On Adverbial Complements in German

Abstract:

Adverbial complements occur with a restricted set of predicates in German. They have to be realized syntactically – just like ordinary syntactic complements, but their semantics is identical to the semantics of adverbial modifiers. In addition, they show surprising scopal behaviour. We present an analysis that makes use of Minimal Recursion Semantics (Copestake et al. 2005), and an analysis of wide scope quantification of objects in German in Kiss (2001) to account for the properties of adverbial complements.

1. Introduction

Prepositional complements (governed PPs) are typically characterized as lacking in meaning, the lexical form of their head being determined and hence fixed by an external governor. Adverbial PPs on the other hand are characterized as being headed by autosemantic prepositions, their form neither fixed nor determined by an external governor. A prototypical example of a prepositional complement in German is given in (1).

(1) Er freute sich **auf** das Spiel.
he looked-forward REFL on the game
'He looked forward to the game.'

In this paper, we introduce *adverbial complements* in German, and present an analysis of adverbial complements within HPSG. Adverbial complements combine prototypical properties of governed prepositions with prototypical properties of adverbial modifiers: just like obligatory complements, they cannot be omitted. Yet, they are headed by autosemantic prepositions. Examples of adverbial complements of stative and process predicates are given in (2) and (3):

(2) Ein Schimmer lag über dem gesamten Bild.
a gleam lay above the whole picture
'The whole picture was gleaming.'

(3) Sie ziehen maschinell eine Sprengschnur durch den Abschnitt.
they distend mechanically a detonating cord through the section
'They distend a detonating cord through the section by use of a machine.'

Apart from occupying a special position with regard to the distinction between governed and adverbial prepositions, adverbial complements also show somewhat surprising scopal behaviour. Since Frey (1993) (cf. also Kiss 2001, Sauerland and Elbourne 2002) it has been established that wide scope object quantification in German is much more restricted than wide scope object quantification in English. While object quantifiers in English may receive wide scope without any further proviso, object quantifiers in German require either topicalization or scrambling to allow wide scope readings. Governed PPs behave like NP objects of transitive verbs in this respect, as is illustrated in (4) and (5).

(4) Jeder Mann freut sich auf eine Verabredung.
every man look-forward REFL on the date
'Every man looks forward to a date.' √∀∃, *∃∀

(5) Auf eine Verabredung freut sich jeder Mann.
on a date look-forward REFL every man
'Every man looks forward to a date.' √∀∃, √∃∀

The scopal relationships in (4) are fixed: the subject has been topicalized, and occupies a more prominent position than the object both in terms of configuration and in terms of ARG-ST, where the subject is located to the left of the object. The situation is different in (5), where the object has been topicalized: it is still less prominent on ARG-ST, but now it occupies a more prominent position than the subject in the syntactic configuration (cf. Kiss 2001). The example is thus predicted to be ambiguous between a narrow scope and a wide scope reading of the object. Adverbial complements differ from governed PPs in that wide scope object quantification becomes possible without ostensible scrambling or topicalization of the adverbial complement, as is witnessed in (6).

(6) Sie zogen eine Schnur durch jeden Abschnitt.
they pulled a cord through every section.
'They pulled a cord through every section.' √∀∃, √∃∀

The most plausible reading of (6) is one where *jeden Abschnitt* (every section) outscopes *eine Schnur* (a cord).[1] And the same pattern applies to the stative predicates in (2), where the adverbial complement may outscope the subject, even if the subject has been topicalized, as is illustrated in (7).[2]

(7) Ein Schimmer lag über jedem Bild.
a gleam lay above every picture
'Every picture was glistening with a gleam.' √∀∃, √∃∀

An analysis of adverbial complements thus must account for the following observations:

- In contrast to adverbial modifiers, which may occur freely and are not lexically constrained, the presence of adverbial complements is lexically conditioned: only certain, semantically related classes (stative locatives, spatial processes) select adverbial complements.
- Although the heads of adverbial complements belong to the class of autosemantic prepositions, they are syntactically obligatory.
- Adverbial complements allow for scope ambiguity without ostensible syntactic dislocation.

In section 2, we will establish the characteristic properties of adverbial complements in more detail, particularly addressing their semantics. In section 3, we will discuss how to deal with wide scope readings in German in Minimal Recursion Semantics. The analysis of adverbial complements in presented in section 4, and section 5 briefly compares the present analysis to Tseng (2000) and Zifonun et al. (1997).

2. Properties of Adverbial Complements

The realization of adverbial complements is obligatory, as can be witnessed by the ungrammaticality of the examples in (8) that are derived from (2) and (3) by omission of the adverbial complement.

(8) a. *Ein Schimmer lag.
c. *Sie ziehen maschinell eine Sprengschnur.[3]

Considering the meaningfulness of the prepositions, the prepositions in (2) and (3) can be adverbially modified – which is impossible for *synsemantic* preposition uses like *auf* in (1).

(9) a. Nahezu über dem gesamten Bild lag ein Schimmer.
almost above the whole picture lay a gleam
'The picture was glistening almost completely.'
b. Quer durch den Abschnitt wird eine Sprengschnur gezogen.
across through the section PASS-AUX a detonating cord pulled
'They pulled a detonating cord right across the section.'

That the modifier does indeed modify the P(P) and not the verb, can be seen from the topicalizations in (9). If the adverbials would modify the verb, the constructions in (9) would violate the verb second constraint. Finally, the semantic nature of adverbial complements prohibits the realisation of adverbial *modifiers* with the same semantics in the same clause, while form-identical adverbial modifiers can always be combined with governed PPs, as can be witnessed in (10).

(10) a. Auf der Party freute er sich auf die Verabredung.
on the party looked-forward he REFL on the date
'He looked forward to the date at the party.'

---

[1] One could argue that a wide scope reading of *eine Schnur* (a cord) actually entails a wide scope reading of *jeden Abschnitt* (every section), since $\exists y \forall x \Rightarrow \forall x \exists y$. But the most plausible reading of (6) entails that the cord actually varies with every section, i.e. that it is not the very same cord that is pulled through every section.

[2] We assume with Tseng (2000:104f.) that the locus for binding a reflexive object of an autosematic P is the P's ARG-ST. Hence the analysis proposed in section 3 and 4 does not have direct repercussions on possible reflexive binding patterns.

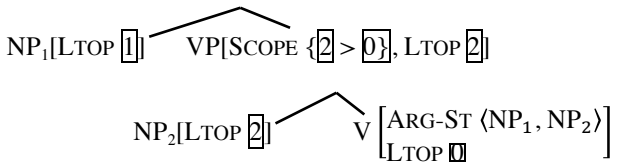
[3] The example in (8) is not ungrammatical if a different interpretation of *ziehen* in the sense of *to tow* is considered.

b. *Über dem gesamten Bild lag ein Schimmer über dem Rahmen.
above the whole picture lay a gleam above the frame

3. German Scope Variation in Minimal Recursion Semantics

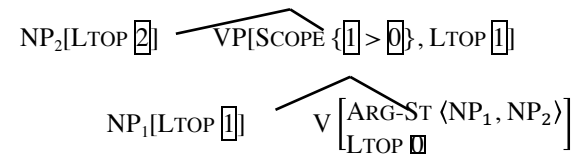
Wide scope readings of objects in German are more restricted than respective readings in English, which prohibits the direct application of Copestake et al. (2005). The MRS-based analysis of quantificational scope in Kiss (2001) exploits mismatches between syntactic structure and ARG-ST by assuming that a quantificational combination will either yield a HANDLE constraint to the effect that the *label* of the syntactic sister of the quantifier is identified with the SCOPE argument of the quantifier, or that the SCOPE argument of the quantifier is identified with the *label* of a quantifier that appears in less prominent position on the same ARG-ST. This condition is related to the projection of the LTOP of the phrase. If the SCOPE of the quantifier is identified with the label of its syntactic sister, the LTOP of the resulting phrase will be the LTOP of the quantifier. If the quantifier, however, selects a less prominent co-argument as its SCOPE, the LTOP of the resulting phrase will be the LTOP of the semantic head (which in turn will be the non-quantificational daughter, as in (13) below). If the word order corresponds to the configurational structure, as in (11), scope ambiguity may not emerge, since the lowest quantifier cannot take any lower element on ARG-ST as its scope.[4]

(11) Narrow scope of non-scrambled object quantifier, 2 > 0 & 1 > 2, i.e. 1 > 2 > 0
S[SCOPE {2 > 0, 1 > 2}, LTOP 1]

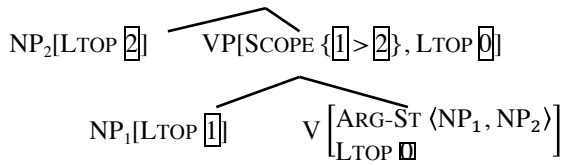


Scrambling, however, leads to scope ambiguity: the configurationally lower quantifier may either take the LTOP of its syntactic sister as its scope, leading to a wide scope of the scrambled quantifier – cf. (12), or the LTOP of the scrambled quantifier, which is less prominent on ARG-ST – cf. (13).

(12) Wide scope of scrambled object quantifier, 1 > 0 & 2 > 1, i.e. 2 > 1 > 0
S[SCOPE {1 > 0, 2 > 1}, LTOP 2]



(13) Narrow scope of scrambled object quantifier, 1 > 2 & 2 > 0, i.e. 1 > 2 > 0
S[SCOPE {1 > 2, 2 > 0}, LTOP 2]



In (11), the least prominent argument (NP[LTOP 2] can only take the LTOP of its sister as its SCOPE. The analysis thus predicts similar effects to an analysis that assumes that wide scope readings can only emerge due to scrambling, as e.g. Frey (1993). If no scrambling applies, the least prominent element on ARG-ST will also be configurationally less prominent than its more prominent co-argument on ARG-ST, as in (11). The quantifier NP_2 will have to take the LTOP of its verbal sister as its argument,

[4] The SCOPE value in (11), (12), and (13) is an abbreviatory device for the actual SCOPE values of quantifiers contained in the CONT|RELS values of the phrases: x > y is to be interpreted as "the element with LTOP x immediately outscopes the element with LTOP y. The LTOP of S in (13) is indeed 2, which may sound counterintuitive. Note, however, that the *Tree Condition* of Copestake et al. (2005: 296) rules out MRS structures that may take up 2 subsequently.

its own LABEL becoming the LTOP of the phrase, which eventually will be taken as argument by the more prominent (and configurationally superior) NP_1.[5]

In (12), NP_1 selects the *label* of its verbal sister, and consequently, the LTOP of NP_1 becomes the LTOP of the phrase. As this is selected by NP_2, a wide scope reading of the object NP_2 emerges. In (13), NP_1 selects the LABEL of NP_2, NP_2 being less prominent on the same ARG-ST. Now, the LTOP of the verbal sister of NP_1 becomes the LTOP of the phrase, and is selected by NP_2. Hence, we end up with the constraints that NP_1 outscopes NP_2 (via ARG-ST) and NP_2 outscopes V_0 (via LTOP projection). Taken together, a narrow scope reading of the object quantifier emerges after scrambling. In the following, we will claim that the same mechanism applies to the analysis of adverbial complements in (6) and (7).

4. The Grammar of Adverbial Complements

The three constitutive properties of adverbial complement will receive the following analysis: as adverbial complements do only co-occur with certain (verbal) predicates, we assume that adverbial complements are true syntactic arguments of these predicates, and hence are specified on COMPS and ARG-ST. But adverbial complements are also headed by full-fledged autosemantic prepositions with intersective semantics (where the event variable of the PP is identified with the event variable of the modified element). We capture this property by assuming that adverbial complements, despite their appearance on ARG-ST, are not subordinated semantically to the head, but are combined semantically by intersective modification (which is implemented in the lexical specification of the governing verb). On the other hand, we must also account for the fact that the respective predicates do not allow arbitrary adverbial complements. This is captured by assuming that the governing predicate selects the KEY of the adverbial complement. Finally, we have to account for the wide scope interpretations of adverbial complements without ostensible scrambling, to cover the scope facts described in (6) and (7). We will assume that the basic configuration presented in (12) and (13) is indeed applicable to (6) and (7), i.e. that the examples involve scrambling of the NP object, and consequently, that the PP occupies a more prominent position on ARG-ST than the object in (6) or even the subject in (7). In favour of this conclusion, it should be noted that a PP preceding an NP is often classified as marked, both orders are equally judged with adverbial complements. Morevoer, we find a lack of scope ambiguity if the PP is realized to the left (and hence above) the NP-object or subject, as can be witnessed in (14).

(14) a. Sie zogen durch jeden Abschnitt eine Schnur. √∀∃, *∃∀
b. Es lag über jedem Bild ein Schimmer. √∀∃, *∃∀

The lexical entry for *ziehen* in (15) captures the aforementioned properties of adverbial complements: The PP complement appears on COMPS and ARG-ST, yet is not specified for PFORM. The PP bears the same LABEL and *eo ipso* the same EVENT value as the KEY of *ziehen,* thus capturing its status as intersective adverbial. The presence of the KEY of the adverbial complement in the RELS of of the governing predicate explains the ungrammaticality of examples like (10b): the specific relation introduced by the PP can only be filled once in the RELS of the predicate. Finally, the PP is assumed to be located to the left of the NP complement on ARG-ST. We thus propose that we do find scrambling in (6) and (7). The PP may outscope the NP argument even if the NP is located to the left of the PP, and hence configurationally superior to the PP, because the PP is more prominent than the NP on the ARG-ST of *ziehen*.

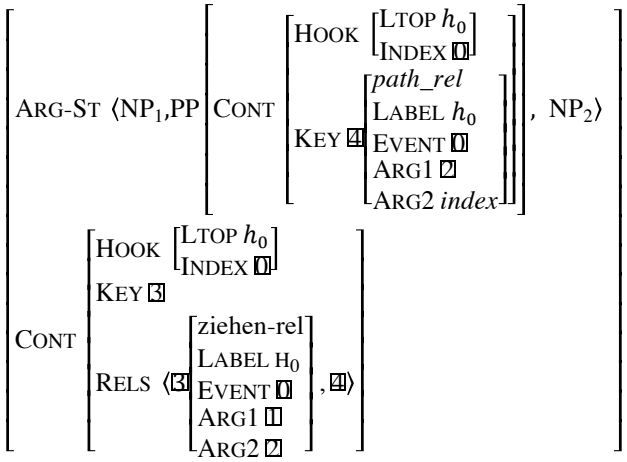
If both the PP and NP_2 are quantificational, the mechanisms for scope determination described in section 3 account for the ambiguity of (7). Similarly, we have to assume for stative predicates like *liegen* in (7) that the PP is realized to the *left* of the subject on the ARG-ST of *liegen*. This conclusion may sound controversial, but it can be justified empirically by the non-existence of otherwise predicted scope ambiguity in (14a), and also conceptually, if we look at the semantic combination of the predicates and the PPs, as illustrated for *ziehen* in (15): While the PP is a syntactic argument of the verb, it does not only show intersective semantics, but also does not receive an argument role in the *key* of *ziehen*.[6]

---

[5] Following Müller (forthcoming), we assume that COMPS is a list, and yet arguments can be discharged in any order.

[6] This is reminiscent to Müller's (2002) analysis of *complex predicates*.

(15) *ziehen*



5. Comparison to other approaches

Tseng (2000:119) discusses autosemantic PP complements with fixed PFORM. These PPs are derived from the sortal hierarchy in Tseng (2000:121), but the properties of adverbial complements, as discussed here, withstand integration into Tseng's sortal structure. Two points should be noted in particular: First, although Tseng assumes with Bouma et al. (2001) that adverbial complements enter DEPS at the very end (and presumably do not enter ARG-ST at all). Admittedly, Tseng does not discuss scopal properties, but the analysis thus cannot account for the scope variation of adverbial complements presented in (6), (7), and (14). Secondly, Tseng (2000:119) assumes that adverbial complements actually intersect with an argument slot of the governing predicate. The present analysis assumes a relation between an argument of the verbal predicate (ARG2 in (15)) and the external argument (ARG1) of the adverbial complement. Yet, the adverbial complement does not fill a slot in the *relation* introduced by the predicate. Tseng's analysis is reminiscent of a class of *optional* prepositional complements discussed in Zifonun et al. (1997:1099ff.). The prepositional complement is considered to be optional, and its semantics can be inferred from the semantics of the governing predicate. As an example, Zifonun et al. (1997) consider the verb *werfen (to throw),* from which an endpoint of the throwing can always be inferred, but can be made explicit by various PPs, which, however, are not form-fixed. Apart from the latter property, the behaviour of these complements lends itself to an analysis akin Tseng's (2000:119), where the pertinent *argument slot* is present in the verb's relation and could be filled by *existential closure*. With regard to the rather different behaviour of adverbial complements, it is worthwhile to entertain the assumption that the selection of the preposition's KEY is insufficient to trigger existential closure (which applies to individual variables and not to relations), and hence that *obligatory adverbial complements* are obligatory because their semantic contribution is not directly related to an argument slot of the governing predicate.

References

Bouma, Gosse, Robert Malouf and Ivan A. Sag. 2001. *Satisfying Constraints on Extraction and Adjunction*. Natural Language and Linguistic Theory 19(1), 1–65. **Copestake,** Ann, Daniel P. Flickinger, Carl J. Pollard and Ivan A. Sag. 2005. *Minimal Recursion Semantics: an Introduction*. Research on Language and Computation 4(3), 281–332. **Frey,** Werner. 1993. *Syntaktische Bedingungen für die semantische Interpretation*. Berlin: Akademie Verlag. **Kiss,** Tibor. 2001. *Configurational and Relational Scope Determination in German*. In: Meurers, Walt Detmar and Tibor Kiss (eds.). Constraint-Based Approaches to Germanic Syntax. Studies in Constraint-Based Lexicalism, No. 7, Stanford, CA: CSLI Publications, 141–175. **Müller,** Stefan. 2002. *Complex Predicates: Verbal Complexes, Resultative Constructions, and Particle Verbs in German*. Stanford, CA:CSLI Publications. **Müller,** Stefan. forthcoming. *HPSG – A Survey*. In: Kiss, Tibor and Artemis Alexiadou (eds.). Syntax – An international handbook of contemporary syntactic research. Berlin: Walter de Gruyter Verlag. **Sauerland,** Uli and Paul Elbourne. 2002. *Total Reconstruction, PF Movement, and Derivational Order*. Linguistic Inquiry, 33(2), 283–319. **Tseng,** Jesse L. 2000. *The Representation and Selection of Prepositions*. PhD Dissertation. University of Edinburgh. **Zifonun,** Gisela, Ludger Hoffmann and Bruno Strecker. 1997. *Grammatik der deutschen Sprache*. Berlin: Walter de Gruyter Verlag.