

Towards a Uniform Approach to Postnominal PPs and Genitives in German*

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In Distributed Morphology analyses of German, genitives occurring postnominally to deverbal event nominals such as in *die Beschreibung der Bürgermeisterin* ('the description of the mayoress') are argued to occur in different syntactic positions depending on their interpretation. Whenever they are interpreted in a parallel fashion to the internal argument of the underlying verb, they are assumed to occupy some complement position internal to the nominalisation. However, if they are interpreted as more loosely associated with the event, such as in an interpretation of *die Beschreibung der Bürgermeisterin* as a particular event of a description of something which the mayoress attended, they are assumed to be adjoined to the noun phrase. I argue that for lack of hard syntactic evidence with regard to these positions, we should seek a surface-oriented uniform analysis of the two interpretations. The varying interpretation of genitives is accounted for by assuming them to be introduced via an underspecified semantic relation ρ . The analysis is held in the framework of Underspecified Discourse Representation Theory.

1. Introduction

Genitives and prepositional phrases (PPs) as modifiers of noun phrases have a wide range of interpretations. For instance, they may be interpreted as arguments of an event nominalisation or a relational noun, or they may express possession or some general associative relation, cf. the German Determiner Phrases (DPs) in (1):

- (1) a. die Zerstörung der Stadt
the destruction the-gen city
'the destruction of the city'
b. die Schwester des Angeklagten
the sister the-gen defendant
'the sister of the defendant'
c. der Rechner meines Kollegen
the computer my-gen colleague
'my colleague's computer'

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In (1a), the genitive *der Stadt* ('the city') has a preferred interpretation as the object of destruction, whereas in (1b), the genitive *des Angeklagten* ('the defendant') is most likely to be interpreted as the sibling of the individual referred to by *Schwester* ('sister'). In (1c) the colleague is preferably interpreted as the possessor of the computer, or otherwise associated with it, e.g. as someone using it or similar.

There is broad consensus in the literature on adnominal genitives that their interpretation in e.g. (1a) and (1b) is restrained by the head noun of the complex DP, the event noun *Zerstörung* ('destruction') and the relational noun *Schwester* ('sister'), respectively. This can be accounted for by analysing event nouns and relational nouns as introducing argument variables. Similarly, there is widespread agreement that the relatively free relation between the genitive *meines Kollegen* ('my colleague') and the head noun *Rechner* ('computer') may be due to the lack of an argument relation in non-eventive and non-relational nouns such as *Rechner*.

In a number of analyses, the difference between the interpretation of the genitive as corresponding to the internal argument of the underlying verb of a deverbal nominalisation — henceforth referred to as the theme argument of the nominalisation — and the interpretation of a genitive as a possessor or as more broadly associated with the noun in question, is also assumed to have a syntactic correspondence: The semantic behaviour is accounted for not only by referring to the fact that nominalisations such as *destruction* involve a theme argument semantically, but also by assuming different syntactic positions in the two cases. For genitive theme arguments, a syntactic position parallel to that of the direct object of verbal projections is assumed. For possessives or other associative genitives a different position is assumed, possibly adjoined to the noun phrase. This view is most prominently defended in work in Distributed Morphology (cf. e.g. Alexiadou, 2001), but similar dichotomies may be found in other approaches as well, cf. e.g. Hartmann & Zimmermann (2002), who use the terms *syntactic and semantic genitive*.¹

While I do not dispute the basic semantic insights concerning the above data, I take a different view of the syntax-semantics interface. I argue that in the case of German the postnominal genitives should all be treated the same way syntactically. More concretely, I assume that there is no syntactic argument position for postnominal genitives. Instead, I explore an approach in which all postnominal genitives show the syntactic behaviour of the modifier case but may still be interpreted as arguments semantically, being introduced by the same underspecified semantic relation in all cases. The interpretational variation is due to the fact that the underspecified semantic representation of the genitive and the semantic representation of the noun or nominalisation may relate differently to one another. I will also show how this analysis may account for the postnominal PP realisation of arguments.

¹ Barker (1995) makes a parallel distinction between *lexical* and *extrinsic possession*.

Although the present paper deals with the syntax-semantics interface, the main emphasis will be on the semantics of the genitives. Thus, I will ignore a range of syntactic intricacies and often only refer to relevant issues very briefly. My main goal is to show that a reasonably straightforward semantic analysis is possible for the phenomena under discussion without the complex syntactic machinery which is often assumed. Although I will only focus on German data, I believe that some of the results of this paper may be of relevance for other languages.²

The paper is organised as follows. In Section 2 I introduce the data which I will focus on along with the basic features of the proposed analysis. In Section 3, the syntactic and semantic analysis is presented. Section 4 concludes the paper with some general remarks on the syntax-semantics interface.

2. Data and Main Claims

In German, genitives may be post- or prenominal. I will restrict myself to postnominal genitives as the prenominal genitives have a different distribution and may be argued to be restricted to involving personal names in Modern German (for a different view see Sternefeld, 2007, p. 212). However, I will also include such postnominal PPs which may be associated with the arguments of a nominalisation, namely *von* ('by') and *durch* ('through') phrases. I will only analyse event nominalisations which are derived by means of the suffix *-ung*. This means that I will not discuss relational nouns such as *sister*, but it seems plausible to me that they can be analysed in the spirit of this approach.

I will present a small case study of the event nominalisation *Beschreibung* ('description').³ In particular, I will examine the following examples:

- (2) a. die Beschreibung der/von der Bürgermeisterin
the description the/of the mayoress
'the description of the mayoress' or 'the mayoress's description'
- b. die Beschreibung durch die Bürgermeisterin
the description through the mayoress
'the mayoress' description' (agentive only)

² Let me point to one of the differences between e.g. German and English which would have to be taken into account: In English, postnominal arguments and non-arguments are not realised the same way. Arguments are introduced in an *of* phrase, while non-arguments are introduced by means of a 'double genitive' such as in *the stick of John's* (cf. *the stick of John).

³ Like the English nominalisation *description*, *Beschreibung* has at least two more readings: First, it may refer to the content of description. Second, it may also receive a coerced interpretation which may be paraphrased as 'object carrying information which serves as a description' (e.g. a piece of paper containing a description). I will not discuss the exact reasoning behind the assumption that the information reading is more basic than the concrete object reading.

- c. die Landschaftsbeschreibung der Bürgermeisterin
the scenery.description the mayoress
'the description of the scenery by the mayoress'

In (2a), the genitive *der Bürgermeisterin* ('the mayoress') may be interpreted both as the described entity as well as the describing individual. As indicated in the example, I will treat postnominal *von* phrases and genitives as equivalent in German. This is motivated by that fact that since in general no case marking is allowed on bare nouns in German, *von* sometimes has to be used instead of the genitive, as e.g. in some occurrences of mass nouns. This view is certainly somewhat too simplified, but I will not go into this issue in any detail. See the remarks on PP attachment below and footnote 4 on page 194. With a *durch* phrase as in (2b), only one interpretation is available, namely that the mayoress is the agent of the describing event. Finally, I will also look at cases where the genitive cannot be interpreted as the theme argument, as in the case of (2c), where *Landschaft* ('scenery') is the described entity and *Bürgermeisterin* is most naturally interpreted as the describing individual, i.e. as the agent of the event of describing.

As opposed to analyses assuming two different syntactic positions for the argument and non-argument interpretations, I will make the following assumptions:

- All postnominal PPs and genitives occupy the same syntactic position, i.e. they are adjoined to the level of nP, assuming DP as the highest functional projection dominating a noun phrase.
- All postnominal PPs and genitives are represented semantically by the underspecified two-place relation ρ . This relation may be differently realised though, which is what gives us the different interpretations of postnominal genitives and PPs.

Concerning the syntactic position, it may be noted that in Distributed Morphology analyses, assignment of genitive case to theme arguments is assumed to be structural, often linked to the presence of D (although the case feature itself may be located within other projections dominated by the DP, cf. Alexiadou, 2001, p. 177 ff.). As for non-arguments such as possessives, other case assigning mechanisms will have to be applied to, since they are not assumed to occupy an argument position. Contrary to this, I assume that the DP is assigned genitive case in a uniform way, i.e. there is no differentiation between structural and non-structural case assignment for arguments and non-arguments, respectively. Admittedly, I will not provide a detailed syntactic analysis here, but it may be remarked that at least for a uniform approach to German postnominal genitives an identical case assignment mechanism should be available, since we need to be able to assign genitive case to non-argument noun phrases anyway.

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As to the semantic representation of the postnominal modifier, the semantics of genitives and postnominal PPs is related to the nominalisation via a ρ operator. The operator ρ , which is underspecified, may either be identified with the specific semantic role of theme argument or it may be specified as for instance an agent, a possessor or some kind of broad associative relation. To a large degree the specification is dependent on the selectional restrictions of the nominalisations in question.

Let me make some remarks on the motivation for the uniform approach I have chosen to pursue: It seems that one of the most prominent arguments for a split approach is related to the argument or non-argument status of the genitive. While I believe that it is indisputable that we have to differentiate between these semantically, I still think we lack hard syntactic evidence for a different distribution of the two cases in German. Intuitions concerning the argument status of genitives cannot be considered such evidence alone (cf. Partee & Borschev, 2003, p. 72).

Relevant data to look into could for instance involve binding, extraction or quantification phenomena. To my knowledge, no such evidence has been provided for German. Admittedly, I will not be able to clarify this issue in the present paper, but I would like to make some remarks on the relevance of extraction data for German. It has often been argued that the possible extraction out of a DP is determined by the status of the extracted element in some thematic hierarchy (cf. e.g. Godard, 1992). According to this line of explanation, a theme argument should only be extractable as long as an agent or possessor phrase is not present. This is linked to the assumption that theme arguments are more deeply embedded in an NP than for instance agents. If this would hold for German, it could be argued that this constitutes evidence for an approach where genitives interpreted as theme arguments of event nouns are assigned a different syntactic position than genitives which are interpreted as possessors. At first sight, the German data actually seem to confirm the thematic hierarchy approach:

- (3) a. Die Soldaten, deren Zerstörung der Stadt die Welt schockiert hat,
the soldiers, whose destruction the city the world shocked has
wurden gestern festgenommen.
where yesterday arrested
'The soldiers, whose destruction of the city has shocked the world, were
arrested yesterday'.
- b. *Die Stadt, deren Zerstörung der Soldaten die Welt schockiert hat, ist
the city, whose destruction the soldiers the world shocked has, is
nur 50 km entfernt.
only 50 km away.
'The city, whose destruction by the soldiers has shocked the world, is
only 50 km away.'

- c. Die Stadt, deren Zerstörung die Welt schockiert hat ...
 the city, whose destruction the world shocked has
 ‘The city, whose destruction has shocked the world ...’

According to the thematic hierarchy approach, the different acceptability rating of (3a) and (3b) is due to the fact that in the acceptable (3a) the higher-ranked agent *die Soldaten* (‘the soldiers’) has been extracted, whereas in the ungrammatical (3b), the lower-ranked patient *die Stadt* (‘the city’) has been extracted. Example (3c) confirms that patients can be extracted in principle.

Now, there are two ways to save the uniform approach. The first argument stems from Kolliakou (1999), who discusses *de*-phrases in French. Kolliakou argues convincingly that the possible extraction from a noun phrase may very well be determined by other properties than positions in thematic hierarchies. She shows that there exist counter-examples to distributions similar to the one in (3) and argues that the data are more adequately accounted for when taking the distinction between individual and property denotations into account.

More importantly, though, it may be doubted whether the examples in (3) constitute true cases of extraction parallel to the French *de* data provided by Godard (1992) and Kolliakou (1999). As the *de*-phrases are PPs, the diagnostics cannot be directly applied to the German data. For instance, there seems to be a strict adjacency constraint on the interpretation of adnominal genitives in German (see also Section 3.2): A genitive may only relate to the immediately preceding noun. Contrary to *de* phrases in French, no two postnominal genitives may modify the same noun. Thus, in a DP such as

- (4) die Zerstörung der Stadt der Soldaten
 the destruction the city the soldiers
 ‘the destruction of the city of soldiers’

the second genitive, *der Soldaten* (‘the soldiers’), does not modify the head noun *Zerstörung*, e.g. being interpreted as one of its arguments. Rather, it is related to the immediately preceding noun, *Stadt* (‘city’), expressing a broader associative relation, e.g. as the city which the soldiers control or live in. Consequently, the constructions in (3a) and (3b) cannot be derived from (4).⁴ I will not discuss further details concerning syntactic facts supporting one analysis over the other.

⁴ It may be noted that in German a PP can be related to a noun although other material intervenes:

- (i) das Haus der Müllers von Le Corbusier
 the house the Müllers by Le Corbusier
 ‘the Le Corbusier house of the Müllers’

The *von* phrase in (i) may refer to a house which was constructed by Le Corbusier.

Let me sum up the motivation for exploring the particular analysis which is presented in this paper: As long as there is no syntactic evidence to suggest that there are two separate positions for genitives in German, we should pursue a uniform analysis. The varying semantic interpretation does not as such justify postulating two different syntactic analyses. Thus, my goal in the remainder of the paper is to show how a semantic analysis could be conceived of that takes a surface oriented perspective on syntactic structure, where both kinds of genitives are assumed to occupy the same syntactic position. Accordingly, the semantics of the genitive has to be either one which is characterised by extensive homonymy or underspecification. I contend that the latter alternative should be chosen.

It should be added that attempts at a uniform analysis of the different kinds of genitives have been undertaken before (see for instance the discussion in Partee & Borschev, 2003). What is new about what I am going to present — to my knowledge — is on the one hand that I include PPs corresponding to external arguments and that the analysis is intended to be compatible with a semantic decomposition of nominalisations as it is assumed in both lexicalist and non-lexicalist approaches.

3. The Analysis

As just mentioned, my analysis is intended to be compatible with both lexicalist and non-lexicalist decomposition of nominalisations. Although I will argue against an adnominal syntactic argument insertion site for genitives as assumed in Distributed Morphology, I will follow the analysis of Roßdeutscher (2007), which leans heavily on Distributed Morphology with respect to the morphology of *-ung* nominalisations. Nothing much hinges on this, however.

With Roßdeutscher I assume that word derivational elements are paired with a Discourse Representation Theory semantic format involving a store mechanism (van der Sandt, 1992; Kamp, 2001). As I will refer to a level of representation where many of the details concerning the exact generation of the *-ung* nominalisations is of no great importance, I will present a strongly simplified version of the analysis of Roßdeutscher. I will turn to the details of the semantic analysis in Section 3.2 after presenting the morpho-syntactic structure of *Beschreibung* in Section 3.1.

3.1 Word-syntactic Structure of *-ung* Nominalisations

In Roßdeutscher's Distributed Morphology analysis, a simplified word-structure as in Figure 1 (p. 196) is assigned to *Beschreibung*. The items in boxes indicate which semantic entities are introduced at a particular level of representation. The root SCHREIB is merged with a *v* head, supplying an event. The *v* head takes a small clause as its complement, in which the verbal prefix of *be-schreiben* ('describe')

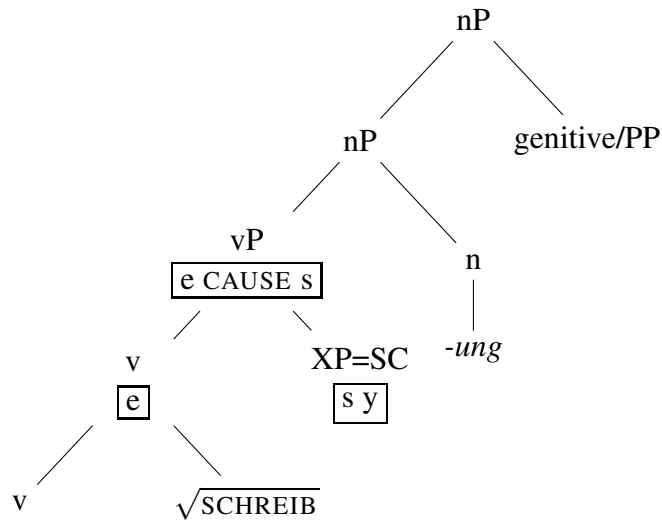


Figure 1: Simplified DM-style structure of *Beschreibung*

is contained. The prefix *be-* is assumed to introduce a two-place relation, but the exact details of the semantic and syntactic construction at this point will not be discussed here. What is important is that the small clause structure introduces an entity *y* (corresponding to the content of the description) which is predicted to be in a state *s*. Finally, at the level of vP, the bi-eventive structure consisting of the combination of an event *e* (corresponding to the event of describing) with the state *s* motivates the introduction of a CAUSE predicate, which relates the two (*e* and *s*). It is further assumed that the *n* head operates on vP, *n* being the head of the nominalisation and taking vP as its complement. It is this resulting nP to which the genitives and PPs are adjoined. In addition to the simplification of the small clause complement of *v*, the substructure of both vP and nP is also more complex than illustrated here. For instance, head-to-head movement is assumed to account for the correct phonological realisation of the structure, but this will not concern me here.

As I already mentioned, most of the details concerning the structure of the vP will be ignored. However, the following assumptions will be of importance for the analysis to be presented. I will not discuss all of them in detail:

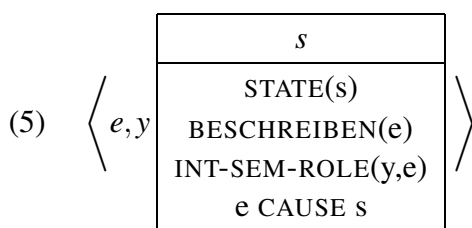
1. I assume the Voice hypothesis, i.e. external arguments are introduced by Voice and not contained in vP.
2. The suffix *-ung* operates on the level of vP, but has no semantic effect apart from providing us with a noun. Importantly, though, the transformation to a noun makes the modification through the ρ -relation possible, as I will argue.
3. As *-ung* is applied to the level of VP, the *-ung* nominalisation does not include a Voice projection.

4. The variable y corresponding to the theme argument is not bound before the level at which nominalisation occurs.
5. The vP level includes semantic information on the relation between the y argument and the event in which it is included, i.e. information as to the semantic role associated with y .

3.2 Semantic Construction

The semantic analysis I present is framed in UDRT Reyle (1993), applying the DRT formalisation outlined in Kamp (2001). It is intended to be compatible with a range of syntactic approaches, all of which should share the common assumption that some genitives may relate to an argument of the noun whereas others are merely modifiers of the noun phrase they are attached to.

For the level of vP of predicates like *beschreiben* we assume the following simplified representation which can either be expanded to a verb or a noun phrase:



The left part of the representation, i.e. the variables e and y occurring before the DRS box in (5) is referred to as the store, whereas the left part, i.e. the DRS box itself is termed the content part of the representation. I will not go into details concerning this particular formalisation in DRT (for details, cf. Kamp, 2001). The only important aspect for the present analysis concerns the fact that variables in the store still await binding after the application of the *-ung* suffix.

As can be seen from (5), the only variable which is bound at the level of vP or nP is the state variable s which originates in the small clause structure. I will not describe this state any further here, as it is not relevant for my present purposes, but it is clear that it must include the representational function of a description and the entities involved in it. The representation also includes information on the semantic role of the internal argument in the event which emerges from the combination of e with s . I have given it a general name, simply INT-SEM-ROLE, here, but it is clear that it should be differently specified (e.g. PATIENT ...) for various kinds of predicates.

Contrary to the variable *s*, the variables *e* and *y* still need to be bound at the level of nP or later. It is of great importance that *y* is not yet bound. This is the crucial point where I differ from Distributed Morphology analyses such as the one of Roßdeutscher (2007): In my analysis, internal arguments have not been yet inserted at the level of vP.⁵

As mentioned, the representation at the level of vP does not change after the application of the *-ung* suffix. However, taking the vP as its complement, the resulting nP may be modified by the ρ relation. It is assumed that any noun may be modified by the ρ relation. This is clearly an assumption which has to be qualified further, but here I will only remark that it mirrors the empirical situation where a genitive may be attached to any noun. The relation ρ has a uniform semantics as specified in (6):

$$(6) \quad \left\langle \rho, x, z \begin{array}{|c|} \hline \\ \hline \rho(x,z) \\ \hline \end{array} \right\rangle$$

The variables *x* and *z* are sortally underspecified. Mostly, *x* will be an individual, whereas *z* may be a state, an event or an individual. ρ may be seen as presuppositional and thus subject to other binding mechanisms than those of *x* and *z*, but for the sake of simplicity they are all treated equally in the present paper. The representation of ρ is unified with the one for the nP when a postnominal genitive or PP is adjoined to it.

I will first discuss genitives and *von* phrases. As stated earlier, I assume that genitives and *von* phrases are semantically equivalent. In the first example, (2a), repeated below for convenience, the genitive *der Bürgermeisterin* may be associated both with the described entity as well as the describing individual. I will first look at the case where the genitive is associated with the theme argument.

- (2a) die Beschreibung der Bürgermeisterin
 the description GEN mayor
 ‘the description of the mayor’ or ‘the mayor’s description’

The representation for *von der Bürgermeisterin* or *der Bürgermeisterin* (‘of the mayoress’) emerges as follows:

⁵ The discourse referents *e*, representing the event of description, and *y*, corresponding to the content of the description, are the only possible referential arguments of a noun phrase which is headed by *Beschreibung*. I will not go into any details with respect to this distribution. See Roßdeutscher (2007) for further motivation for this assumption.

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$$(7) \left\langle \begin{array}{c} \rho, z \\ \begin{array}{|c|} \hline x \\ \hline \rho(x,z) \\ \hline \text{BUERGERMEISTERIN}(x) \\ \hline \end{array} \end{array} \right\rangle$$

Here, the variable x has been bound by applying the genitive to the noun *Bürgermeisterin*, which is the specification of the variable x . In the next step, the representation of the nP *Beschreibung* and the representation of the genitive *der Bürgermeisterin* are unified:

$$(8) \left\langle \begin{array}{c} e, y \\ \begin{array}{|c|} \hline s \\ \hline \text{STATE}(s) \\ \text{BESCHREIBEN}(e) \\ \text{INT-SEM-ROLE}(y,e) \\ \hline e \text{ CAUSE } s \\ \hline \end{array} \end{array} \right\rangle \uplus \left\langle \begin{array}{c} \rho, z \\ \begin{array}{|c|} \hline x \\ \hline \rho(x,z) \\ \hline \text{BUERGERMEISTERIN}(x) \\ \hline \end{array} \end{array} \right\rangle$$

What we need to achieve in the case of the noun *Bürgermeisterin* contained in a genitive or a *von* phrase to be interpreted as the internal argument of the nominalisation, is an identification of the relation INT-SEM-ROLE with ρ , x with y and z with e . It is assumed that ρ is bound by INT-SEM-ROLE, and that thus, y is identified with x and z with e . z has to be identified with the referential argument of the nominalisation in all cases. As we are dealing with an event nominalisation, z must be identified with an event. Obviously, we need some general constraints on what relations may be unified with ρ . I will not attempt to give an exhaustive list of what they may be, but it seems clear that internal argument roles such as for instance PATIENT should be among them.

The result of the unification is given in (9), where the equations specify which variables are unified:

$$(9) \left\langle \begin{array}{c} e \\ \begin{array}{|c|} \hline s, x, z, y, \rho \\ \hline \text{STATE}(s) \\ \text{BESCHREIBEN}(e) \\ \text{INT-SEM-ROLE}(y,e) \\ \hline e \text{ CAUSE } s \\ \hline \rho(x,z) \\ \hline \text{BUERGERMEISTERIN}(x) \\ \hline \rho = \text{INT-SEM-ROLE} \\ \hline x = y \\ \hline z = e \\ \hline \end{array} \end{array} \right\rangle$$

In (9), the variable e is still unbound. With Roßdeutscher (2007), I assume that it is bound at the level of DP. ρ has been identified with INT-SEM-ROLE, x with y and z with e .

Importantly, I assume a general principle for interpretation to achieve the correct binding relations: variables should preferably enter binding relations as opposed to being bound merely existentially. The preference for an object reading of a genitive in many cases stems from this general interpretational principle. If the ρ of the genitive or *von* phrase is not identified with the INT-SEM-ROLE relation and the variable y is thus not identified with the variable x of the ρ relation, a binding possibility has been overlooked. What is more, the genitive has to be specified or accommodated as some relation different from the INT-SEM-ROLE one.

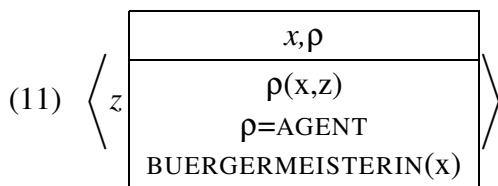
Before discussing the case of the agentive interpretation of the genitive, I want to show how the unambiguous case of agentive *durch* phrase modification is treated, cf. (2b), repeated below for convenience:

- (2b) die Beschreibung durch die Bürgermeisterin
 the description through the mayoress
 ‘the mayoress’ description’ (only agentive)

As *durch* is the default preposition introducing external arguments in nominalisations, I propose to let *durch* introduce a binding condition or unification constraint which may be formulated as in (10):

- (10) $\rho = \text{AGENT}$

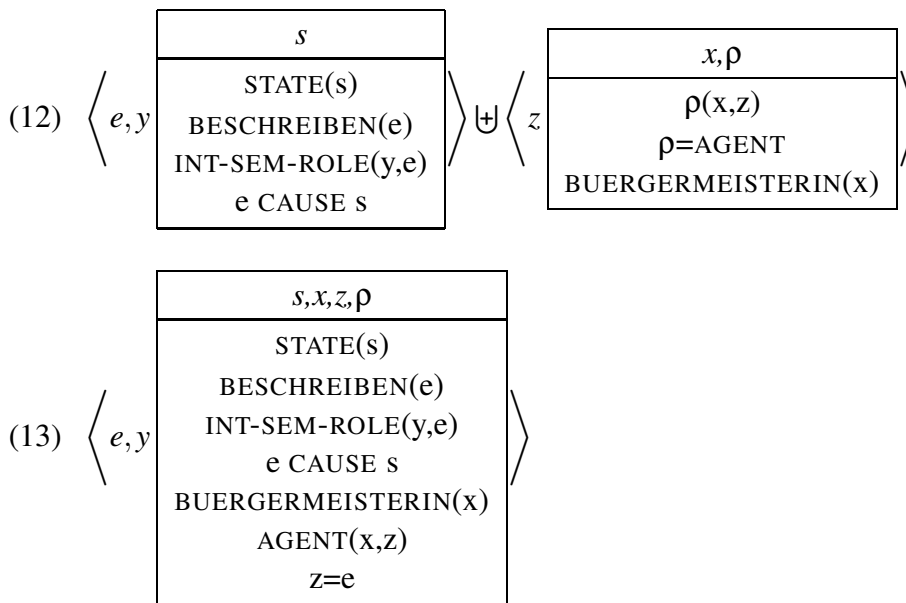
To be precise, we need a more general reference to an external argument role or similar as the external arguments introduced by the *durch* phrase may be for instance both agents and experiencers. However, the AGENT specification is sufficient for our current needs.⁶ The representation of the *durch* phrase is as follows:



⁶ There is an interesting difference in distribution between *von* and *durch* in verbal passives and nominalisations with respect to agentivity. Whereas *durch* is the preferred agentive preposition in nominalisations, in verbal passives *von* is clearly the preferred preposition for introducing agents. In verbal passives *durch* is restricted to special cases of agentivity, such as the agent being controlled by someone else. Unfortunately, I cannot treat this difference in any detail here, cf. the discussion in Solstad (2007, pp. 299–307).

The agent specification of *durch* binds ρ , introducing the restriction that it should only apply to agents. Otherwise, the representation is similar to the one for the case of the genitive.

Again, the representation of the nP adjunct is unified with the representation of the *-ung* nominalisation. Before unification we have the representation in (12), while (13) shows the result of unification:



INT-SEM-ROLE is not identified with AGENT. In fact, it is assumed that they cannot match because the AGENT specification of the ρ relation cannot be identified with the semantic role of the internal argument, INT-SEM-ROLE. Thus, the *durch* phrase introduces an additional semantic relation. In this case, y has to be existentially bound and z has to be identified with e . z must be identified with e because the AGENT relation is one between an individual and an event. The variable y can be specified in context.

Turning now to the case of genitives not being identified with the internal argument of the nominalisation, I will discuss the example in (2c) where the *-ung* noun is part of a noun-noun compound, cf. example (2c), repeated below for convenience. Many of the remarks made here concerning the interpretation of the genitive itself would also apply to the simple case not involving a compound, but the compound makes clear that the genitive cannot be interpreted as the internal argument:

- (2c) die Landschaftsbeschreibung der Bürgermeisterin
the scenery.description the mayoress
‘the description of the scenery by the mayoress’

In (2c) it is not possible to associate the genitive with the internal argument, i.e. the noun phrase cannot refer to an event of someone describing the mayoress. It could seem like a reasonable first hypothesis to assume that the first part of the compound, *Landschaft* ('landscape') binds the y variable, making it inaccessible for entering a binding relation with *Bürgermeisterin*. This, however, does not seem right. There are cases where both the first part of the noun-noun compound and the postnominal genitive seem to specify the variable y :

- (14) a. die Personenbeschreibung der Täter
the person.description the delinquent
'the personal description of the delinquent'
b. die Strukturbeschreibung des einfachen Arraymodells
the structure.description the simple array model
'the structural description of the simple array model' or
'the description of the structure of the simple array model'

In the case of *Personenbeschreibung der Täter* ('the personal description of the delinquent'), the first part of the compound merely specifies the particular sort of *description* we are dealing with. It is an open question whether *Personen* and *Täter* are identified or whether *Personen* sortally restricts *Beschreibung*. Essentially, (14b) is parallel to (14a), with the first part of the compound restricting the type of description sortally. In this case however, the genitive may also be seen as modifying the first part of the compound, constituting a so-called bracketing paradox.

I will not go into the syntactic structure of the noun-noun compounds, which is a notoriously difficult matter, but in light of the above data, it seems reasonable to conclude that semantically, no binding in the strict sense is going on between y and any variable introduced by the first part of the compound. Otherwise, the genitive should not be interpretable as the internal argument in (14a). Rather, the first part of the compound introduces restrictions on the binding possibilities of the variable y . In cases such as *Landschaftsbeschreibung* in (2c), the ρ relation cannot be identified with INT-SEM-ROLE and the variable y thus has to be bound existentially. It may be noted that this goes against the view put forward in Grimshaw (1990, p. 68 ff.) that the first part of the compound is theta-marked by the head of the compound.

There is an important difference to the above binding of ρ which I did not discuss yet. In the case of *durch*, I argued that the preposition introduces a binding condition on ρ which does double work. It provides a specification of the ρ relation and simultaneously makes the binding of ρ by INT-SEM-ROLE impossible. But how is the ρ relation specified as AGENT if there is no agent contained in the representation of nP? What ensures that we get an AGENT interpretation and not just a random relation?

It is clear that we need to restrict the ρ relation in general. I hinted at relations such as possession and association, both of which admittedly are vague notions. It may very well be that ρ is only specified as some kind of associative relation in the case of *Lagebeschreibung der Bürgermeisterin* and that conceptual knowledge alone is responsible for providing the AGENT specification.⁷ It may also be seen as an argument in support of such a view that the associative relation may also be specified otherwise. The phrase *Landschaftsbeschreibung der Bürgermeisterin* may refer to a description of a scenery which we somehow associate with the mayoress, as for instance in a case where it was the description of a scenery which was told to the mayoress. Thus, the mayoress is not necessarily an agent in *Landschaftsbeschreibung der Bürgermeisterin*. I have no good answer to how such a process should look like, but I contend that any theory of adnominal modification has to deal with argument conceptualisation one way or the other; see also the discussion in Barker (1995, p. 73 f.).

I did not yet comment on the other interpretations of the ρ relation. As an indication of possible strategies, I shall only provide a hint at how one could imagine the emergence of the possessive interpretation. It may be assumed that a possessive reading may be instantiated whenever the semantic entity which enters a binding relation with z is itself also an individual. Two entities, or rather: an individual and an entity, may enter a possessive relation, whereas individuals and events do not enter possessive relations.

Let me finally briefly mention the case where both a genitive and a *durch* phrase modify the *-ung* nominalisation. In this case there is only one syntactic order which is acceptable since a genitive may only modify semantically a noun which it is adjacent to.

- (15) a. die Beschreibung der Landschaft durch die Bürgermeisterin
the description the scenery through the mayoress
'the description of the scenery by the mayoress'
- b. *die Beschreibung durch die Bürgermeisterin der Landschaft
the description through the mayoress the scenery
intended: 'the description of the scenery by the mayoress'

The structure assigned to such cases would thus be as in Figure 2 (p. 204). An adjacency constraint would have to be added to the genitives to be able to achieve the correct distribution in these cases (see the remarks on adjacency in Section 2). The semantic analysis would be a combination of the two derivations presented above. First, the genitive is unified with the representation at nP as illustrated in (9), then the *durch* phrase is unified with the result of this combination as in (13).

⁷ As mentioned in Section 3.1, I assume that the nP does not include a Voice projection.

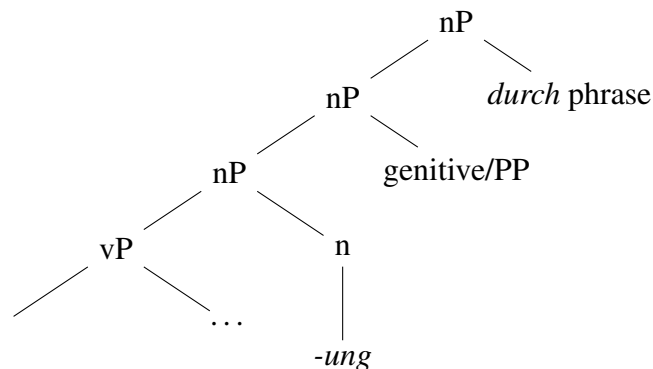


Figure 2: An nP modified by a genitive and a *durch* phrase

To conclude this section, I want to point at a principled issue which the above analysis raises: One may ask at which level semantic entities are available for modification. In this case, what is the latest level where the theme argument variable *y* may be bound? In most Distributed Morphology analyses, it is natural to assume that it is bound within the small clause as in the case of *Beschreibung* or within the root phrase for other *-ung* nominalisations, since the internal argument is inserted there. In my analysis, it is crucial that the variable is not bound within the vP.⁸ Another possibility would be to assume that the modifying *-ung* suffix somehow makes bound variables available again. In such a case, it would be possible to existentially bind *y* within the small clause. After *-ung* has applied, *y* would become available once more for modification. Ultimately, the settling of this issue is a question of one's view of compositionality. I have to leave this issue for future research.

3.3 Apparent Counter-examples to the Freedom of ρ

Finally, I want to discuss briefly a generalisation which was proposed by Ehrich & Rapp (2000). In their paper on *-ung* nominalisations, they discuss different kinds of genitives and argue that in the case of certain *-ung* nominalisations, no other reading than the theme argument one is available for the genitive. They discuss a phrase like (16), in which the chancellor may only be interpreted as the internal argument (Ehrich & Rapp, 2000, p 274 ff.):

- (16) die Absetzung des Kanzlers
 the unseating the chancellor
 'The unseating of the chancellor'

⁸ It may further be assumed that as long as the variable is not bound, all structures and substructures in which the variable is embedded may be subject to modification. I will not discuss the consequences of this assumption.

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This is at first hand somewhat surprising from the point of view of the analysis which I have presented here, given the underspecification of ρ and the flexible mode of composition. Unless some additional structural constraint may be found, there is no obvious reason why in the case of (16) no agentive interpretation is possible. Ehrich & Rapp claim that this is similar for all *-ung* nominalisation embedding a change of state predicate, like *absetzen* ('unseat'). This is certainly not a predication which my analysis could make. I think, however, that there are some data which weaken their claim considerably. Consider the examples in (17):

- (17) a. die Kanzlerabsetzung des Bundestages
the chancellor.unseating the Bundestag
'the Bundestag's unseating of the chancellor'
- b. Die Gruppe "Revolutionärer Kampf" protestierte gegen die
the group revolutionary struggle protested against the
todbringende Umweltzerstörung des kapitalistischen System.
deadly environment.destruction the capitalistic system
'The group "revolutionary struggle" protested against the deadly de-
struction of the environment by the capitalistic system'
- c. Eine Woche nach der Leitzinserhöhung der Deutschen
one week after the key.interest.rate.raising the German
Bundesbank ...
Bundesbank
'One week after the raising of the key interest rate by the German Bun-
desbank ...'

In the case of (17a), we may observe that the first part of the noun-noun-compound makes available an agentive reading of the postnominal genitive *des Bundestages* ('of the Bundestags'), assuming that chancellors cannot unseat parliaments. This is an effect similar to the case of *Landschaftsbeschreibung* (2c). What is more, in the case of the authentic examples (17b) and (17c) both *Zerstörung* ('destruction') and *Erhöhung* ('increase') involve changes of states. Still, the genitives in these cases may be interpreted as agents of the events described by the *-ung* noun. I thus conclude from the above that alternative explanations have to be sought for the Ehrich & Rapp data and that they do not constitute counter-evidence to my analysis.

4. Conclusion

I have presented a uniform analysis of postnominal genitives and PPs as modifiers of *-ung* nominalisations in German, in which I defended the following claims:

- All postnominal genitives and PPs occupy the same syntactic position. They are adjuncts of nP.

- All postnominal genitives and PPs are related to the head noun via an underspecified semantic relation which may be specified as being agentive in the case of a *durch* phrase, whereas in the case of genitives or *von* phrases it may either be unified with the semantic role of the theme argument or be specified otherwise according to the selectional and sortal restrictions of the nominalisation.

Although the analysis was limited to a specific phenomenon in German, I think there is a general point concerning the syntax-semantics interface to be made from the story which was told in this paper.

Within Distributed Morphology, a rather rigid view of the syntax-semantics interface seems to be predominant, according to which every semantic variation is also necessarily reflected in syntax. While one cannot object against this as such, it may be noted that it is a view which has a rather unattractive consequence: Due to the lack of evidence for some of the word-internal structures, much of the evidence for variation in syntax often turns out to be purely semantic in nature.

In this paper, I contended that as long as there is no clear syntactic evidence that postnominal genitives and PPs should be differentiated syntactically in the case of German, we should not let semantic considerations alone lead us to the postulation of structural differences. As was shown, this puts more workload on the semantic side of the interface. One cannot achieve a simplified surface-oriented syntax without making more complex semantic assumptions. In the case of the present analysis, I have to apply more elaborate binding mechanisms than Roßdeutscher (2007), for instance.

I would like to emphasise that I do not claim that the syntactic, Distributed Morphology way of analysis is incorrect and that the simplified syntactic view is the only plausible one. Two analyses may first and foremost be compared with respect to the predictions they make with respect to grammaticality and issues of interpretation. The above comments relate to the question of which part of the syntax-semantics interface one wants to do be the driving force of interpretation. In the Distributed Morphology approach, syntax seems to be taking over ever more elements which have traditionally been considered semantic in nature. Contrary to that, I have provided a simplistic syntactic analysis which exploits semantics mechanisms of underspecification and unification as a mode of composition. Whether in this case the syntax is too simplistic and the semantics is too powerful is a question which I will have to leave open for future research. Still, I hope to have shown that it is a path which is worth exploring.

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