

Syntactic and Semantic Adnominal Genitive

Katharina Hartmann & Malte Zimmermann

1. Introduction

In this study we present a fresh look at an old topic of noun phrase syntax which is the genitive case in German and English.* We argue that genitive in German is a cover term for two distinct phenomena which we call *syntactic* and *semantic* genitive. By *syntactic* genitive we mean the realisation of a syntactic argument which is licensed by genitive case. *Semantic* genitive, on the other hand, adds semantic content to the construction it occurs in. It expresses a semantic relation which holds between the genitive and the head-noun of the whole DP. This distinction also accounts for the varying distribution of genitive in German and English: while German exhibits both types of genitive, English does not have syntactic genitive. Genitive in English only serves to express a semantic relation.

Apart from the distinction between syntactic and semantic genitive, we argue for a further syntactic distinction between prenominal and postnominal genitives in German, taking the former to be D⁰-heads and the latter DPs. Again, English differs from German in that both, pre- and postnominal genitives are phrasal.

The paper is structured as follows. In section 2, we identify the two positions for genitive in German, the pre- and the postnominal one. In section 3, we raise a number of problems for existent analyses which treat pre- and postnominal genitives as essentially alike. We refer to these under the label "Symmetric Analysis". In section 4 we present our analysis of German prenominal genitive as a syntactic D-head. Semantically, it modifies the head-noun of the whole genitive expression. In section 5, we analyse postnominal genitives. These do not form a uniform class but can be analysed as either arguments (syntactic genitive) or modifiers (semantic genitive) depending on the semantic type of the head-noun. Section 6 compares our findings for German with the English facts. The main difference between the two languages is argued to lie in the absence of syntactic genitive in English. Finally, in section 7 we discuss some open problems before concluding.

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2. Two Positions for Adnominal Genitive in German

German, as well as English, has two positions for genitive within DPs, the prenominal and the postnominal position, as illustrated by the examples in (1) and (2), where the genitive expression is printed in bold face.¹ As we will argue in section 4, prenominal genitive is always interpreted as a functor. Postnominal genitive, on the other hand, can function as an argument to a relational noun (2a), or as a modifier (2b). It can be replaced by a PP-paraphrase (2c), and it can cooccur with prenominal genitive (3).

- (1) **Fidos** Behandlung/Knochen
Fido-GEN treatment/bone
'Fido's treatment/bone'
- (2) a. die/eine Behandlung **des Hundes** (genitive argument)
the/a treatment the_{GEN} dog_{GEN}
'the treatment of the dog'
- b. der/ein Knochen **des Hundes** (genitive modifier)
the/a bone the_{GEN} dog_{GEN}
'the bone of the dog'
- c. der Knochen/die Behandlung [PP von dem Hund]
the bone/the treatment of the dog
- (3) **Peters** Eroberung **Roms**
Peter-GEN taking Rome_{GEN}
'Peter's taking of Rome'

German genitive constructions have received a lot of attention in the literature. The predominant view in most of the articles and books on this topic is that both, prenominal and postnominal genitives are DPs (cf. Haider: 1988, Bhatt: 1989, 1990, Olsen: 1991, Gallmann: 1994, Lindauer: 1995, de Wit & Schoorlemmer: 1996, Fortmann: 1996). All these proposals share the assumption that prenominal genitive DPs are located in the specifier of the genitive expression (DP* in (4)), or a higher functional projection of the extended DP projection.² Postnominal genitives are analysed as sisters of the head-noun of DP*.

- (4) [DP* [DP Peters] D* [NP Eroberung [DP Roms]]]

¹ As the interlinear English translations of the German examples suggest, we assume different kinds of morphological genitive marking pre- and postnominally. For reasons which will become clear below, we take it that prenominal genitive marking is realised by suffixation (the suffix being translated as *GEN*), while postnominal genitive marking is realised as morphological case (which is represented by the subscript *GEN*).

² We will continue to call DP*, i.e. the DP containing adnominal genitives, the "genitive expression".

If prenominal and postnominal genitives cooccur (cf. (4)), the "postnominal genitive" fills the SpecNP position. As a consequence, this position is not accessible to the "prenominal genitive" DP for case assignment. Therefore, the "prenominal genitive" DP moves to the specifier of an additional agreement projection (cf. Lattewitz: 1994, 143).

The second theory which assumes that prenominal genitives are located in the determiner position is Demske (2001). Looking at genitive constructions from a diachronic perspective, Demske observes that the prenominal genitive position was not always reserved for proper names. In Old High German, it was the position for attributive genitives in general. Gradually, NPs started appearing postnominally. The development of a positional separation between proper names (prenominally) and NPs (postnominally) was finished at the end of the 17th century. Following Demske, this development was accompanied by a further transition: In Old High German, genitives and determiners could still cooccur. The increasing tendency to realise common nouns postnominally led to a reanalysis of the preposed genitive as part of the determiner system. As a consequence, the cooccurrence of prenominal genitives and determiners became impossible. Since the 18th century, the prenominal genitive is interpreted as a determiner head in German.⁵ In view of the diachronic development, Demske concludes that

"In my opinion, the characteristic properties of the prenominal genitives in today's German clearly oppose any analysis which assumes phrasal transformations within the nominal phrase." (Demske: 2001, 240; our translation).

The aim of this paper is to present synchronic evidence in favour of Demske's analysis that prenominal genitives are D-heads. They act like determiners in that they are semantically interpreted as functors. We would like to follow up Demske's conclusion in the quotation above and argue – against Lattewitz – that the prenominal genitive is base-generated in D^0 , and not moved to this position. Our proposal is backed by semantic considerations. We show that the semantic relation between a prenominal genitive and the head-noun of the genitive expression is contextually determined. In this respect, the interpretation of the prenominal genitive deviates from the interpretation of a postnominal genitive complement which is restricted to an argument interpretation. Such asymmetries in interpretation are hard to capture in purely syntactic accounts as advocated by proponents of the Symmetric Analysis.

3. Problems for the Symmetric Analysis

⁵ The interpretation of prenominal genitives as heads did not take place in English and the Mainland Scandinavian languages. These languages therefore allow phrasal prenominal genitives, cf. subsection 4.4.

The distribution of genitives in German (and to a certain degree in English) is subject to a number of restrictions which raise serious problems for the Symmetric Analysis.

3.1 Positional Asymmetries

A major objection against the Symmetric Analysis concerns the fact that the prenominal genitive in German is restricted to proper names (cf. Bhatt: 1990, Lattewitz: 1994, Demske: 2001). As the example in (7a) illustrates, postnominal genitives can be complex DPs. Such DPs, however, are excluded in prenominal position, cf. (7b).

- (7) a. die Wohnung [meines kürzlich nebenan eingezogenen Nachbarns]
the apartment my_{GEN} recently next.door moved.in neighbour_{GEN}
 'the apartment of my neighbour who moved in recently'
 b. *[meines kürzlich nebenan eingezogenen Nachbarns] neue Wohnung

The Symmetric Analysis, which assumes that the prenominal genitive is a maximal projection formally licensed in the specifier position of a functional projection, cannot explain the restriction of prenominal genitives to proper names without further assumptions. Concerning the postnominal genitive, certain nouns do not allow proper names as postnominal genitives, cf. (8).

- (8) a. ?*der Hut Annas
the hat Anna_{GEN}
 'Anna's hat'
 b. der Hut der Anna

Again, it is not evident how the Symmetric Analysis accounts for this asymmetry.

3.2 Interpretational Asymmetries

The asymmetry that we would like to address in this subsection concerns the semantic relation between the postnominal genitive and the head-noun of the genitive expression. The range of possible relations varies depending on the semantic type of the head-noun. In the spirit of Partee & Borshev (1998) and (1999), we distinguish nouns which denote a property from those which denote a relation. The former ("P-nouns") are of type $\langle e,t \rangle$, the latter ("R-nouns") are of type $\langle e,et \rangle$ or $\langle e,vt \rangle$ ⁶. If a postnominal genitive occurs after a P-noun, it can

⁶ $\langle e,vt \rangle$ is the logical type of relations between individuals and events. Such relations are commonly expressed by deverbal nominalizations, as e.g. *explosion* or *arrival*.

express a variety of different relations, as illustrated by the (non-exhaustive) number of translations in (9a). If it appears after an R-noun, however, it is generally interpreted as the internal argument to the noun, cf. (9b).⁷

- (9) a. der Verein der Präsidentin
the club the_{GEN} president-FEM_{GEN}
 'the club owned by the president' / 'the club for which the president plays' / 'the club which is supported by the president'
- b. die Explosion Hugos
the explosion Hugo_{GEN}
 'Hugo explodes' / NOT: 'the explosion caused by Hugo'

Interestingly, this semantic asymmetry between postnominal genitives after P-nouns on the one hand, and R-nouns on the other hand disappears with prenominal genitives. Irrespective of the type of the noun, prenominal genitives allow the same interpretational variety as postnominal genitives after P-nouns. This is illustrated in (10a) for P-nouns (cf. also Fortmann: 1996), and in (10b) for R-nouns.

- (10)a. Sarahs Verein
Sarah-GEN club
 'the club owned by Sarah' / 'the club where Sarah plays' / 'the club which is supported by Sarah'
- b. Hugos Explosion
Hugo-GEN explosion
 'the explosion caused by Hugo' / 'Hugo explodes'

We do not see how the derivational approaches of the Symmetric Analysis can handle such interpretational asymmetries. What remains mysterious in these theories is the fact that pre- and postnominal genitives exhibit a different range of possible relations to R-nouns. Thus, the Symmetric Analysis fails to explain the greater range of possibilities for interpreting prenominal genitives with R-nouns.

To summarise this section, we have shown that the Symmetric Analysis faces various problems which we think are elegantly solved assuming a distributional and interpretational asymmetry between pre- and postnominal genitives. The distribution is controlled by the semantic nature of the genitive expression. While the prenominal position is reserved for proper names, descriptions can only occur postnominally. The interpretation of the genitive depends on at least two factors. Firstly, it depends on the semantic relation of the genitive to the nominal head: R-nouns trigger an argument interpretation of the postnominal genitive. P-nouns only allow for a modifier interpretation. Secondly, the prenominal modifiers are neither interpreted as arguments or as modifiers. As we will show below, they denote functors.

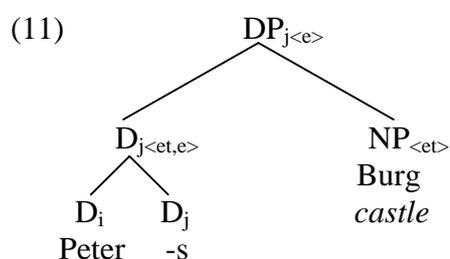
⁷ The observation that postnominal genitives are always interpreted as internal arguments if they appear after R-nouns is due to Bhatt (1990).

4. Prenominal Genitives

The aim of this section is to elaborate a theory of prenominal genitive in German which is able to account for the following observations, partly arrived at in section 3: It derives the restriction of the prenominal genitive position to proper names and explains why the prenominal genitives cannot cooccur with overt determiners (subsections 4.1 and 4.2). It offers a semantic solution to the observation that prenominal genitive may express a variety of relations to the head-noun of the genitive expression (subsection 4.3). Finally, we compare our results to English prenominal genitives and suggest that the difference between the two languages is due to a variation in phrase structure (subsection 4.4).

4.1 Prenominal Genitives are Functors in D^0

Following the spirit of Demske (2001), we assume that prenominal genitives form part of the determiner system of the genitive expression. More precisely, we argue that they are adjoined to the D^0 -position which hosts the prenominal genitive morphology. Our proposal is compatible with Longobardi's (1994) theory that assumes movement of proper names into the D^0 -position.



Semantically, we follow Partee & Borshev (1998) in analysing the prenominal $[D+s]$ -complex as denoting a functor of type $\langle et, e \rangle$. It takes the property denoted by the NP as argument and yields an individual (cf. also section 4.3).

With regard to the prenominal case suffix, it is conspicuous that the phonological form of the feminine case morpheme deviates from the regular inflection of feminine genitive DPs. We present the paradigm for genitive singular DPs in (12).

(12)	des	Mannes	–	der	Frau	–	des	Kindes
	<i>the</i> _{GEN}	<i>man</i> _{GEN}		<i>the</i> _{GEN}	<i>woman</i> _{GEN}		<i>the</i> _{GEN}	<i>child</i> _{GEN}

Genitive case is not overtly marked on feminine nouns – in contrast to masculine and neuter nouns. Note that this unmarked feminine form cannot appear prenominally, as shown in the following examples.

- (13)a. Anna-s Imbiss
Anna-GEN diner
 'Anna's diner'
- b.* Anna Imbiss
Anna_{GEN} diner

This unexpected asymmetry receives a natural explanation if we take into consideration that the inflectional forms of proper names differ from those of full DPs. Genitive on proper names is always expressed through an *s*-suffix, irrespective of the gender of the proper name:⁸

- (14) Peter-s Imbiss Anna-s Imbiss Marzahn-s Imbiss
 'Peter's diner' 'Anna's diner' 'the diner in Marzahn'

While the masculine and neuter genitive forms are identical on DPs and proper names,⁹ the forms differ in the feminine gender. Thus, the ungrammaticality of (13b) is due to the wrong inflectional morphology on the pronominal genitive. Note that our analysis of German pronominal genitives as D-heads filled by proper names correctly predicts that they always appear with the *s*-suffix reserved for proper names. Concerning postnominal genitives, we anticipate that they can be either DPs or proper names (cf. section 5). As expected, they appear either with the genitive morphology of DPs or proper names.

- (15) die Verfolgung der Diebin / die Verfolgung Annas
the pursuit the_{GEN} thief-FEM_{GEN} / the pursuit Anna_{GEN}
 'the pursuit of the thief / Anna'

Teuber (2000) analyses the differences in nominal case marking in (9) and (10) as reflexes of two different underlying processes. The case of full DPs is expressed on the determiner, while the "case" morphology on the NP is really just agreement marking. In contrast, Teuber (2000) analyses the *s*-suffix on proper names as a real case morpheme. Proper names are always marked by an *s*-suffix, irrespective of the regular genitive marking. As a consequence, feminine pronominal genitives will be marked by the *s*-suffix as well (cf. (14) above).

4.2 Deriving the Positional Restrictions of Prenominal Genitives

⁸ Most plausibly, this synchronic asymmetry has a diachronic explanation. Demske (2001, 252) proposes that the *s*-suffix is not an instance of genitive case but a relic from a possessive marker, which occurred pronominally. Demske's analysis is based on the observation that the pronominal genitive and the possessive shared various properties in earlier stages of German (Demske: 2001, 227). An analogous process is still productive in Dutch. The full form *Jan zijn auto* 'Jan his car' often reduces to *Jan z'n auto*.

⁹ We take the schwa in *Mannes* and *Kindes* in (8) to be epenthetic.

The structure in (11) assumes that proper names are D-heads. This immediately accounts for the fact that prenominal genitives cannot cooccur with overt determiners, since there is only one D^0 -position which is already filled by the prenominal genitive. This is shown in (16).

- (16)a. die Ernennung Martins b. *Martins die Ernennung
the appointment Martin_{GEN} *Martin-GEN the appointment*
 'the appointment of Martin' 'Martin's the appointment'

Furthermore, the analysis correctly predicts that the prenominal genitive is restricted to referential D^0 -categories in German. We differentiate three different types of referential D^0 -categories. The first type are proper names, as illustrated in (14). The second one are quantifier phrases that are reanalysed as proper names such as *jedermanns* ('everybody's'), and *niemandes* ('nobody's').

- (17)a. Jedermanns Idol war anwesend.
everybody-GEN idol was present
 'Everybody's idol was present.'
 b. Es ist in niemandes Interesse, zu spät zu sein.¹⁰
it is in nobody-GEN interest too late to be
 'It is in nobody's interest to be too late.'

That the quantifying DPs *jedermanns* and *niemandes* have been reanalysed as proper names (D^0) is witnessed by their inability to bind pronouns. Compare the ungrammatical examples (18a) and (19a), where the reanalysed quantifier phrases fail to bind a pronoun, with (18b) and (19b), where pronoun binding is possible.

- (18)a.* [Jedermanns Mutter]_i liebt ihren_i Sohn.
everybody's mother loves her son
 b. [Jede Mutter]_i liebt ihren_i Sohn.
every mother loves her son
- (19)a. * Es ist in niemandes_i Interesse, dass er_i zu spät kommt.
it is in nobody's interest that he too late comes
 b. Niemand_i hat behauptet, dass er_i pünktlich kommen werde.
nobody has claimed that he in.time come would
 'Nobody claimed that he would come in time.'

¹⁰ The use of *niemandes* is very restricted. It only occurs in the almost idiomatic expression *es ist in niemandes Interesse* 'it is in nobody's interest'. The unproductivity of *niemandes* is illustrated in (i).

(i) * Niemandes Mutter ist zum Elternabend gekommen.
nobody's mother is to.the parent's.evening come
 'Nobody's mother came to the parent's evening.'

To sum up, the impossibility for *jedermanns* to bind a pronoun in German follow from the assumption that the QP *jeder Mann* (*everybody* in English) has been reanalysed as a proper name *jedermanns* which is a D⁰-head.

The third type of referential D⁰-categories that appear as prenominal genitives are generic DPs. We assume that they are also reanalysed as proper names. Consider (20). The proposition in (20a) can only express a generic statement. If the statement is changed such that a generic interpretation is suppressed, a prenominal genitive is impossible. In (20b), the subject is made specific such that the generic reading is ruled out. In (20c), it is the predicate which is modified. This sentence would be pragmatically well-formed only if it was true that blue whales live exclusively between New York and Boston.

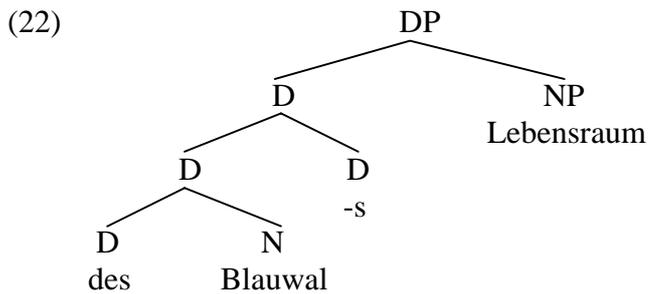
- (20)a. Des Blauwals Lebensraum ist der Ozean.
the_{GEN} blue.whale-GEN habitat is the ocean
 'The habitat of the blue whale is the ocean.'
- b.* Des vor Boston gesichteten Blauwals Lebensraum ist der Ozean.
the_{GEN} near Boston detected blue.whale-GEN habitat is the ocean
- c.*Des Blauwals Lebensraum erstreckt sich von New York bis Boston.
the blue.whale-GEN habitat extends REFL from New York to Boston

The examples in (21) give further support to the restriction of prenominal DPs to generic expressions. Again, modifying the generic statement in (21a) such that the subject (21b) or the predicate (21c) become more specific, a generic interpretation is not available any longer, and a DP in prenominal position is excluded. Notice, again, that (21c) has a reading if it is true that men usually consider a new Golf their preferred toy.

- (21)a. Des Mannes liebstes Spielzeug ist sein Auto.
the_{GEN} man-GEN most.favorite toy is his car
 'The sweetest toy of a man is his car.'
- b.* Des nebenan eingezogenen Mannes liebstes Spielzeug ist sein Auto.
the_{GEN} next.door moved.in man-GEN most.f. toy is his car
- c.*Des Mannes liebstes Spielzeug ist ein neugekaufter Golf.
the_{GEN} man-GEN most.favorite toy is a newly.bought Golf

Thus, prenominal genitive is also possible with "DPs" which (may) act as kind names. These DPs are reanalysed as words, i.e. the article and the noun together form a D-head. The process of reanalysing syntactic phrases as words was first proposed by Di Sciullo & Williams (1987, 78-88) who analyse Romance compounds as "syntactic words", which are X⁰-categories derived from phrases. In the spirit of Di Sciullo & Williams' proposal, we argue that the prenominal "DPs" are actually D-heads. The trigger for reanalysis for the case at hand seems to lie in the fact that the DP denotes a kind name. Our analysis is illustrated for the subject of the example in (20a).¹¹

¹¹ As witnessed by (20a) and (21a), complex prenominal genitives seem to be subject to an additional wellformedness condition: The first phonological word in the sequence must be



The reanalysis of DPs as kind names extends to function descriptions which denote a set of cardinality one. This is the case for title and position holder, for dignitaries and deities.

- (23)a. des Kaisers neue Kleider b. des Kanzlers Ansehen
the emperor-GEN new cloths *the chancellor-GEN reputation*
 'the emperor's new cloths' 'the chancellor's reputation'

The goal of this subsection was to show that all prenominal genitives are located in D^0 . If the prenominal genitives are complex, they are reanalysed as complex elements in D^0 , as proposed by Di Sciullo & Williams (1987).

4.3 The Semantics of Prenominal Genitives

We now turn to the semantics of prenominal genitives. As briefly outlined in subsection 4.2, the prenominal genitives are functors and therefore of the same type as definite determiners, i.e. $\langle et, e \rangle$.¹² It was pointed out in subsection 3.2, example (10), that prenominal genitives stand in a relatively free relation to the head-noun of the genitive expression. This is due to a free relational variable 'R' in their lexical entry, as proposed by Partee & Borshev (1998, 4). The compositional semantics for the prenominal genitive is given in (24) (= (10a) from above).

- (24) Sarahs Verein ('Sarah's club')
- $[[\text{-s}]] = \lambda y \lambda P.1x [P(x) \ \& \ R(x, y)]$
 - $[[\text{Sarahs}]] = \lambda P.1x [P(x) \ \& \ R(x, \text{sarah}')]]$
 - $[[\text{Sarahs Verein}]] = 1x [\text{club}'(x) \ \& \ R(x, \text{sarah}')]]$

marked unambiguously as genitive. This correctly excludes all complex feminine forms from prenominal position because the fem./gen. determiner *der* is formally identical with the fem./dat. or masc./nom. determiner:

- (i) **der Königin(s) Kind*
the queen(-GEN) child

We do not have an explanation for this additional condition, but suspect that it may have to do with parsing requirements.

¹² We follow the treatment of definite determiners in Heim & Kratzer (1998).

The content of the variable R is determined by a relation which is salient in the context (cf. also Storto: 2000 and references therein). This accounts for the free relation between the genitive expression and the head-noun. The genitive expression permits many different interpretations, e.g. *the club owned by Sarah, the club sponsored by Sarah, the club for which Sarah plays, the club which Sarah supports, the club which supports Sarah*, among others, in (20). Given the assumption that prenominal genitives are heads, they do not have to be case-marked. Therefore, the prenominal morphology is not a syntactic case-marker, but the morphological realisation of the free variable R. Since this variable expresses a semantic relation, prenominal genitive is semantically motivated, hence an instantiation of what we call "semantic genitive".

The definiteness effect observable with prenominal genitive constructions is reflected in the iota-operator whose effect is illustrated in the following examples. They show that prenominal genitives only appear in positions where definite articles can also occur.

- (25)a. Peters zwei / viele / wenige Freunde
 b. die zwei / vielen / wenigen Freunde
 'Peter's/the two / many / few friends'

- (26)a. Peters liebstes Hobby
 b. das liebste Hobby
 'Peter's/the dearest hobby'

- (27)a. zwei von [_{DP} Peters Freunden]
 b. zwei von [_{DP} den Freunden]
 'two of Peter's/the friends'
 c. * zwei von einigen/vielen Freunden
 * 'two of some / many friends'

- (28)a. *Peters jeder Freund
 b. *der jeder Freund
 *'Peter's/the every friend'

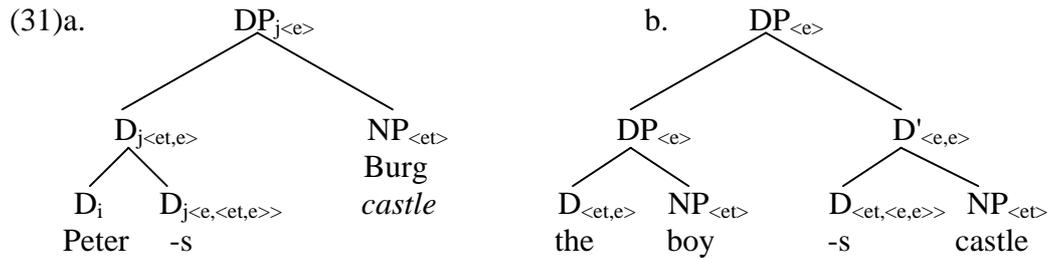
- (29)a. * Peters alle Freunde
 b. * die alle Freunde
 * 'Peter's/the all friends'

The examples in (25) to (29) show that the distribution of the prenominal genitive and the definite article is complementary. The prenominal genitive is possible in exactly those contexts which allow for a definite determiner. Such contexts are before weak quantifiers (25), superlatives (26), and the embedded DP in a partitive construction (27). As (27c) illustrates, weak quantifiers as *some* and *many* are excluded from such embedded DPs. (28) and (29) show that both prenominal genitives and definite determiners cannot cooccur with strong quantifiers. On the other hand, prenominal genitives cannot appear in positions which are reserved for indefinite expressions (cf. de Jong: 1987).

- (28)a. eine / zwei / einige / viele Woche(n) später
 'one / two / some / many week(s) later'
 b. * die Woche(n) später
 * 'the week later'
 c. * Peters Probezeit später
 * 'Peter's probation later'

4.4 Comparing German and English Prenominal Genitives

The proposed analysis of German prenominal genitive as semantic genitive carries over to English. However, English differs from German in that prenominal genitives are not D-heads, but maximal projections in the specifier of the genitive expression. The structures of prenominal genitives in German and English are given in (31a) (= (11) from above) and (31b), respectively.



The structural difference between English and German is motivated by the well-known observation that English prenominal genitives can consist of maximal projections. The prenominal genitive morpheme, which is identical to the German one, attaches to phrases no matter how complex, cf. (32).

- (32)
- [my neighbour]'s new apartment
 - [my recently moved in neighbour]'s new apartment
 - [my neighbour [who never introduced himself]]'s new apartment

We follow Abney's (1987) proposal for the structure of the English genitive phrase in its sentential aspect and assume that the English prenominal genitive morpheme is base-generated in the D-head of the genitive expression, i.e. in the same position as in German. Since the English prenominal genitive is phrasal, and therefore does not adjoin to D^0 , the bound morpheme cliticises to the maximal projection in SpecDP.

It is a consequence of the different syntactic structures of English and German prenominal genitives that quantificational English prenominal genitives can bind a pronoun in the same clause. As argued in subsection 4.2 above, this is impossible in German.

- (33) a. [_{DP}Everybody_i's [_{NP}mother]] loves her_i son.
 b. *Jedermanns_i Mutter liebt ihren_i Sohn. (= (18a))

The quantifier phrase in SpecDP in the English example does not reanalyse, therefore, it can bind a pronoun. The prenominal genitives in German, on the other hand, are reanalysed D-heads which have lost their quantificational force.

The logical types in (31b) indicate that the difference in the syntactic structure of prenominal genitives in German and English is accompanied by different lexical entries for the *s*-suffix. This is so because the meaning of the *s*-suffix in (31b) first combines with the NP denotation (type $\langle e,t \rangle$) and then

with the denotation of the DP in SpecDP (type $\langle e \rangle$). In other words, the argument orders of the *s*-suffixes in German and English form a mirror image. This semantic variation is accompanied by another, independent difference. As discussed above, English differs from German in that it allows for real quantifying DPs such as *everybody* and *nobody* as prenominal genitives. This means that the lexical entry for *-s* in English must be flexible enough to handle these higher types as well. In German, type shifting the *s*-suffix is unnecessary because quantifying DPs are impossible as prenominal genitives anyway.

There is a way to reconcile the assumption of different syntactic structures for English and German prenominal genitives with a unified semantics for the *s*-suffix. The English structure may not be quite as indicated in (31b). Abney (1987) discusses an alternative structure for (31b) which involves an extra functional projection (=KP) in SpecDP.

- (34) revised structure of (31b):
 $[_{DP} [_{KP} [_{DP} \text{Peter}] s] [_{D'} D^0 [_{NP} \text{castle}]]]$

In (34), the *s*-suffix occupies the head of KP and takes the denotation of the prenominal “genitive” DP as its first argument, and the NP denotation as its second argument. On this analysis, the structural difference between English and German rests in the presence or absence of the extra functional projection KP, and the content of D (filled in German, phonetically empty in English). The revised analysis in (34) allows for a treatment of the English suffix *s*- as being of type $\langle e, \langle et, e \rangle \rangle$ on a par with its German counterpart (apart from the possibility to type shift, of course). The revised analysis may look more attractive because it does not have to assume two different (if similar) lexical entries for *-s* in English and German. Apart from that, it allows for a continued treatment of the sequence [DP+s] as functor denoting (cf. Keenan & Stavi: 1986). Third, it is more in line with a plausible analysis of possessive pronouns as being of type $\langle et, e \rangle$ (with an incorporated indexical element of type $\langle e \rangle$). The latter point is not entirely unimportant, given the hypothesis that the *s*-suffix is diachronically derived from possessive pronouns. Looking at it from this angle, semantic considerations may provide an additional argument in favour of Abney’s revised structure for prenominal genitive expressions. We shall not pursue this matter further.

To summarise the results of this section, prenominal genitives in German are heads located in the determiner position of the genitive expression. This analysis accounts for the restriction of prenominal genitives to proper names. The fact that this restriction is not found in English leads us to conclude that English prenominal genitives are maximal projections located in SpecDP instead. Semantically, prenominal genitive is the manifestation of a free semantic relation between the prenominal expression and the head-noun of the genitive expression. Therefore, English and German prenominal genitives are both instances of “semantic genitive.”

5. Postnominal Genitives

The second position of adnominal genitive in German is the postnominal position. Our analysis takes up ideas developed in Partee (1983/97), Partee & Borshev (1998, 1999), and to a certain extent in Bhatt (1989). The basic idea is the following: There are two ways for a postnominal genitive to enter a semantic relation with its head-noun, depending on the semantic nature of the latter. If the head-noun is a R(elational)-noun (a *transitive common noun* (TCN) in Partee & Borshev's terms), it can take the postnominal genitive as its semantic argument. In this case, the genitive licenses the argument syntactically. If the head-noun is a P(roperty)-noun (Partee & Borshev's *common noun* (CN)), which does not have relational content, the relation is brought along by the postnominal genitive, which modifies the head-noun. In this case, genitive has semantic content. It provides a free relation variable whose value must be supplied by the context.

The following two subsections investigate the syntactic and semantic properties of postnominal genitive arguments (5.1), and postnominal genitive modifiers (5.2). Section 5.3 discusses some predictions and consequences of our treatment of syntactic and semantic genitive. Finally, section 5.4 expands our analysis to partitive and pseudo-partitive constructions.

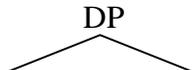
5.1 Postnominal Genitive Arguments: Syntactic Genitive

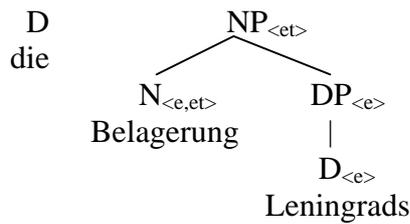
As a first observation, notice that German postnominal genitives can be either proper names or phrases. In example (35), both of them may appear postnominally.

- (35) die Belagerung [_{DP} Roms] / [_{DP} der Stadt]
the siege *Rome_{GEN}* *the_{GEN} city_{GEN}*
'the siege of Rome / of the city'

The head-noun of the genitive expression in (35) is relational ("R-noun"); it requires an argument of type <e>. This argument can be provided by a postnominal proper name or a full DP, respectively, since both are of the appropriate type. The argument is licensed by genitive case assigned by the head-noun. Genitive case on postnominal arguments has no semantic impact. It only licenses the argument of the R-noun syntactically. Therefore, we call it "syntactic genitive".

The structure of syntactic genitive constructions is given in (36). The relational head-noun selects the postnominal genitive as its argument. The postnominal genitive argument is a DP which can contain either a full maximal phrase, or, in case the postnominal genitive is a proper name, just the D-head. This latter case is illustrated below.

- (36) 



Postnominal genitives which occur as complements to R-nouns must be interpreted as arguments to the R-noun, due to the rules of semantic composition. They do not allow the same range of variety concerning the semantic relation to the head-noun as prenominal genitives (and postnominal genitive *modifiers*, cf. section 5.2).

The compositional semantic analysis of postnominal genitive arguments is given below. *Belagerung* is an R-noun (37b), which takes as its internal argument (represented by the variable *z*) the postnominal genitive *Leningrads* (37c). The semantic representation of the prenominal genitive (37d), as elaborated in subsection 4.3, is a function from properties to individuals. The free interpretation of the prenominal genitive is due to the relational variable *R* in the range of the function. (37e), finally, illustrates function application of the prenominal genitive to the property *Belagerung Leningrads* yielding the correct interpretation that there is somebody who is performing a specific siege of Leningrad and Hitler stands in some relation to this event.

(37) Hitlers Belagerung Leningrads

- a. $[[\text{Leningrads}_{\text{postnominal}}]] = \text{Leningrad}'$
- b. $[[\text{Belagerung}]] = \lambda z \lambda e. \exists x [\text{siege}'(e, x, z)]^{13}$
- c. $[[\text{Belagerung Leningrads}]] = \lambda e. \exists x [\text{siege}'(e, x, \text{Leningrad}')]^{14}$
- d. $[[\text{Hitlers}_{\text{prenominal}}]] = \lambda P. \iota e [P(e) \ \& \ R(e, \text{Hitler}')]]$
- e. $[[\text{Hitlers Belagerung Leningrads}]]$
 $= [\lambda P. \iota e [P(e) \ \& \ R(e, \text{Hitler}')]] (\lambda e. \exists x [\text{siege}'(e, x, \text{Leningrad}')])$
 $= \iota e \exists x [\text{siege}'(e, x, \text{Leningrad}') \ \& \ R(e, \text{Hitler}')]]$

Note that it does not follow from the semantic representation that *Hitler* is the agent argument. The semantic representation just says that there is some relation between Hitler and the event of the siege of Leningrad. The reading as subject genitive is only pragmatically suggested.

¹³ In analogy to passive constructions, the external argument in *ung*-nominalisations (as *Belagerung*) is existentially bound. Passive constructions as well as *ung*-nominalisations allow the optional realisation of the external argument as a *von/durch*-phrase (*by*-phrase).

(i) Leningrads Belagerung von/durch Hitler

¹⁴ Since the expression of the internal argument is not obligatory with *ung*-nominalisations (as it is also the case with some transitive verbs, e.g. *essen* 'to eat'), the variable corresponding to the unexpressed internal argument ('*z*' in the above formula) is also existentially bound if no postnominal argument is realised, cf. (i).

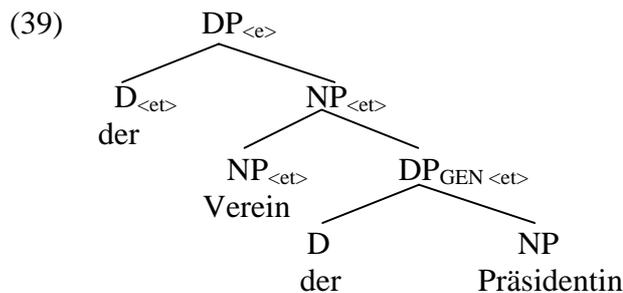
(i) $[[\text{Hitlers Belagerung}]] = \iota e \exists z \exists x [\text{siege}'(e, x, z) \ \& \ R(e, \text{Hitler}')]]$

5.2 Postnominal Genitive Modifiers: Semantic Genitive

Genitive modifiers only appear with property denoting nouns ("P-nouns"). They modify the head-noun by predicate modification. Like PP-modifiers, they are of type $\langle e,t \rangle$ and denote a relation variable indicated by the genitive. Genitive modifiers thus express "semantic genitive". As with prenominal genitives, this relation variable is free. Its value is contextually determined, causing their free interpretation.

- (38) $[_{DP1}$ der Verein $[_{DP2}$ der Präsidentin]]
the club the_{GEN} president-FEM_{GEN}
 'the club owned by the president / for which the president plays / which the president supports ...'

Syntactically, the postnominal genitive modifiers are adjoined to the NP of the genitive expression.



The semantic derivation of (39) is given in (40). As (40b) shows, the genitive denotes some relation. Functional Application of (40b) to the DP denotation $[[die\ Präsidentin]]$ yields the genitive modifier (40c). This genitive modifier is combined with the P-noun denotation $[[Verein]]$ by predicate modification which yields (40d). Finally, functional application of the definite determiner's denotation $[[der]]$ to the property expressed in (40d) yields the denotation of the genitive expression: the unique club which stands in some contextually salient relation to its president.

- (40) der Verein der Präsidentin
- $[[die\ Präsidentin]] = \iota y[\text{president}'(y)]$
 - $[[GEN_{mod}]] = \lambda z \lambda x.R(x,z)$
 - $[[der\ Präsidentin_{mod}]] = \lambda x.R(x, \iota y[\text{president}(y)])$
 - $[[Verein\ der\ Präsidentin]] = \lambda x.\text{club}'(x) \ \& \ R(x, \iota y[\text{president}'(y)])$
 - $[[der\ Verein\ der\ Präsidentin]] = \iota x.\text{club}'(x) \ \& \ R(x, \iota y[\text{president}'(y)])$

Excursus: Genitive Adverbs

In the preceding paragraph, we have argued that genitive on postnominal modifiers has semantic content, just like prenominal genitive: It expresses a free

relation variable which specifies the relation between the genitive and the head-noun, and whose value depends on the context.

Motivation for the assumption of semantic genitives comes from the fact that all postnominal genitive modifiers can be substituted by PPs. (41a) is paraphrasable as (41b), depending on context.

- (41)a. die Schüler einer Klasse
the students one_{GEN} class_{GEN}
 'the students of one class'
- b. die Schüler von / aus / in einer Klasse
the students of / from / in one class

In (41b) the preposition clearly contributes to the meaning: It relates the denotation of its NP complement to that of the head-noun. The null hypothesis is that the genitive takes over this function in (41a). Note again that the genitive form in (41a) is insensitive to different contexts, while different contexts demand for different prepositions in (41b). We take this as support for the claim that genitive expresses a 'bare' relation variable without further specification.

Semantic, relation-denoting genitive also occurs on another class of modifiers, namely on genitive adverbials. Consider the synonymous (42ab). In (42a), the adverbial phrase is marked for genitive.¹⁵

- (42) a. Abends waren wir schwimmen.
evening_{GEN} were we swimming
- b. Am Abend waren wir schwimmen.
in.the evening were we swimming
 'In the evening we went swimming.'

Like other adverbial phrases, genitive adverbials are best treated as event modifiers which add a property to the event denoted by the VP. In (42b), the genitive adverbial has been replaced by a relation-denoting PP. The preposition denotes a relation *IN* which holds between an event of swimming by us and its location in time (evening). On the null hypothesis, the same relation is expressed by the genitive in (42a).¹⁶ This leaves us with the following expressions for the meaning of the adverbial phrases in (43):

- (43)a. $[[\text{am Abend}]] = \lambda e. \text{IN}(e, \iota y[\text{evening}'(y)])$
 b. $[[\text{abends}]] = \lambda e. \text{R}(e, \iota y[\text{evening}'(y)])$ ¹⁷

¹⁵ The existence of case-marked nominal adverbials is not restricted to German (cf. Larson 1985 on bare NP adverbials in English).

¹⁶ Both, the existential and the generic reading are possible with both alternatives (42a and 42b):

- (i) Was habt ihr gestern gemacht? Am Abend/abends waren wir schwimmen.
 'What did you do yesterday? In the evening, we went swimming.'
- (ii) Was macht ihr in den Ferien? Am Abend/abends gehen wir immer schwimmen.
 'What do you do during the holidays? In the evening, we always go swimming.'

¹⁷ Two comments are in order. First, genitive marks a full DP is witnessed by the parallel (slightly archaic) form *des Abends* with its indefinite counterpart *eines Abends*. Second, the

Some further examples of genitive adverbials together with their PP-counterparts are given in (44):

(44)a.	montag-s	vs.	am Montag	'on Monday'
	b. jedenfall-s	vs.	auf jeden Fall	'in any case'
	c. größtenteil-s	vs.	zum größten Teil	'for the most part'
	d. diesseit-s	vs.	auf dieser Seite	'on this side'

Genitive adverbial modifiers differ from adnominal genitive modifiers in one important respect: They do not appear to be productive any longer (although they clearly were at an earlier stage of German as witnessed by the abundance of genitive adverbials that still exist). We do not know for sure what is responsible for the lexicalisation of adverbial genitives, but we assume that it has to do with the fact that the range of relations expressible by specific adverbials is usually restricted to one (cf. footnote 17). As a result, the value of *R* will be predictable independent of the context, and lexicalisation can take place.

This being said, we take the existence of genitive adverbials to support our analysis of (some) postnominal genitive expressions as genitive modifiers.

5.3 Predictions and Consequences

5.3.1 Relational Nouns with Genitive Modifiers

Within the nominal paradigm, the realisation of arguments is (almost) always optional. In contrast to the verb serving as its base, an R-noun can stay in isolation, i.e. without its argument, which is implicitly understood. This difference between verbs and their nominalisations is shown in (45).

- (45) a. Die Ernennung fand um 3 Uhr statt.
'The appointment took place at 3 o'clock.'
- a.* Peter ernannte um 3 Uhr.
- b. Peter vollendete die Bemalung am Nachmittag.
'Peter finished the painting in the afternoon.'
- b.* Peter bemalte am Nachmittag.
- c. Nach dem Schneiden werden die Kartoffeln angebraten.
'After cutting, the potatoes are roasted.'
- c.* Nachdem Peter schnitt, briet er die Kartoffeln an.

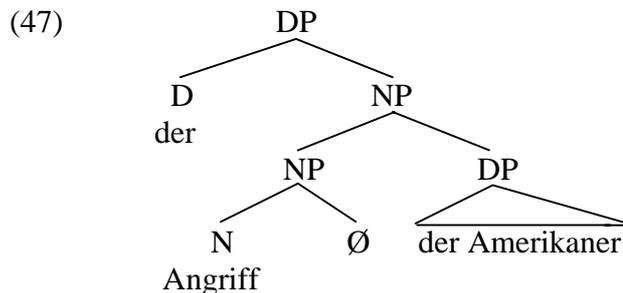
relation *R* in (43b) should be able to receive different values depending on the context. In practice, the genitive adverbial seems pretty much restricted to locating an event in time. We surmise that this is because it is difficult to establish sensible relations between events and points of time other than temporal location (with other candidates like 'possession', 'spatial location', 'part-of/membership' etc. being out of the question). The relative fixedness of *R*'s value in the case of genitive adverbials may have resulted in their lexicalisation, as opposed to genitive modifiers in the nominal domain, which can express a variety of relations, and which do not form lexical units.

* 'After Peter cut, he roasted the the potatoes.'

This asymmetry between verbs and R-nouns does not hold for modifiers. Modifiers are always optional since they do not form part of the argument structure of a verb (and its nominalisation). We therefore expect to find R-nouns without a genitive argument but with a genitive modifier. Such examples are given in (46).

- (46)a. die Beschreibung des Polizisten
'the description of the policeman's'
- b. der Angriff der Amerikaner
'the attack of the Americans'
- c. die Berührung Peters
'the touch of Peter's'

The postnominal genitives in (46) are all ambiguous between an argument and a modifier interpretation of the postnominal genitive. Most plausibly, the postnominal genitive is interpreted as subject of the genitive expression. (Note that German – differing from English, cf. section 7 – does not morphologically distinguish postnominal object genitive from subject genitive.) The structure of (46b) is given in (47).



Thus, the prediction is fulfilled for R-nouns describing a process (like *Berührung*, *Angriff*, *Beschreibung*): Since the realisation of postnominal arguments and modifiers is not obligatory, these R-nouns can appear with either a postnominal argument, or a modifier. (As for the cooccurrence of both, cf. the end of the present subsection.)

Unfortunately, this observation cannot be generalised to all R-nouns. With some nouns, only the internal argument can be realised.

- (48)a. die Absetzung des Kanzlers
the dismissal the_{GEN} chancellor_{GEN}
'the dismissal of the chancellor'
- b. die Erschießung des Anführers
the shooting the_{GEN} leader_{GEN}
'the shooting of the leader'

Under normal intonation, the only available interpretation for the postnominal genitives in (48) is the interpretation as object genitive. Against our prediction that postnominal genitives should always allow for a modifier interpretation, the genitives in (48) are not interpretable as such. (48a) cannot mean that the chancellor dismisses someone, and (48b) lacks the interpretation that the leader shoots someone. Thus, the prediction only holds for a subclass of R-nouns.

A subclassification of one type of R-noun, so-called *ung*-nominalisations (as e.g. *Eroberung* 'siege', *Verteidigung* 'defense', *Ernennung* 'nomination',...) is presented by Ehrich & Rapp (2000). In their detailed study, Ehrich & Rapp argue that the lexical semantic structure (LSS) of the *ung*-nominalisation determines their argument structure, as well as the interpretation of the postnominal genitive. The authors formulate the following rule: If the LSS does not contain a change of state predicate (BECOME), all thematic arguments appear in the argument structure of the nominalisation. Any of them can be realised as a postnominal genitive. This case was illustrated in (46) above, where all postnominal genitives could be interpreted as subjects. If, on the other hand, the LSS contains a change of state predicate, the argument structure of the *ung*-nominalisation only contains the lowest argument of this predicate (apart from the event argument) (Ehrich & Rapp: 2000, 276). In this case, illustrated in (48), the lowest argument is the only argument which appears as a postnominal genitive. This theory elegantly accounts for the following minimal pair (examples from Ehrich & Rapp: 2000, 275).

- (49)a. die Befragung des Kanzlers (subject or object genitive)
the questioning the_{GEN} chancellor_{GEN}
 b. die Absetzung des Kanzlers (only object genitive)
the dismissal the_{GEN} chancellor_{GEN}

The postnominal genitive in (49a) can be interpreted as either the actor (subject genitive) or the patient (object genitive) of the R-noun. Following Ehrich & Rapp, this is due to the LSS of the head-noun *Befragung* which does not contain a change of state predicate. The postnominal genitive in (49b), on the other hand, can only be the theme of the event described by the R-noun because the LSS of the nominalisation *Absetzung* contains a change of state predicate. Therefore, only the lowest argument may be realised, which is the theme object. The theory of Ehrich & Rapp accounts for a large range of facts concerning the interpretation of postnominal genitive arguments with *ung*-nominalisations. We do not want to enter into further details here, but refer the interested reader to the work of Ehrich & Rapp.

Ehrich & Rapp do not dwell on the issue if other nominalisations exhibit similar restrictions. The data in (50) suggest that this is indeed the case. As elaborated above, the prenominal genitive in (50a) expresses a free relation to the head-noun of the genitive expression. Among the many possible interpretations, it can mean that Hugo causes the explosion, or that Hugo is the victim of the explosion. Such interpretational freedom is not possible with the postnominal genitive argument in (50b), which is preferably interpreted as the theme of the event described by the R-noun.

- (50)a. Hugos Explosion
 'the explosion caused by Hugo' / 'Hugo explodes'
 b. die Explosion Hugos
 'Hugo explodes' / NOT: 'the explosion caused by Hugo'

The R-noun *Explosion* is another nominalisation which contains a change of state predicate. The restriction to the theme-interpretation of the postnominal genitive in (50b) might be taken as an indication that Ehrich & Rapp's generalisation concerning the interpretation of postnominal genitive of *ung-*nominalisations carries over to other nominalisations as well.

To summarise, the theory presented in Ehrich & Rapp (2000) offers an account for the interpretational asymmetry observed between the examples in (46) and (48) above. However, this account is not without problems. In the following paragraphs, we will address two of them.

The first problem concerns prenominal genitives which Ehrich and Rapp do not take into account. They follow Lindauer (1995) who, in accordance with the Symmetric Analysis, assumes that the prenominal genitive is derived from the postnominal position. In case the prenominal genitive is interpreted as an object, its base position is the postnominal genitive position; in case it is interpreted as a subject, it originates in an adjunct position. Ehrich & Rapp do not extend their theory to prenominal genitives but stick with Lindauer's analysis. Therefore, they predict that the interpretation of the prenominal genitive of a change of state R-noun is restricted the same way as its postnominal counterpart. This, however, is not the case. In our opinion, the following examples allow the agent interpretation of the prenominal genitive, apart from the interpretation as theme.

- (51)a. Schröders Absetzung 'Schröder's dismissal'
 b. Massuds Erschießung 'Massud's shooting'
 c. Stefans Bemalung 'Stefan's painting'

The interpretational asymmetry between pre- and postnominal genitives of R-nouns follows from our treatment of prenominal genitives without further assumptions. The prenominal genitives in (51), which, at first glance, seem to represent an argument of the R-noun, are functors with the typical semantic properties associated with them: Their interpretation to the head-noun is not restricted to the internal argument interpretation. Since in general, none of the thematic arguments of R-nouns must be realised (cf. Ehrich & Rapp: 2000, 276, as well as the examples in (45) above), the genitive expressions in (51) do not contain overt arguments.

The second problem concerns the fact that the postnominal genitive of a change of state noun, which should only allow the internal argument interpretation, receives an additional modifier interpretation if it is contrastively focussed. We repeat the examples (48b) and (50b) from above providing them with a context which licenses a contrastive focus interpretation. The

interpretation as a genitive modifier becomes available in all cases. (Capital letters express contrastive stress.)

- (52)a. Die Erschießung des ANführers war grausamer als die seines
the shooting the_{GEN} leader_{GEN} was more.brutal than the of.his_{GEN}
 GEGners.
rival_{GEN}
 Possible: 'The shooting of the leader's was more brutal than the shooting of his rival's.'
- b. Die Explosion HUGos erregte mehr Aufsehen als die PETERS.
the explosion Hugo_{GEN} caused more sensation than the Peter_{GEN}
 Possible: 'The explosion of Hugo's caused more sensation than the explosion of Peter's.'

Obviously, the contrastive focus intonation supports the modifier interpretation, which we argue to be available anyway. We surmise that the modifier interpretation is promoted by the existence of a set of alternatives induced by the contrastive focus. In the following paragraph, it will be shown that contrastive focus also licenses the cooccurrence of two postnominal genitives.

Our proposal predicts that semantic genitives – unlike syntactic genitives – need not stand adjacent to the head-noun. As a consequence, both postnominal genitives can cooccur in the order syntactic GEN >> semantic GEN.¹⁸ This prediction seems to be born out, as the following examples show.

- (53)a. Die Übersetzung des Artikels des Redakteurs wurde überall
the translation the_{GEN} article_{GEN} the_{GEN} editor_{GEN} was everywhere
 gelobt.
praised
 'The translation of the article by the editor was praised everywhere.'
- b. Die Bombardierung der Stadt der Artillerie war stärker
the bombing the_{GEN} city_{GEN} the_{GEN} artillery_{GEN} was stronger
 als die der LUFTwaffe.
than the the_{GEN} air.force
 'The bombing of the city by the artillery was stronger than the bombing by the air force.'
- c. Die Prüfung der Unterlagen des Finanzamtes kam zu
the examination the_{GEN} documents the_{GEN} Inland.Revenue_{GEN} came to
 anderen Ergebnissen als die der STEUERberater.
different results than the the_{GEN} tax.consultant_{GEN}
 'The examination of the documents by the Inland Revenue came to different results than the examination by the tax consultant.'

¹⁸ This prediction contradicts Haider (1988) and Bhatt (1990), who claims that there can be only one postnominal genitive, but see Fortmann (1996) for a different view.

Especially when contrastively focussed, postnominal modifiers can cooccur with postnominal arguments. This is expected since the modifier does not have to be adjacent to the head-noun of the genitive expression.

5.3.2 Cooccurrence of Pre- and Postnominal Genitives

Pre- and postnominal genitives can also cooccur, as long as their realisation respects the restrictions imposed by the type of noun, the position and the interpretation of the respective genitive. The example in (54a) is ambiguous between a modifier and an internal argument reading for the postnominal genitive, as expected. If, however, pre- and postnominal genitives cooccur, the postnominal genitive is automatically interpreted as the internal argument. Notice that neither (54b) nor (54c) are ambiguous.

- (54)a. die Unterstützung des Vaters
the support the_{GEN} father_{GEN}
 'x supports the father' / 'the father supports x'
- b. Julianes Unterstützung des Vaters
 'Juliane's support of the father'
- c. Vaters Unterstützung Julianes
 'the father's support of Juliane'

Thus, although the postnominal genitive may express any argument of the R-noun's argument structure in (54a), the internal argument interpretation becomes obligatory if an additional prenominal genitive occurs. The question, then, arises why it is impossible to interpret both genitives as modifiers, with the postnominal genitive being interpreted as supporter, and the prenominal as supportee? We assume that genitive expressions prefer to be realised with one modifier only. Since the prenominal genitive must be a modifier, and since R-nouns have the possibility to interpret the postnominal genitive as internal argument, the postnominal genitive will automatically be interpreted as such.¹⁹

If the interpretation of pre- and postnominal genitives is such that the relation expressed by the prenominal genitive is pragmatically restricted to the theme/patient interpretation, a combination with an "agent" postnominal genitive is excluded as witnessed by (55b).

- (55)a. Hitlers Belagerung Leningrads
Hitler-GEN siege Leningrad_{GEN}
 'Hitler's siege of Leningrad'
- b. *Leningrads Belagerung Hitlers

¹⁹ This possibility is not available for P-nouns which cannot take an internal argument. It is therefore predicted that P-nouns can occur with a pre- and a postnominal modifying genitive.

(i) Peters Buch des Professors
Peter-GEN book the_{GEN} professor_{GEN}
 'the book owned by the professor borrowed to Peter' / 'the book written by the professor owned by Peter' etc.

The restriction of *Leningrads* in (56a) to the internal argument is due to pragmatic reasons, as the ambiguity of (56b) suggests.

- (56)a. die Belagerung Leningrads b. die Belagerung Hitlers
the siege *Leningrad*_{GEN} *the siege* *Hitler*_{GEN}
 'Leningrad is besieged.' 'x besieges Hitler' / 'H. is besieged'

Therefore, if both *Leningrads* and *Hitlers* cooccur, *Leningrads* cannot occupy the prenominal position since its interpretation is more restricted than the one of *Hitlers*. Again, since the internal argument interpretation is reserved to the postnominal genitive *Leningrads*, the prenominal realisation of *Hitlers* in (55a) must express another relation. The ungrammaticality of (55b) receives a straightforward account.

De Wit & Schoorlemmer (1996) present a similar account for the possible cooccurrences of pre- and postnominal genitives. The authors claim that the prenominal genitive must always be an argument which is higher on the thematic hierarchy than the postnominal genitive (cf. also Bhatt: 1990 and Lattewitz: 1994). Thus, given the hierarchy possessor>agent>theme (de Wit & Schoorlemmer: 1996, 185), the well-formedness of (56a) is explained since the prenominal agent argument is hierarchically higher than the postnominal theme. The ungrammaticality of (56b) also follows because the prenominal genitive *Leningrad* can only receive the unnatural interpretation of either an agent, or a possessor. De Wit & Schoorlemmer's account, which successfully accounts for the thematic restrictions on the cooccurrence of pre- and postnominal genitives in (56), presupposes that the prenominal genitive receives a thematic role from the head-noun of the genitive expression. However, as we have pointed out, the interpretation of prenominal genitives is quite free and only restricted by pragmatic factors. Hence, in our theory, it is only one option out of many that the prenominal genitive is interpreted as the agent argument. If the context allows it, any interpretation is possible (cf. e.g. example (10a)). De Wit & Schoorlemmer, as well as Ehrich & Rapp (2000) cannot account for this interpretational freedom of prenominal genitives since they take prenominal genitives to be always selected.

5.4 Extending the Analysis Partitive and Pseudo-Partitive Constructions

Our bipartite analysis of postnominal genitives as either arguments or modifiers extends straightforwardly to two other types of postnominal genitives which are found with P-nouns. Both are illustrated in (57ab).

- (57)a. zwei der Männer → partitive construction
*two the*_{GEN} *men*_{GEN}
 'two of the men'
 b. eine Flasche kühlen Biers → pseudo-partitive construction
*a bottle cool*_{GEN} *beer*_{GEN}
 'a bottle of cool beer'

Partitive constructions have received much attention in the literature.²⁰ They consist of a definite genitive DP following a phonetically empty nominal head. Pseudo-partitive constructions consist of a genitive mass DP following a classifier element and have also been discussed extensively.²¹ In our view, both constructions are reducible to instances of semantic genitive. We will look at partitive constructions first.

We follow Jackendoff (1977) and Olsen (1987) in analysing partitive constructions as containing a phonetically empty head-noun. We assume the structure in (58a). The empty head-noun is co-indexed with the overtly spelled out NP *Männer* whose semantic value it shares. That is, (57a) can be paraphrased as (58b):²²

- (58)a. $[_{DP1} \text{zwei} [_{NP} [_{NP} \text{NO}_i] [_{DP2} \text{der Männer}_i]]]$
 b. *zwei Männer der Männer*

Ladusaw (1982) has shown that the lower DP2 in (58a) must be definite. It denotes a specific plural entity. The higher DP1 denotes a subgroup of this set. That is, the subpart-relation *PART-OF* obtains between the two entities denoted by DP1 and DP2. We propose that *PART-OF* is the value assigned to the free relation variable introduced by the genitive. The semantic derivation is as follows:

- (59)a. $[[\text{NO}]] = \lambda x. \text{men}'(x)$
 b. $[[\text{der}_{\text{GEN}} \text{Männer}_{\text{GEN}}]] = \lambda y. R(y, \sigma z [\text{men}'(z)])$ ²³
 c. $[[\text{NO der}_{\text{GEN}} \text{Männer}_{\text{GEN}}]] = \lambda x. \text{men}'(x) \wedge R(x, \sigma z [\text{men}'(z)])$
 d. $[[\text{zwei NO der}_{\text{GEN}} \text{Männer}_{\text{GEN}}]] = \exists_2 x. \text{men}'(x) \wedge R(x, \sigma z [\text{men}'(z)]) \wedge P(x)$

With *R* equalling *PART-OF*, we get the desired reading, namely ‘There are two men which form a subgroup of the men and ...’.²⁴ Again, the modifier analysis for partitive constructions is supported by the possibility of using a PP-construction instead.

- (60) *zwei von den Männern*
two of the men

²⁰ See e.g. Jackendoff (1977), Ladusaw (1982), Barker (1998).

²¹ See e.g. Selkirk (1977), Jackendoff (1977), Abney (1987), for English, and Löbel (1989) for German.

²² Note that in (58a) neither of the coindexed elements c-commands the other, thus saving the structure from incurring a principle C-violation (Chomsky 1981).

²³ The expression $\sigma z. \text{men}'(z)$ reads as ‘the maximal group of men’. Formally, the σ -operator is defined as follows (cf. Link: 1983): $\sigma x P x = \sigma x (P * x \wedge \forall y (P * y \rightarrow y \text{ is part of } x))$.

²⁴ No other values for *R* are possible. This seems to follow from the definiteness of the lower DP2. DP2 denotes the maximal group of men present in the universe of discourse. Any other group of men must by necessity form a subgroup of this maximal group.

Turning to the pseudo-partitive construction (57b), we see that it is ambiguous between an amount- and an object reading (cf. Selkirk: 1977). On the amount reading, it is the amount of cool beer which is relevant. On the object reading, it is the concrete object bottle itself which is relevant. Both readings are illustrated in (61):

- (61)a. We drank a bottle of beer. (it is not the bottle which is drunk)
 b. We smashed a bottle of beer. (it is the bottle which is smashed)

Both readings can be derived on the assumption that the postnominal genitive expression functions as a genitive modifier. As with all other genitive modifiers, we take the DP *kühles Bier* 'cool beer' to be right-adjoined to the head-noun.

(62) $[_{DP} \text{eine } [_{NP} [_{NP} \text{Flasche}] [\text{kühlen Biers}]]]$

The semantic interpretation of (62) proceeds as follows:

- (63)a. $[[\text{kühlen}_{GEN} \text{Biers}_{GEN}]] = \lambda y. \wedge R(y, \mu z[\text{cool}'(z) \wedge \text{beer}'(z)])^{25}$
 b. $[[\text{Flasche}]] = \lambda x. \text{flasche}'(x)$
 c. $[[\text{Flasche kühlen}_{GEN} \text{Biers}_{GEN}]]$
 $= \lambda x. \text{flasche}'(x) \wedge R(x, \mu z[\text{cool}'(z) \wedge \text{beer}'(z)])$
 d. $[[\text{eine Flasche kühlen}_{GEN} \text{Biers}_{GEN}]]$
 $= \exists x. \text{flasche}'(x) \wedge R(x, \mu z[\text{cool}'(z) \wedge \text{beer}'(z)]) \wedge P(x)$

Depending on which value is chosen for R , we get the two readings observed. With the value *CONSIST*, (63d) reads as 'There is a quantity of one bottle (full) which consists of cool beer and ...'. With the value *CONTAIN*, (63d) reads as 'There is a bottle filled with beer and...'.²⁶ Again, possible contexts do not seem to license any more sensible relations between containers and inanimate stuff contained within them, resulting in a restricted number of readings for R .

Summing up, in this section we have shown that our analysis of some postnominal genitive expressions as genitive modifiers (adjoined to NP) carries over to two other postnominal genitive constructions. Both partitive constructions and pseudo-partitive constructions are analysable as genitive modifier constructions. This is a welcome result, since it allows for a unified account of both constructions (as proposed by Abney: 1987, and contra Löbel: 1989). Differences between the two constructions are semantic (and pragmatic) in nature.

In this section we proposed an analysis for postnominal genitives. We argued that there are two types of postnominal genitives, i.e. genitive arguments (syntactic genitive) and genitive modifiers (semantic genitive). We have shown that the analysis accounts for the restrictions on possible readings observed with

²⁵ μ is the counterpart of σ in the mass domain. The expression $\mu z[\text{cool}'(z) \wedge \text{beer}'(z)]$ stands for the maximal amount of cool beer in the universe of discourse.

²⁶ On our analysis, *Flasche* 'bottle' is ambiguous between a predicate over quantities and a predicate over concrete entities. Which value is chosen depends on the value of R .

postnominal genitives. The distinction between genitive arguments and modifiers also predicts that both can cooccur. This prediction was shown to be borne out – contrary to claims frequently found in the literature. The cooccurrence of two postnominal genitives seems to constitute a strong argument against the view that genitive case inside the DP is always structural case. Finally we extended our analysis of genitive modifiers to partitive and pseudo-partitive constructions, arriving at a unified analysis for all postnominal genitive modifiers.

6. English

The English genitives behave quite differently from their German counterparts. We will defend our claim that the differences between the two languages are due to the fact that English only has semantic genitive. English genitive only indicates the expression of a relation. It appears exclusively in positions designated for semantic genitive, i.e. prenominally or as a postnominal genitive modifier. Postnominal arguments are never marked for genitive. They are case-marked by the semantically empty preposition *of* (cf. Chomsky 1981).

English and German prenominal genitives differ syntactically. As we pointed out in subsections 4.3 and 4.4, German prenominal genitives are functors located in D^0 of the DP genitive expression. The English prenominal genitives, on the other hand, are phrasal and are located in the DP specifier (cf. the tree diagram in (31b)). This difference manifests itself in two respects: Firstly, English prenominal genitives are not restricted to proper names but can be phrases of varying type and complexity. Secondly, the prenominal genitive morpheme in D^0 , which amalgamates with the proper name in German forming a complex determiner, is a bound affix in English which attaches to the last head of the phrase in SpecDP. These two differences are exemplified in (64). Note that only (64a) is grammatical in German.

- (64)a. Peter's team
- b. my brother Peter's team
- c. my brother who lives in Berlin's team
- d. the city's destruction

With respect to semantics, English and German prenominal genitives behave alike. They both express a relation to the head-noun, which is contextually determined.

The lack of syntactic genitive in English has more evident repercussions on the distribution of postnominal genitives. Irrespective of the semantic type of the head-noun (relational vs. property denoting), English postnominal genitives cannot express an argument. They must always indicate a relation.

Consider P-nouns first. P-nouns can only combine with postnominal modifiers, which are obligatorily marked with genitive for semantic reasons (65). The lack of genitive marking leads to ungrammaticality (66).

- (65) a. the trip of Peter's
- b. the team of Mary's

- (66)a. *the trip of Peter
- b. *the team of Mary

With respect to postnominal genitives with R-nouns, our hypothesis that English lacks syntactic genitive makes the following prediction: If the argument of an R-noun is expressed, genitive marking is not licensed. The postnominal arguments are syntactically licensed by the preposition *of* in (67). Our hypothesis is corroborated by the following contrast.

- (67)a. the siege of Rome
- b. the siege of the city

- (68)a. *the siege of Rome's
- b. *the siege of the city's

Genitive marking in English always indicates semantic genitive, i.e. a free relation of a genitive modifier. It is therefore not licensed on postnominal arguments. One could raise the question, however, why the modifier interpretation is totally excluded, as shown by the ungrammaticality of the genitive expressions in (68). But note that the only natural interpretation of the relation between the modifier and the head-noun in (68) is THEME. Since the theme interpretation is reserved for the implicit, existentially bound internal argument, (68ab) are ungrammatical.

In those cases where the modifier can have a natural non-theme interpretation (e.g. agent), postnominal genitive modifiers are possible with R-nouns (69a)/(70a). As expected, the lack of genitive marking leads to an obligatory interpretation of the postnominal DP as an internal argument (69b)/(70b).

- (69) a. the execution of McVeigh's
'McVeigh executes somebody' / NOT: 'McVeigh is executed'
- b. the execution of McVeigh
'McVeigh is executed' / NOT: 'McVeigh executes somebody'

- (70)a. a treatment of Peter's
'Peter treats somebody' / NOT: 'Peter is treated'
- b. a treatment of Peter
'Peter is treated' / NOT: 'Peter treats somebody'

7. Open Problems and Possible Solutions

We want to address three problems of our analysis, which we kept quiet about so far. The first of these problems concerns a rather unexpected restriction on postnominal genitive modifiers, which may not always be proper names (7.1). The second one takes up an observation by Holmberg (1993) who observes that if a DP with prenominal genitive appears in predicative position, the uniqueness condition can be violated (7.2). The third problem, finally, concerns relative clauses which cooccur with genitives. If they appear with a postnominal genitives, they can be interpreted as either restrictive or appositive. With prenominal genitives, however, they only allow an appositive interpretation (7.3).

7.1 Prosodic Restrictions on Postnominal Genitive Modification with Names

Postnominal genitive modification with proper names is not always grammatical. Observe the following asymmetry between prenominal genitives and postnominal genitive arguments, which both can be proper names (71ac), with postnominal genitive modifiers, which are ungrammatical as proper names (71b).

- (71)a. Peters Tasche
Peter-GEN bag
 b.* die Tasche Peters
the bag Peter_{GEN}
 c. die Behandlung Peters
the treatment Peter_{GEN}
 'the treatment of Peter'

We cannot offer a fully satisfying account of this restriction on genitive modifiers, but we would like to add an interesting observation: If the postnominal proper name gets prosodically heavier, the acceptability of these genitive modifiers increases. Thus, the following examples become more acceptable the longer the postnominal proper name is. While the monosyllabic and bisyllabic names in (72a) and (72b) yield ungrammatical genitive expressions, the trisyllabic name *Ursula* in (72c) is only slightly marked. If the names contain more than three syllables, they are perfect postnominal genitive modifiers.

- (72)a. * Der Computer Ulfs
 b.*?Der Computer Peters
 c. ?Der Computer Ursulas
 d. Der Computer Alexanders
 e. Der Computer Katharinas der Großen
 'The computer of ... is broken.'
- }
 |
 } ist kaputt.
 |
 }

Note that R-nouns are not sensitive to the prosodic weight of their arguments. Monosyllabic postnominal genitive arguments are perfectly acceptable.

- (73)a. Die Behandlung Ulfs war erfolgreich.
the treatment Ulf_{GEN} was successful
 'The treatment of Ulf was successful.'
- b. Die Behandlung Katharinas der Großen war erfolgreich.

We do not know why prosodic weight should play a role for the realisation of postnominal genitive modifiers as proper names. But we did not come across a convincing proposal either which reduces this restriction to other factors. Bhatt (1990) accounts for the ungrammaticality of examples like (72a) claiming that P-nouns do not assign a theta role to the postnominal genitive modifiers. This evidently accounts for the unavailability of (72ab). However, Bhatt's account does not do justice to the fact that markedness is graded.

7.2 Genitive-DPs in Predicative Position

If a DP with prenominal genitive appears in predicative position, the uniqueness condition can be violated (Holmberg 1993) as shown in the examples below. In (74a), the two identical prenominal genitive expressions (*Karls Lehrer* 'Karl's teacher') are predicates of two different DPs, i.e. the subjects of the two conjuncts. This suggests that the uniqueness condition, which is normally observable with prenominal genitives (74b), is absent if the prenominal genitive-DP is in predicative position.

- (74)a. Herr Löbe ist Karls Lehrer und Herr Erb ist auch Karls Lehrer.
Mr. Löbe is Karl-GEN teacher and Mr. Erb is too Karl-GEN teacher
 'Mr. Löbe is Karl's teacher, and Mr. Erb is Karl's teacher, too.'
- b. #Karls Lehrer ist gekommen und Karls Lehrer ist auch gekommen.
Karl's teacher is come and Karl's teacher is too come
 'Karl's teacher came and Karl's teacher came, too.'

We suggest the following account for this asymmetry between the interpretation of predicative and non-predicative genitive-DPs. The interpretation of the genitive expression as being of type $\langle e \rangle$ ($4x.teacher'(x, karl')$) leads to a contradiction in (74a) since expressions of type $\langle e \rangle$ cannot be interpreted as predicates. This triggers a reinterpretation of the genitive expression as predicates of type $\langle e, t \rangle$. As a result of this type-shift, the genitive expression will denote a property ($\lambda x.teacher'(x, karl')$). The possibility of reinterpreting individual denoting definite descriptions is independently attested. Consider (75).

- (75) Herr Erb ist der Klassenlehrer von Karl.
Mr. Erb is the class.teacher of Karl
 'Mr. Erb is Karl's class teacher.'

In (75), the definite DP *der Klassenlehrer von Karl* denotes a property which is predicated of Mr. Erb. We assume that whatever process is responsible for the type-shift in (75) is also responsible for the type shift in (74a). At the same time, this type-shift operation cannot apply in argument position, as witnessed by the ungrammaticality of (74b).

7.3 Relative Clauses

Relative clauses with postnominal genitives can be interpreted as either restrictive or appositive. With prenominal genitives, however, they only allow an appositive interpretation (cf. Abney: 1987, 55).

- (76)a. Die Invasion Italiens, die im 19. Jh. stattfand, war sehr blutig.
the invasion Italy_{GEN} which in.the 19th century took.place was very bloody
 'The invasion of Italy which took place in the 19th century was very bloody.'
 (restrictive and appositive)
- b. Italiens Invasion, die im 19. Jahrhundert stattfand, war sehr blutig.
 'Italy's invasion which took place in the 19th century was very bloody.'
 (only appositive)

With respect to an account of this unexpected asymmetry, we can only offer a speculation with far-reaching consequences at this point: There is no post-nominal modification within DP, at least not with relative clauses (restrictive or appositive).²⁷ As a result, the head noun semantically combines with prenominal genitive first yielding an individual which can only be qualified appositively.

8. Conclusion

We proposed a multiply asymmetric treatment of genitives in German and in English, which, we think, accounts for the many syntactic and semantic differences between pre- and postnominal genitives more adequately than the varieties of the Symmetric Analysis.

With respect to German prenominal genitives, we took their restriction to proper names as evidence that they are complex determiners consisting of the

²⁷ If the prenominal genitive expression appears in predicative position, the relative clause is ambiguous again between an appositive and a restrictive interpretation.

(i) Der Auslöser war Italiens Invasion, die im 19. Jahrhundert stattfand.
the cause was Italy-GEN invasion which in.the 19. century took.place
 'The cause was Italy's invasion which took place in the 19th century.'

We do not have an explanation for this effect.

proper name and the prenominal genitive morpheme. English prenominal genitives, on the other hand, can be phrasal, which suggests that they are rather located in SpecDP of the genitive expression. The semantics of prenominal genitives is identical in both languages. Its denotation contains an iota operator which accounts for the definiteness effect associated with the prenominal genitive. Apart from this, the relational variable R accounts for the free semantic relation which prenominal genitive expresses.

As for the postnominal genitives, we distinguished genitive arguments, which are selected by relational nouns, from genitive modifiers occurring with property denoting nouns. We adopted the theory of Ehrich & Rapp (2000) which attributes the varying interpretations of genitive arguments with *ung-nominalisations* to differences in the lexical semantic structure of the R-noun. Based on their theory, we discussed the cooccurrence of pre- and postnominal genitives. We showed that if two genitives cooccur, the postnominal genitive is restricted to the internal argument interpretation. Genitive modifiers, i.e. postnominal genitives of P-nouns, are never instantiations of an argument but, as prenominal genitives, express a free relation, which is semantic modification. Comparing our findings to English, we observed that English lacks postnominal genitive arguments altogether. This is due to the fact that English cannot express syntactic genitive. In English, pre- and postnominal genitives are semantically symmetric since they always indicate a relation.

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