On Autonomous PP Complements in German

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Abstract:

Autonomous PP complements occur with a restricted set of predicates in German. They have to be realized syntactically – just like ordinary syntactic complements, but semantically, they behave like 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 autonomous PP complements.

1. Introduction

The syntactic heads of prepositional complements (governed PPs) are typically characterized as lacking in meaning, their lexical form 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 *autonomous PP complements* in German, and present an analysis of these PP complements within HPSG. Autonomous PP 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 autonomous PP 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.'

The realization of autonomous complements is obligatory, as can be witnessed by the ungrammaticality of the examples in (4) that are derived from (2) and (3) by omission of the PP complement.

(4)   a.   *Ein Schimmer lag.
        b.   *Sie ziehen maschinell eine Sprengschnur.[2]

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).

(5)   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 (5). If the adverbials *(nahezu, quer)* would modify the verb, the constructions in (5) would violate

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[2]   The example in (4) is not ungrammatical if a different interpretation of *ziehen* in the sense of *to tow* is considered.

the verb second constraint. Finally, the semantic nature of autonomous PP complements prohibits the realisation of adverbial *modifiers* with the same semantics in the same clause – cf. (6b), while form-identical adverbial modifiers can always be combined with governed PPs, as can be witnessed in (6a).[3]

(6) 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.'
     b. *Über dem gesamten Bild   lag ein Schimmer über dem Rahmen.
          above the whole   picture lay a   gleam   above the frame

Apart from occupying a special position with regard to the distinction between governed and adverbial prepositions, autonomous PP 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.[4] Governed PPs behave like NP objects of transitive verbs in this respect, as is illustrated in (7) and (8).

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

(8) 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 (7) 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 (8), 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. Autonomous PP complements differ from governed PPs in that wide scope object quantification becomes possible without ostensible scrambling (or topicalization) of the autonomous PP complement, as is witnessed in (9).

(9) 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 (9) is the one where *jeden Abschnitt* (every section) outscopes *eine Schnur* (a cord).[5] And the same pattern applies to the stative predicate in (2), where the autonomous PP complement may outscope the subject, even if the subject has been topicalized, as is illustrated in (10).[6]

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

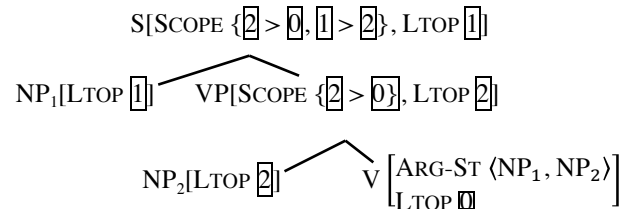An analysis of autonomous PP complements thus must account for the following observations:

o In contrast to adverbial modifiers, which may occur freely and are not lexically constrained, the presence of autonomous PP complements is lexically conditioned: only certain, semantically related classes (stative locatives, spatial processes) select autonomous PP complements.

o Although the heads of autonomous PP complements belong to the class of autosemantic prepositions, they are syntactically obligatory.

o Autonomous PP complements allow for scope ambiguity without ostensible syntactic dislocation.

In section 2, we will discuss how to deal with wide scope readings in German in Minimal Recursion Semantics. The analysis of autonomous PP complements is presented in section 3, and section 4 briefly compares the present analysis to Tseng (2000) and Zifonun et al. (1997).

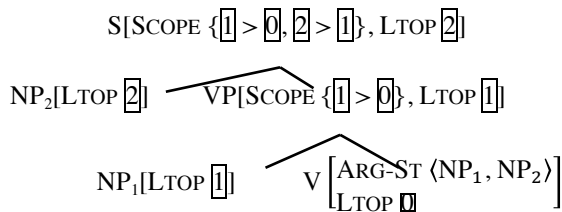## 2. German Scope Variation in Minimal Recursion Semantics

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.[7]

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

$$S[\text{SCOPE } \{[2] > [0], [1] > [2]\}, \text{LTOP } [1]]$$

$$NP_1[\text{LTOP } [1]] \quad VP[\text{SCOPE } \{[2] > [0]\}, \text{LTOP } [2]]$$

$$NP_2[\text{LTOP } [2]] \quad V \begin{bmatrix} \text{ARG-ST } \langle NP_1, NP_2 \rangle \\ \text{LTOP } [0] \end{bmatrix}$$

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]

$$S[\text{SCOPE } \{[1] > [0], [2] > [1]\}, \text{LTOP } [2]]$$

$$NP_2[\text{LTOP } [2]] \quad VP[\text{SCOPE } \{[1] > [0]\}, \text{LTOP } [1]]$$

$$NP_1[\text{LTOP } [1]] \quad V \begin{bmatrix} \text{ARG-ST } \langle NP_1, NP_2 \rangle \\ \text{LTOP } [0] \end{bmatrix}$$

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7 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.

(13) Narrow scope of scrambled object quantifier, $1 > 2$ & $2 > 0$, i.e. $1 > 2 > 0$

$$S[\text{SCOPE } \{[1] > [2], [2] > [0]\}, \text{LTOP } [2]]$$

$$NP_2[\text{LTOP } [2]] \qquad VP[\text{SCOPE } \{[1] > [2]\}, \text{LTOP } [0]]$$

$$NP_1[\text{LTOP } [1]] \qquad V \begin{bmatrix} \text{ARG-ST } \langle NP_1, NP_2 \rangle \\ \text{LTOP } [0] \end{bmatrix}$$
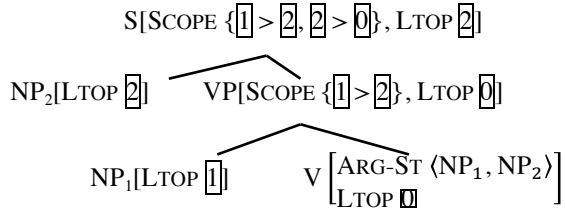
In (11), the least prominent argument (NP[LTOP [2]]) can only take the LTOP of its sister as its SCOPE. The analysis thus predicts similar effects to an analysis that assumes that wide scope readings can only emerge due to scrambling, as e.g. Frey (1993). If no scrambling applies, the least prominent 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, 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.[8]

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 autonomous PP complements in (9) and (10).

3.   The Grammar of Autonomous PP Complements

The three constitutive properties of autonomous PP complements will receive the following analysis: as autonomous PP complements do only co-occur with certain (verbal) predicates, we assume that they are true syntactic arguments of these predicates, and hence are specified on COMPS and ARG-ST. But autonomous PP complements are also headed by full-fledged autosemantic prepositions with intersective semantics (where the external argument of the PP is identified with the *index* of the modified element). We capture this property by assuming that autonomous PP 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 autonomous PP complements. This is captured by assuming that the governing predicate selects the KEY of the complement. Finally, we have to account for the wide scope interpretations of autonomous PP complements without ostensible scrambling, to cover the scope facts described in (9) and (10). We will assume that the basic configuration presented in (12) and (13) is indeed applicable to (9) and (10), 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 (9) or even the subject in (10).

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 autonomous PP complements. Moreover, 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. $\sqrt{\forall\exists}$, $*\exists\forall$
        b.   Es lag über jedem Bild ein Schimmer. $\sqrt{\forall\exists}$, $*\exists\forall$

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[8]   Following Müller (forthcoming), we assume that COMPS is a list, and yet arguments can be discharged in any order.
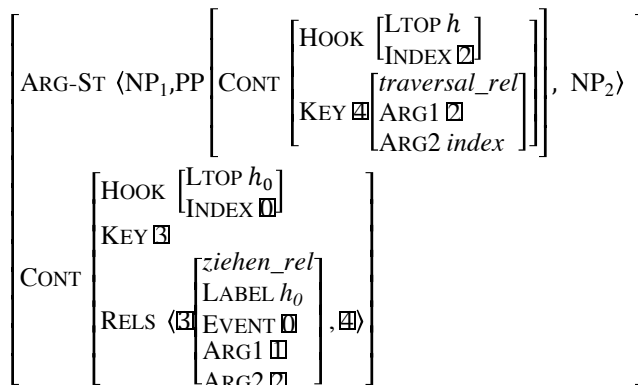
Finally, while there is conspicuous scope interaction between the autonomous PP complement and the NP complement in (9), no such interaction can be observed between an autonomous PP complement of a transitive verb and the *subject*, as is illustrated in (15).[9]

(15)   Ich sah, dass jeder Mann die Schnur durch einen Abschnitt zog. √∀∃, *∃∀
         I   saw that every man the cord   through a   section   pulled

Example (15) suggests that the autonomous PP complement does not occupy a position in the left periphery of ARG-ST. Instead, it seems to be restricted to a position on ARG-ST to the left of the argument, which is semantically modified by the autonomous PP complement.

The lexical entry for *ziehen* in (16) captures the aforementioned properties of autonomous PP complements: The PP complement appears on COMPS and ARG-ST, yet is not specified for PFORM. The *index* of the PP is identical to the *index* of the least prominent argument on the ARG-ST of *ziehen*. The verb thus does not specifically select the *form* of the prepositional complement, but indicates that it must be subsumed by a relation of traversal *(traversal_rel)*; if a PP cannot provide such a relation, it cannot become the complement of *ziehen*. As *traversal_rel* is selected, and thus incorporated into the semantics of *ziehen*, we assume that this particular relation could not be expressed by another PP modifying the verb – thus accounting for the ungrammaticality of examples like (6b). 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 (9) and (10). 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.*, The mechanisms for scope determination described in section 2 account for the ambiguity of (10) in case the PP and NP_2 are quantificational

(16)   *ziehen*

$$
\begin{bmatrix}
\text{ARG-ST} \left\langle NP_1, PP \begin{bmatrix} \text{CONT} \begin{bmatrix} \text{HOOK} \begin{bmatrix} \text{LTOP } h \\ \text{INDEX } \boxed{2} \end{bmatrix} \\ \text{KEY } \boxed{4} \begin{bmatrix} traversal\_rel \\ \text{ARG1 } \boxed{2} \\ \text{ARG2 } index \end{bmatrix} \end{bmatrix} \end{bmatrix}, NP_2 \right\rangle \\[2em]
\text{CONT} \begin{bmatrix} \text{HOOK} \begin{bmatrix} \text{LTOP } h_0 \\ \text{INDEX } \boxed{0} \end{bmatrix} \\ \text{KEY } \boxed{3} \\ \text{RELS } \left\langle \boxed{3} \begin{bmatrix} ziehen\_rel \\ \text{LABEL } h_0 \\ \text{EVENT } \boxed{0} \\ \text{ARG1 } \boxed{1} \\ \text{ARG2 } \boxed{2} \end{bmatrix}, \boxed{4} \right\rangle \end{bmatrix}
\end{bmatrix}
$$

Similarly, we have to assume for stative predicates like *liegen* in (10) that the PP is realized to the *left* of the subject on the ARG-ST of *liegen*. This conclusion may sound controversial. Yet, several observations speak in favour of it. To begin with, I would like to remind the reader that the analysis predicts that no scope ambiguity occurs if a PP is realized to the left of the subject of *liegen*, which is borne out by (14b). We have also pointed out that there is no ambiguity between the PP and the subject in (15), indicating that the PP does not necessarily occupy the position left to the subject, but a position to the left of the argument with which the PP is intersected. This will be the object of otherwise transitive *ziehen*, but the subject of intransitive *liegen*. This assumption has immediate consequences for passivization. Pollard and Sag (1994:121f.) assume that the *Passive Lexical Rule* affects transitive predicates – but this analysis applies to English only and cannot be maintained for German, where impersonal passivization is ubiquitous. But passivization in German requires that the input structure provides a subject in first position of ARG-ST; thus raising verbs, subjectless predicates, and object-experiencer psych-verbs do not passivize. Given the presumed structures of *liegen* and *ziehen*, we predict that an example like (9) can be passivized, but (10) cannot. This is so because a subject is found in the first position of the ARG-ST of (9), but not of (10). And this is what we can observed, cf. (17).[10]

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9   We use a subordinate clause in (15) to make sure that topicalization of the subject can be excluded as a possible source for a missing wide scope reading of the PP complement.

10   I would like to thank an anonymous reviewer for referring to the consequences of the present proposal for passivization.

(17) a.   Eine Schnur wurde   durch   jeden Abschnitt gezogen.
          a   cord   PASS-AUX through every section   pulled

      b.   *Über jedem Bild   wurde   gelegen.
           above every picture PASS-AUX laid.

4.   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 autonomous PP complements, as discussed here, withstand integration into Tseng's sortal structure. Two points should be noted in particular: First, Tseng assumes with Bouma et al. (2001) that autonomous PP 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 autonomous PP complements presented in (9), (10), and (14). Secondly, Tseng (2000:119) assumes that autonomous 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 (16)) and the external argument (ARG1) of the autonomous PP complement. Yet, the autonomous PP 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*. But if such complements fill argument slots in the semantics of the verb, they clearly differ from the complements discussed here, which form intersections with the index of another argument of the verb. At this point, one might speculate that the autonomous PP complements are obligatory because their semantic contribution – and in particular, their intersective semantics with respect to *another* argument of the same verb – cannot be inferred from the semantics of the verb alone.

References

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