling all of the criteria in (14) is obviously impossible together with analytic inflection: as soon as the PTC is not linearly adjacent to the verbal part of the PTC-V, the sentences corresponding to those above are judged as ungrammatical.

(20) a. *An hatte alles am 2. Januar 1889 gefangen, als . . .

b. *Kennen haben sich die beiden Mitte der 80er Jahre (…) gelernt.

In our view, this shows that the structures in (19) are in fact not generated according to the rules of projection. There can't be any serious rule in projective grammar involving just *linear* adjacency. Why are these structures exceptionally possible, however? A tentative answer could be that certain 'constructions'[9] may be produced in analogy with regularly generated expressions[10] if they are licensed on the level of performance – where rules like linearly local decoding, which cannot apply in a projective system, may in fact apply.

(21) ***Licensing of 'Constructions'***

a. competence-based, by regular structure building operations

b. performance-based, by analogical paralleling to regular structures, if decoding conflicts can be resolved locally in the linear structure[11].

Thus, with semantically specified V-PTCs allowing the building of phrases in SPEC/CP, placement in the prefield is possible without any restriction other than discourse semantic markedness.

[9] In contrast to Jacobs (2008: 26ff.), we do not intend to explain so called 'idiosyncrasies not to be captured by projective systems' by means of construction grammar. The intuition, however; is similar: irregular projections may be licensed by performance if there are regular projections serving as patterns.

[10] Note that our reference to analogy within the generative framework is not as uncommon as one might think, given that it was used already by Chomsky (1970: 194) in order to defend a lexicalist way of deriving certain gerund constructions (thanks to Andrew McIntyre for this piece of information): "Suppose that we discover (...) that some speakers find [such expressions] acceptable. On the lexicalist hypothesis, these sentences can only be derivatively generated....their acceptability to these speakers results from a failure to take note of a certain distinction of grammaticalness. We might propose that [such expressions] are formed by analogy to the gerundive nominals (...)."

[11] This hypothesis was inspired by personal discussion with Joachim Jacobs.

(22) a. [$_{AdvP}$ An] schalten wir das Licht etwa genau so oft, wie aus.
PTC('*on*') − *switch* − *we* − *the* − *light* − *roughly* − *exactly* − *as* − *often* − *as* − *out*

b. [$_{AdvP}$ An] wird das Licht erst wieder geschaltet, wenn wir garnichts mehr sehen!
PTC('*on*') − AUX(FUT) − *the* − *light* − *only* − *again* − *switched* − *when* − *we* − *nothing* − *more* − *see*

We assume, however, that the sentence in (23a) below is not generated by the rules of projection since the semantically opaque PTC *an* cannot project a phrase. This is also the reason why the sentence in (23b) is clearly ungrammatical. In contrast to (23a), the structure built in analogy with sentences like (22a) above, it cannot be locally decoded either and is not even marginally accepted. Thus, (23a) may only be accepted because the PTC and V are linearly adjacent, as they are in (23c) and (d).

(23) a. ?[$_{?P}$ An] fing alles 1898.

b. *[$_{AdvP}$ An] hatte alles 1898 gefangen.

c. [$_{VP}$ Anfangen] wird alles erst sehr viel später.

d. weil 1998 alles anfing

There are several more empirical arguments from German. PTC-V-constructions for the assumption that speakers produce expressions that cannot be generated by regular structure building operations.[12] Another example is the assignment of phrase structure to semantically opaque particles and the performance-based induction of transparency under strong contrastive accent. Without the analagous second clause the first one is contrasted to, both sentences would hardly be acceptable (cf. 15b. and 18b. above).

[12] Here, we would like to mention an alternative proposal made by Andrew McIntyre (p.c.) in order to explain examples like (18) above: if the prefield has a topic interpretation rather than a focus one, and the speakers are trying to get the new, focussed information to appear sentence-finally (cf. the 'focus-last' principle, Cinque 1993), this effect is ruined if the VP also contains the verb. In this case, it is not linear adjacency but backgrounding moving the verb back to the neighbourhood of the particle in SPEC/CP. Note that this would also be a factor interfacing with performance (i.e. information packaging) apparently licensing the production of a grammatically marked construction. However, even though it is true that fronted particles may have a topic interpretation, we think it is hard to get one with our sentences in (18).

(24) a. ?[$_{?P}$ /**KEN**nen] hatte sie ihn 1980 gelernt, /**LIE**ben schließlich 1985\.
PTC('*know*') − AUX − *she* − *him* − *1980* − *learned* − PTC('*love*') − *eventually* − *1985*

'Whereas she got to know him in 1980, she learned to love him not before 1985.

b. ?[$_{?P}$ /**AUS**] sind die Kinder gegangen, **nach** /**HAUS**e die EL\tern.
PTC('*out*') − AUX − *the* − *children* − *gone* − *to* − *home* − *the* − *parents*

'Whereas the children went /OUT, the parents stayed at \HOMe.

Speakers even tolerate phrases in SPEC/CP that cannot be constituents in the middle field, e.g. if they contain a sentence adverbial.

(25) a. ?[$_{?P}$ Eben mal schnell an] schalten Sie bitte das Licht auch dann nicht, wenn . . .
just − *once* − *quickly* − PTC('*on*') − *switch* − *you* − *the* − *light* − *also* − *then* − NEG − *if*

b. ?[$_{?P}$ Leider nicht steif genug] hat er die Sahne geschlagen.
unfortunately − NEG − PTC('*stiff*') − *enough* − AUX − *he* − *the* − *cream* − *beaten*

Even in the middle field, phrases may occur that do not seem to be generated by rules of projection.

(26) a. ?Andrew Halsey ist auf dem Weg von Kalifornien nach Australien [$_{?P}$ weit ab vom Kurs] gekommen. (Müller 2002: 96)
A.H. − AUX − *on* − *the* − *way* − *from* − *C.* − *to* − *A.* − *far* − PTC('*off*') − *from-the* − *course* − *come*

b. ?Manchmal darf man die Partikel schon [$_{?P}$ relativ weit weg vom Verb] bewegen.
sometimes − *may* − *one* − *the* − *particle* − *yet* − *relatively* − *far* − PTC('*weg*') − *from-the* − *verb* − *move*

The corresponding fully grammatical orders of these sentences are:

(27) a. Andrew Halsey ist auf dem Weg von Kalifornien nach Australien [$_{AP}$ weit] [$_{PP}$ vom Kurs] abgekommen.

b. Manchmal darf man die Partikel schon [$_{AP}$ relativ weit] [$_{PP}$ vom Verb] wegbewegen.[13]

Our tentative assumption that we intend to test in later experiments is that speakers may analyse the V-PTC as adverbial heads (directionals) if they can assign an interpretation to them – even if there is no corresponding lexical entry. Again, such sentences are judged as grammatically marked.
Thus, there is some empirical evidence for the hypothesis that speakers accept certain constructions that are ungrammatical because they are locally decodable. For the competence-based licensing of particles in the prefield, however, we assume the criteria in (14) to hold.

[13] Andrew McIntyre (p.c.) objects that the separate modification of the V-PTCs also in the default position indicates their phrasal status.

(i) Ich habe den Brief direkt rein.geworfen.
I – AUX-PERF – *the* – *letter* – *directly* – PTC('in').*thrown*
'I threw the letter in directly'.

There are two possible replies to such an objection: First, it is not at all obvious that the particle must form a constituent with a modifier of the secondary predication it denotes. There are examples with deverbal particles, which cannot head a PP or whatsoever phrase, showing this quite obviously:

(ii) Er hatte sie dadurch noch besser kennen.gelernt
He − AUX − *her* − *through-this* − *even* − *better* − PTC('know')*learned*
'He got to know her even better by this'.

Whereas the modifier can be moved in the middlefield without changing its denotational properties, the PTC cannot.

(iii) Er hat sie noch besser dadurch kennen.gelernt.
(iv) *Er hat sie [noch besser kennen] dadurch gelernt.

Second, sentences like (i) are kind of ambiguous: *rein* can also be analysed as a directional adverb. Thus, it can - at least marginally - move together with its modifier:

(v) %Ich habe [direkt rein] noch keinen Brief geworfen.
I – AUX-PERF – *directly* – *inside* – *yet* – *no* – *letter* – *thrown*

4. Phrasal Status: Particles in the Prefield and in Base Position

We now return to the two initial questions: if V-PTCs are phrases, why can they not move anywhere other than to the prefield? If they are heads, why can they move to a SPEC position at all? We think the answer is quite simple: only if the PTC is placed in the prefield, and therefore has to fulfil the conditions in (14), does it project a phrase.[14] If it is part of the complex predicate ('verb cluster'), it is adjoined to V as a head. Before discussing this apparent paradox, we want to look more deeply into some examples (the empirical evidence).
Since there are only phrases in SPEC/CP, the projection of the PTC is always extendable. We assume that the PTC is then in fact a head of the category from which it is derived.

(28) a. [$_{AdvP}$ Nach Hause zurück] sind sie erst am nächsten Tag gekommen.
to − *home* − *back* − AUX − *they* − *only* − *on-the* − *next* − *day* − *come*.PTCP.PERF

b. [$_{AdvP}$ Völlig wild drauflos] hat sie in der Messe gesungen.
totally − *wild* − *away* − AUX − *she* − *in* − *the* − *mass* − *sung*

c. [$_{AP}$ Durch und durch nass] hat er sein Hemd geschwitzt.
through − *and* − *through* − *wet* − *has* − *he* − *his* − *shirt* − *sweat*.PTCP.PERF

What can be found as a phrase in the prefield does not appear to be one in the middle field, however: whereas the modifiers of the PTC-V may be moved around, the PTC itself must stay in its base position.

(29) a. Sie sind erst am nächsten Tag [$_{PP}$ nach Hause] zurückgekommen.

b. Sie sind [$_{PP}$ nach /HAUse] erst am nächsten Tag zurückgekommen.

c. ?*Sie sind [$_{AdvP}$ nach Hause zu/RÜCK] erst am nächsten Tag gekommen.

[14] Note that an account putting it the other way round – saying that particles project phrases by default, but can be analysed as heads if adjacent to a verb, which would be more similar to approaches like Zeller (2002) – would be contradictory to the test results (see section 2), given that movement of the particle is everything else but the default case. V-PTCs move only under the very specific conditions that are discussed above.

(30) a. dass sie in der Messe [$_{AP}$ völlig wild] drauflosgesungen hat.

b. dass sie [$_{AP}$ völlig /WILD] in der Messe drauflosgesungen hat.

c. ?*dass sie [$_{AP}$ völlig wild drauf/LOS] in der Messe gesungen hat.

(31) a. dass er sein Hemd [$_{AP}$ durch und durch] nassgeschwitzt hat.

b. dass er [$_{AP}$ durch und /DURCH] sein Hemd nassgeschwitzt hat.

c. *dass er [$_{AP}$ durch und durch /NASS] sein Hemd geschwitzt hat.

The marginal acceptability of some of the sentences in (29-31c) is, in our view, to be explained as a performance-based phenomenon, much like those discussed above in (26) on page -192-.
Another indicator of the isolation of the modifier from the particle in base position is the behaviour of PTC-Vs in contexts of verb raising like the German. IPP-construction (*infinitivus pro participio*). At least in standard German., the sentences in (32-34a) below represent the natural serialisation, whereas those in (b) are possible only in varieties having verb projection raising (like Swiss German., cf. Schönenberger 1995). The sentences in (c), however, where the PTCs should form constituents together with their modifiers, are ungrammatical or strongly marked.

(32) a. dass sie erst am nächsten Tag [$_{PP}$ nach Hause] haben zurückkommen können.

b. %dass sie erst am nächsten Tag haben [$_{VP}$ nach Hause zurückkommen] können.

c. ?*dass sie erst am nächsten Tag [$_{PP}$ nach Hause zurück] haben kommen können.

(33) a. dass sie in der Messe [$_{AP}$ völlig wild] hat drauflossingen wollen.

b. %dass sie in der Messe hat [$_{VP}$ völlig wild drauflossingen] wollen.

c. ?*dass sie in der Messe [$_{VP}$ völlig wild drauflos] hat singen wollen.

(34) a. dass er sein Hemd [$_{AP}$ durch und durch] hat nassschwitzen müssen.

b. %dass er sein Hemd hat [$_{AP}$ durch und durch nassschwitzen] müssen.

c. *dass er sein Hemd [$_{AP}$ durch und durch nass] hat schwitzen müssen.

Again, the marginal acceptance of the sentences in (c) can be explained as a performance-based phenomenon.
Thus, the options of the distribution of V-PTCs apparently confront us with a paradox:

- V-PTCs in SPEC/CP project a (complex) phrase.
- V-PTCs in their default position seem to form a head cluster with V°.

However, this does not pose a real problem to a model that does not have to derivationally relate the two positions SPEC/CP and the default position as part of the cluster. Haider (1990) already suggested that the German. prefield is not occupied derivationally but that the phrases there are base generated. According to Haider (1990: 98), this must be possible anyway, because if parts of the verbal cluster are in the prefield, they often cannot be reconstructed as a phrase in the middlefield (example simplified for the sake of illustration):

(35) a. [$_{VP}$ Ihren Argumenten mehr oder weniger aufmerksam folgen]$_i$ sollte er x_i können.
her − arguments − more − or − less − attentively − follow − should − he − can

b. [$_{?P}$ Folgen können]$_i$ sollte er ihren Argumenten mehr oder weniger aufmerksam x_i .
follow − can − should − he − her − arguments − more − or − less − attentively

According to Haider (1990: 103ff.), convergence of interpretation can be granted by assuming a co-indexed, phonetically empty head that is part of the verb cluster in the default position. In more recent generative accounts, such co-indexation has been subsumed under a more global notion of syntactic dependency (cf. Sportiche 1998: 388ff; Roberts & Roussou 2002: 128; Öhl 2007: 422ff.), a general binary relation between syntactic objects, one commanding the other.

(36) a. A dependency is a binary relation D(x,y).

b. One of (x,y) must command the other.

(adapted from Sportiche 1998: 389)

Öhl (2007) makes use of the concept of syntactic dependencies in order to explain the licensing of the COMP *if* in contexts like the following one, where *that* would normally be selected (co-indexing symbolises the dependency).

(37) a. On that occasion she worked out {**that/ *if**} this story had substance.

b. On that occasion she will$_i$ [work out]$_i$ **if$_i$** this story has substance.

This shows that selection is not a mere matter of sisterhood in the VP but may be subject to further conditions of licensing by elements that are higher in the structure. Selection is in fact a matter of dependency formation.
As a precondition for the convergent interpretation of dependencies, Öhl (2007) formulates a feature compatibility criterion:

(38) ***Interpretability of Dependencies*** (adapted from Öhl 2007: 423)

a. There is a set of features $\{F_i...F_k\}$ of the type F and

b. α and β are co-members in a dependency by means of F,

$\Rightarrow$ F_α and F_β must be compatible.

Now we assume two kinds of general conditions for the placement of predicate elements in the prefield: the structural condition is the projection of a phrase (implying its head being a semantically specified predicate) which does not have to correspond to a base position in VP; the logical condition, however, is the convergent interpretation of the sentence predicate of which it is part. Thus, the licensing conditions can be reduced to two formulae:

(39) ***Generation of predicate elements in the prefield***

a. Predicate elements in the prefield are heads of phrases that are base generated in (e.g.) Spec/CP.

b. The head of the phrase in SPEC/CP is in a convergent dependency relation with V°.[15]

Two of the criteria in (14) follow naturally from the fact that the V-PTCs may be generated there: whatever is in SPEC/CP must be a phrase. Whatever is head of a lexical phrase is always a transparent semantic predicate. The condition of discourse semantic markedness, however, follows from a more global constraint on predicate elements: they

[15] In an earlier paper (Öhl 2009) we proposed that this dependency relation is in fact with an empty head forming a cluster with V°. Since the empty head renders the predicate syntactically decomposable, this should be more compatible with a bare phrase structure approach. The selectional properties of this head would still have to be licensed by the head of the phrase in SPEC/CP. These technical aspects would have to be discussed in more detail, though, and to be compared to the proposals made by other authors. Since the focus of this paper is on the phenomenology and its consequences making a differentiated account of V-PTCs necessary, we avoid the technical discussions for the sake of space.

are placed in the prefield if and only if they are contrasted or focused (cf. Frey 2004: 21, 32; 2006).
For the sake of space, we illustrate this model with just a brief example:

(40) a. [$_{AP}$ Ganz voll$_i$] hat er *(das Glas) gegossen$_i$.
totally − full − has − he − the − glass − poured

b. [$_{AdvP}$ Bis ins Detail hinein$_i$] hat er *(sich) nicht gewagt$_i$.
till − in-the − detail − into − AUX − *he − himself* − NEG − *dared*

c. [$_{AdvP}$ Wild drauflos$_i$] hat sie (*den Mann) geschlagen$_i$.
wildly − away − has − she − the − man − beaten

In (a), the particle phrase forms an AP due to the categorial properties of *voll*. The verb *gegossen* does not itself license the direct object *das Glas* – it only does so by means of its dependency relation with *voll* extending its selectional frame. In a similar way, *hinein* licenses the reflexive in (b). In contrast, *drauflos* in (c) blocks a potential argument of *geschlagen*, presumably because it changes the event type due to its aspectual properties (cf. McIntyre 2001: 155f.). As in the case of unselected embedded interrogatives, selection may thus be regarded as a matter of dependency formation.

5. Conclusion and Outlook

Phrases move within the middlefield and to SPEC/CP, heads do not. The results of our experiments indicate that V-PTCs behave like heads rather than phrases as they cannot be moved freely in the middlefield. Only the V-PTCs in the prefield are heads of phrases fulfilling the criteria in (14): whatever is positioned in SPEC/CP must be a phrase. Particles can be in SPEC/CP if they are semantically transparent, which we regard as a precondition for the heading of a lexical phrase. Added to that, there is the discourse semantic constraint that they must be either contrasted or focussed. In our experiments, the lack of discourse semantic features presumably explains why the judgement values of the V-PTCs moved to SPEC/CP were not evaluated as fully acceptable by our participants. In contrast, the judgements of clearly phrasal constituents like adverbials showed no significant differences, neither in the middlefield nor in the prefield.
In general, we argued that many of the corpus-based empirical contradictions to the competence-based grammatical constraints in (14) assumed here are explicable as performance-based phenomena. The apparent verb particle paradox (PTCs behave like

heads in the default position but like phrases in the prefield) can be resolved if one assumes base generation in SPEC/CP instead of derivationally relating the two positions. This model is admittedly still somewhat sketchy. A more sophisticated formal elaboration has to be postponed to future research. However, we think a model like this is a plausible option for solving the paradox raised by the contradicting constraints on positioning V-PTCs either in the prefield which is a phrase position, or in the default position which is a head adjoined to V°, i.e. a part of the verb cluster.

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