Discontinuous NPs in German
A case study of the interaction of syntax, semantics, and pragmatics

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Zusammenfassung in Deutsch

Wortstellungsphänomene spielen eine wichtige empirische Rolle bei der Untersuchung natürlicher Sprachen im Rahmen generativer Linguistiktheorien. Wortstellungsdaten gehören zu den wichtigsten Belegen bei der Untersuchung der Frage, was eine syntaktische Konstituente ist und sie motivieren somit die syntaktische Konstituentenstruktur als die zentrale rekursive linguistische Datenstruktur.

In der generativen Tradition liegt der Schwerpunkt der Forschung vor allem auf den Eigenschaften von diversen lokalen und nichtlokalen Wortstellungsphänomenen mit dem Ziel, die *syntaktischen* Restriktionen zu erkennen, mit Hilfe derer erklärt werden kann, welche Wortstellungen grammatisch sind und welche nicht. Andererseits ist seit langem bekannt, das Wortstellungsphänomene auch durch *lexikalische* Faktoren beeinflußt werden. Eines der bekanntesten Phänomene hier sind die sogenannten "Brückenverben", die als einzige die Voranstellung aus finiten Sätzen im Deutschen (und auch im Englischen) erlauben. Desweiteren sind Wortstellungsphänomene in hohem Grade durch den *Kontext*, in dem sie auftreten, beeinflußbar. Diese Tatsache hat vor allem in der nichtgenerativen Tradition Beachtung gefunden, in der u.a. die kommunikative Funktion von Wortstellungsphänomenen ein zentraler Aspekt ist. So wird Voranstellung beispielsweise als eine Art der Hervorhebung eines bestimmten Satzgliedes betrachtet. Die Frage, die sich bei der Betrachtung der drei genannten Ebenen der linguistischen Analyse stellt, ist, wie sich die einzelnen Faktoren zuordnen lassen: Welche der Faktoren, die Einfluß auf die Wortstellung haben, sind syntaktischer Natur und welche sollten als lexikalische oder kontextuelle Eigenschaften behandelt werden?

Die vorliegende Arbeit beschäftigt sich mit einem Wortstellungsphänomen des Deutschen - mit dem Auftreten von diskontinuierlichen Nominalphrasen, die wir als NP-PP-Aufspaltung bezeichnen werden. Die Aufgabe dieser Arbeit ist es, die Aufteilung der syntaktischen, lexikalischen und kontextuellen Faktoren, die diese Konstruktion beeinflussen, zu untersuchen. Es soll gezeigt werden, daß viele der Faktoren, die man bislangen als syntaktische Beschränkungen für Bewegung erklärt hat, sich auf kontextuelle Gegebenheiten zurückführen lassen.

Ein Beispiel für eine NP-PP Aufspaltung findet sich in (1).

(1) *Über Syntax* hat Sarah sich [ein Buch] ausgeliehen.

Die Konstruktion wird häufig als "PP-Extraktion aus NP" bezeichnet, da eine der möglichen Erklärungen für die Voranstellung der Präpositionalphrase *über Syntax* ist, daß die PP aus der NP *ein Buch* extrahiert worden ist.

Die Voranstellung der PP ist jedoch nicht die einzige mögliche Wortstellung, bei der die PP separat von der sie einbettenden NP auftritt. In Beispiel (2) ist der umgekehrte Fall zu sehen, bei dem die NP allein vorangestellt ist, während die PP zurückbleibt.

(2) [Ein Buch] hat sich Sarah *über Syntax* ausgeliehen.

Es ist in der Literatur festgestellt worden, daß Sätze wie in (2) problematisch sind für eine Extraktionsanalyse, da hier nicht das extrahierte Element vorangestellt wurde, sondern die NP, aus der extrahiert wurde. Als Teillösung für dieses Problem wurde in der Literatur eine andere Analyse für das Phänomen vorgeschlagen, bei der die NP und die PP als unabhängige Schwesterkonstituenten "reanalysiert" werden und so an verschiedenen Positionen im Satz unabhängig voneinander auftreten können. Eine der Hauptaufgeben dieser Arbeit ist es, zu zeigen, daß die empirischen Argumente, die für die Extraktionsanalyse vorgebracht wurden, nicht überzeugend sind und empirische Evidenz für einen Reanalyseansatz vorzubringen.

In (3) ist ein Beispiel für die lexikalischen Faktoren zu sehen, die die NP-PP-Aufspaltung beeinflussen.

(3) a. * *Über Syntax* hat Sarah [ein Buch] geklaut.
    b. * [Ein Buch] hat Sarah *über Syntax* geklaut.

Grammatische Beispiele, wie die in (1) und (2) werden zu ungrammatischen Beispielen, wenn das die NP einbettende Verb durch ein anderes Verb ersetzt wird, daß die gleichen syntaktischen Eigenschaften hat, aber eine andere Bedeutung.

Anhand von Beispiel (4) kann man sehen, daß, eingebettet in einen entsprechenden Kontext, ein Beispiel wie (3a) wesentlich akzeptabler wird.

(4) Gestern wurde in der Bibliothek eine Anzahl von Linguistikbüchern geklaut. Vor allem Semantikbücher verschwanden dabei.

a. *Über Syntax* wurde jedoch [nur ein einziges Buch] geklaut.

Auf der Basis eingehender empirischer Untersuchungen der NP-PP-Aufspaltung werden in der vorliegenden Arbeit zwei zentrale Fragen behandelt: zum einen die Frage nach der adäquaten syntaktischen Analyse der Konstruktion und zum anderen die Frage, wie der syntaktische Ansatz mit einem Ansatz, der die lexikalischen und kontextuellen Restriktionen erklären kann, kombiniert werden kann, um alle Aspekte der NP-PP-Aufspaltung befriedigend zu behandeln.

Im Rahmen der empirischen Untersuchungen in Teil I werden als erstes die syntaktischen Stellungsmöglichkeiten der NP und der abgespaltenen PP beschrieben. In Bezug auf die syntaktische und semantische Funktion der PP wird dafür argumentiert, daß nur PP Adjunkte von der NP getrennt auftreten können, während PP Argumente, wie sie bei deverbalen Substantiven vorkommen, niemals von der NP abgespalten werden können. Bei der genaueren Betrachtung der lexikalischen und kontextuellen Faktoren wird festgestellt, daß die NP-PP-Aufspaltung auf den ersten Blick nur mit bestimmte Verb-Substantiv-Verbindungen möglich zu sein scheint. Bei genauerem Hinsehen jedoch stellt man fest, daß die ungrammatischen Beispiele in geeigneten Kontexten wesentlich akzeptabler werden. Um die NP-PP Aufspaltung in den Phänomenbereich der diskontinuierlichen Konstituenten einordnen zu können, wird die Konstruktion schließlich anscheinend ähnlichen Phänomenen, wie sekundäre Prädikation, Funktionsverbgefüge, NP-Spaltung und partitive Konstruktionen, gegenübergestellt.

Teil II der Arbeit widmet sich der theoretischen Untersuchung der NP-PP-Aufspaltung. Zuerst werden die zwei Ansätze für die Konstruktion, Extraktion und Reanalyse, die in der Literatur zu finden sind, eingehend diskutiert. Dabei wird gezeigt, daß die empirischen Argumente, die für eine Extraktionsanalyse vorgebracht wurden, nicht überzeugend sind, und daß verschiedene Wortstellungsmöglichkeiten für einen Reanalyseansatz sprechen. Eine solche Reanalyse-Theorie wird daraufhin im Rahmen der Head-Driven Phrase Structure Grammar mit Hilfe von Argument- und Adjunktanhebung formuliert.

Bei der theoretischen Interpretation der lexikalischen Faktoren, die die NP-PP-Aufspaltung beeinflussen, wird gezeigt, daß die semantische Beziehung zwischen dem einbettenden Verb und der NP die Möglichkeit der Aufspaltung von NP und PP beeinflußt. Um diese Beobachtung in den HPSG-Ansatz zu integrieren, wird die Theorie des generativen Lexikons von Pustejovsky (1995) hinzugezogen, die es ermöglicht, mit Hilfe der "Qualia-Struktur" die relationalen Eigenschaften von Wörtern zu erfassen. Der Anhebungsansatz wird dahingehend erweitert, daß die Anhebung einer PP aus einer NP heraus nur dann möglich ist, wenn die Semantik des einbettenden Verbs und die Qualia-Struktur der NP in geeigneter Weise interagieren.

Bei der Betrachtung der kontextuellen Faktoren, die die NP-PP-Aufspaltung beeinflussen, wird gezeigt, daß der lexikalisch-semantische Ansatz nicht geeignet ist, die Interaktion lexikalischen und kontextuellen Faktoren zu erfassen. Um eine Erklärung für die kontextuellen Effekte zu finden, die bei der NP-PP-Aufspaltung auftreten, werden die Fokus-Hintergrund Eigenschaften der Konstruktion genauer betrachtet. Das Ergebnis dieser Betrachtung ist, daß die Aufspaltung nur dann möglich ist, wenn sich die NP und die PP nicht beide in derselben Fokusprojektion oder beide im Hintergrund eines Satzes befinden. Mit dieser Beschränkung auf die mögliche Fokus-Hintergrund-Gliederung von NP-PP-Aufspaltungen ist es nun möglich, angebliche syntaktische Restriktionen der Konstruktion, wie z.B. der Definitheitseffekt oder die "Specified Subject Condition", als Folgen der Diskursrestriktionen zu erklären. Um diese Beobachtungen in den HPSG-Ansatz für die NP-PP-Aufspaltung zu integrieren, wird eine Informationsstrukturkomponente für die HPSG-Architektur entworfen, mit Hilfe derer sich die Fokus-Hintergrund-Gliederung von Sätzen repräsentieren läßt. Dies ermöglicht es, ein Prinzip zu formulieren, das das syntaktische Auftreten der NP-PP-Aufspaltung auf geeignete Fokus-Hintergrund-Gliederungen beschränkt.

Auf dem Hintergrund dieser Informationstrukturkomponente ist nun eine neue Sichtweise auf die lexikalischen Faktoren, die die NP-PP Aufspaltung beeinflussen, möglich. Die lexikalischen Effekte treten meist bei kontextlosen NP-PP-Aufspaltungen auf, die wesentlich akzeptabler werden, sobald der entsprechende Satz in einen geeigneten Kontext eingebettet wird. Es wird daher am Ende der vorliegenden Arbeit dafür argumentiert, die lexikalischen Faktoren als außergrammatische Faktoren zu erklären. In Abhängigkeit vom lexikalischen Material eines Satzes ist der geeignete

Kontext für eine NP-PP-Aufspaltung mehr oder weniger schwer vorstellbar. Dies führt bei der starken Kontextabhängigkeit der Konstruktion dazu, daß manche der Sätze ohne expliziten Kontext weniger akzeptabel erscheinen. Weitere Untersuchungen solcher Effekte sind nötig, um den Status extragrammtischer Faktoren erklären zu können.

Die Frage, die sich für die zukünftige Forschung auf dem Gebiet der Wortstellungsphänomene stellt, ist, ob es sich bei den in dieser Arbeit behandelten lexikalischen und kontextuellen Effekten um eine Eigenheit der NP-PP-Aufspaltung handelt oder ob sich auch bei anderen Wortstellungsphänomenen angebliche syntaktische Restriktionen adäquater als Restriktionen lexikalischer und kontextueller Natur erklären lassen.

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CHAPTER 1

Introduction

Word order phenomena have played an important empirical role for the development of generative linguistic theories of natural language. Word order data constitute the prime evidence for the notion of constituency and thereby constituent structure as the central recursive linguistic data structure. In the generative tradition, the attention has focused on the syntactic properties of the various local and non-local word order phenomena with the intention of identifying the *syntactic restrictions* explaining which word orders are grammatical and which are not. On the other hand, it has long been observed that word order phenomena are subject to *lexical restrictions* such as, for example, the fact that fronting out of finite sentences is only possible in the presence of so-called bridge verbs. Furthermore, word order phenomena are highly dependent on being integrated in an *appropriate context*. In fact, in non-generative linguistics, word order phenomena are primarily discussed in terms of the particular communicative function associated with a particular word order, such as fronting of constituents as a way of emphasizing. The question which arises with respect to these three levels of analysis concerns the division of labor: Which of the factors constraining a word order phenomenon are of a syntactic nature, which derive from lexical restrictions, and which are more appropriately analyzed as relating to discourse properties?

This thesis investigates a particular word order phenomenon in German, the occurrence of discontinuous NPs which we will refer to as the NP-PP split construction, in order to research the division of labor between the syntactic analysis and lexical as well as discourse constraints on this construction. We will argue that many of the factors which previous literature has tried to explain in terms of syntactic restrictions on movement are in fact derivable from discourse factors.

The NP-PP split construction which is the empirical subject of this thesis is exemplified in (5).

(5) *Über Syntax* hat Sarah sich [ein Buch] ausgeliehen.
about syntax has Sarah self a book borrowed

'Sarah borrowed a book on syntax.'

The construction has often been referred to as *extraction of PPs from NPs* because one of the possible syntactic explanations for the fronting of the PP *über Syntax* in (5) is that the PP has been extracted from the NP *ein Buch*, of which the PP is a dependent specifying the topic of the book.

Fronting of the PP, however, is not the only possible word order in which a PP occurs separate from its nominal head. As illustrated by the example in (6) the reverse case in which the NP is fronted leaving the PP behind is equally possible.

(6) [Ein Buch] hat Sarah sich *über Syntax* ausgeliehen.
a book has Sarah self about syntax borrowed

'Sarah borrowed a book on syntax.'

It has been argued that sentences like the one in (6) are problematic for an extraction theory, since the NP as the extraction site and not the extracted element *über Syntax* has been fronted. Partly in response to this problem, other analyses were proposed in which the NP and its PP dependent can alternatively be analyzed as independent sister constituents with the help of special processes like *reanalysis* (cf., e.g., Fanselow 1987). They can then occur at different positions in the sentence separate from each other. One of the main goals of this thesis will be to show that the empirical arguments that have been presented in favor of an extraction analysis are not convincing, and to provide empirical evidence supporting a reanalysis-like approach.

The lexical constraints on the NP-PP split construction become apparent in (7). Grammatical examples of NP-PP split such as the ones we saw in (5) and (6) become ungrammatical when the embedding verb is replaced by a verb which has the same syntactic properties but a different semantics.

(7) a. * *Über Syntax* hat Sarah [ein Buch] geklaut.
on syntax has Sarah a book stolen

'Sarah stole a book on syntax.'

b. * [Ein Buch] hat Sarah *über Syntax* geklaut.
a book has Sarah about syntax stolen
'Sarah stole a book on syntax.'

The only difference between the sentences in (5) and (6) and those shown in (7) is that the verb *ausleihen* (to borrow) is replaced by the verb *klauen* (to steal).

In (8), we see that given an appropriate context a sentence like (7a) becomes much more acceptable.

(8) Gestern wurde in der Bibliothek eine Anzahl von Linguistikbüchern geklaut. Vor allem Semantikbücher verschwanden dabei.

'Yesterday, a number of linguistics books were stolen from the library. Mostly books on semantic disappeared.'

a. *Über Syntax* wurde jedoch [nur ein einziges Buch] geklaut.
on syntax was however only one single book stolen
'There was, however, only one book on syntax stolen.'

Building on these empirical characteristics of the NP-PP split construction, this thesis investigates two main questions, one concerned with the proper syntactic analysis of the construction, the other with the integration of such a syntactic analysis with an approach to the lexical and contextual factors involved. The structure of the thesis is as follows. In part I, we provide an overview of the empirical characteristics of NP-PP split. In chapter 2, the syntactic, semantic and pragmatic properties of the construction are illustrated and in chapter 3, the NP-PP split construction is compared to other phenomena involving discontinuous NPs. In the second part of the thesis, theoretical interpretations for the central aspects of NP-PP split are provided. In chapter 4, we reevaluate the empirical basis of the choice between the two syntactic analysis ideas proposed in the literature, extraction and reanalysis, and provide an explicit theory licensing reanalysis-like structures for NP-PP split within the framework of Head-Driven Phrase Structure Grammar (HPSG). In chapter 5, the lexical-semantic effects observable for the NP-PP split construction are investigated, and we show how an account based on the generative lexicon can be integrated into our syntactic HPSG analysis. Finally, in order to find an explanation for the context effects that show up with the construction, in chapter 6, we explore the possible focus-background structures of NP-PP split constructions. The empirical insights from this investigation of discourse requirements are then integrated into our account of NP-PP split by developing an information-structure component for our HPSG fragment of German. Since this information structure component accounts for some of the restrictions traditionally viewed as part of syntax, this thesis can be understood as arguing for a more equal division of labor between syntax theory and a theory of discourse, which has been unevenly balanced as a result of the significant advances in syntactic theorizing in the generative enterprise.

Part I

The Phenomenon

CHAPTER 2

Basic Properties of the NP-PP Split Construction

1. Syntax

In this section, we want to take a closer look at the syntactic properties of the NP-PP split construction. We will investigate at which points in the sentence the NP and the split PP can occur, and which governing heads allow splitting of the two phrases.

In describing the possible positions of the two parts of the NP-PP split construction, we will use the terminology of the topological field model for German sentences.[1] The *Vorfeld* is the topological field before the finite verb in verb-second sentences, the *Mittelfeld* is the topological field in-between the complementizer in verb-last or the finite verb in verb-first/second sentences and the right-sentence bracket containing non-finite verbal elements and the finite verb in verb-last sentences. The *Nachfeld* is the topological field to the right of the right-sentence bracket. While the German topological field discussion has a lot more to offer, these three basic field positions will be sufficient for our task.

1.1. Fronted positions. Let us start our investigation with the word order in which the NP-PP split construction most commonly occurs, the PP in a sentence-initial position and the NP remaining in the *Mittelfeld* as exemplified in (9).

(9) a. *Über Syntax* hat er sich [ein Buch] ausgeliehen.
about syntax has he self a book borrowed
'He borrowed a book on syntax.'

[1]For a discussion of the topological fields traditionally assumed for German sentences, the reader is referred to Reis (1980), Höhle (1986), and Kathol (2000, ch. 4).

b. *Worüber* hat er sich [ein Buch] ausgeliehen?
About what has he self a book borrowed
'What did he borrow a book about?'

c. Ich weiß nicht mehr,
I do not remember
worüber Hans [ein Buch] ausleihen wollte.
about what Hans a book to borrow wanted
'on which topic Hans wanted to borrow a book.'

d. Ich kenne kein Gebiet der Sprachwissenschaft,
I do not know any area of linguistics
über das Hans nicht schon [etliche Bücher] ausgeliehen hat.
about which Hans not already several books borrowed has
'on which Hans has not borrowed several books already.'

In each of the four example sentences, the PP *über Syntax* has been fronted independently of its nominal head *Buch*: In (9a), the PP occurs in the *Vorfeld* in a verb-second clause. In (9b), it occurs in the same position but as a *wh*-constituent. In (9c), it occurs as a *wh*-constituent at the left edge of an embedded question. Finally, in (9d), it is the relative pronoun at the left edge of a relative clause.

In (10), some more examples, which were found in the Frankfurter Rundschau, a national German newspaper,[2] illustrate that this construction occurs quite naturally.

(10) a. *Über die gesamte Thematik* wurden schon [viele dicke Bücher] geschrieben.
about the entire topic have already many thick books been written
'Many voluminuos books have already been written about the entire topic.'

b. *Über die "kleine Flunder"* steht in der letzten "RADFAHREN" [ein Testbericht].
about the small Flunder is in the last RADFAHREN a test report
'A test report about the "kleine Flunder" can be read in the last issue of "RADFAHREN".'

[2]The text of this newspaper corpus (39.569.709 words/2.621.622 sentences) is taken from the ECI/DCI Multilingual Corpus I CD-ROM.

c. *Von Erzbischof Carl Theodor Freiherr von Dalberg* gibt es
of archbishop Carl Theodor Freiherr von Dalberg is there
beispielsweise [ein Bild] im Stadtarchiv.
for example a picture in the municipal archives

'There is, for example, a portrait of the archbishop Carl Theodor Freiherr von Dalberg in the municipal archives.'

d. *Darüber* gebe es in Rosbach allerdings [überhaupt keine
about that were there in Rosbach however absolutely no
Unterlagen].
documents

'There were, however, absolutely no documents about this in Rosbach.'

As we already mentioned in the introduction, the reverse order where the NP occurs in a fronted position while the PP remains in the *Mittelfeld* is equally possible. This is shown in (11).

(11) a. [Ein Buch] hat er sich *über Syntax* ausgeliehen.
a book has he himself about syntax borrowed

'He has borrowed a book on syntax.'

b. [Welches Buch] hat er sich *über Syntax* ausgeliehen?
which book has he self in syntax borrowed

'What did he borrow on syntax?'

c. Ich weiß nicht,
I do not know

[welches Buch] er *über Syntax* ausleihen wollte.
which book he about syntax to borrow wanted

'I do not know which book he wanted to borrow on syntax.'

d. Die Studenten sollten sich Bücher über Syntax ausleihen.
The students were supposed to borrow books on syntax.

Dies ist das Buch, [das] Hans *über Syntax* ausgeliehen hat.
this is the book which Hans about syntax borrowed has

'This is the book which Hans borrowed on syntax.'

Parallel to the examples in (9), the NP *ein Buch* occurs in the *Vorfeld* of a verb-second clause in (11a), and so does the *wh*-phrase *welches Buch* in (11b). In both cases, the PP *über Syntax* remains in the *Mittelfeld*. In (11c) and (11d), the NP occurs independent of the PP at the left edge of an embedded question and a relative clause.

1.2. Reordering in the *Mittelfeld*. Fronting to a sentence-initial position is not the only possibility for separating an NP and its PP dependent. As shown in (12), the two constituents can also occur independently of each other within the *Mittelfeld*.

(12) a. Hans hat *über Syntax* während seines Studiums [nur drei Bücher]
Hans has on syntax during his studies only three books
ausgeliehen.
borrowed

'During his studies, Hans borrowed only three books on syntax.'

b. Hans hat [nur drei Bücher] während seines Studiums *über Syntax*
Hans has only three books during his studies on syntax
ausgeliehen.
borrowed

In (12a), the PP *über Syntax* occurs at the beginning of the *Mittelfeld* independent of the NP *nur drei Bücher*. In (12b) it is the NP which occurs at the beginning of the *Mittelfeld*, separated from the PP by the adverbial phrase *während seines Studiums*.

The examples in (13), again taken from the Frankfurter Rundschau corpus, show further word order possibilities for an NP and its PP dependent in the *Mittelfeld*.

(13) a. Obwohl bekannt ist, daß Edvard Munch *über deutsche Maler*
although known is that Edvard Munch about German painters
[Abfälliges] zu sagen nicht müde wurde, ließ er die Arbeiten
derogatory remarks to say not tired became let he the works
des sechs Jahre älteren Max Klinger gelten.
of the six years older Max Klinger pass

'Although it is well-known that Edvard did not get tired of making derogatory remarks about German painters he let the works of the six years older Max Klinger pass.'

b. Auch die Grünen-Stadtteilpolitiker fordern *in der McNair-Kaserne*
also the green politicians demand in the McNair barracks
[eine dauerhafte Flüchtlingsunterkunft].
a permanent accommodation for refugees

'Also the politicians of the green party demand a permanent residence for the refugees in the McNair barracks.'

1.3. Extraposition. So far, we considered topicalization into the *Vorfeld* and linearization in the *Mittelfeld* as word order possibilities for the

NP or the PP in NP-PP-split construction. But there is a further linearization option for many constituents in German, the possibility to occur after the verb in verb-final position, the so-called *extraposition* into the *Nachfeld*. Most often, sentential and infinitival clauses are extraposed, but PPs can occur in this position as well and sometimes even NPs[3]. What is of interest here is the fact that extraposed PPs can originate from an embedded position, for example, from inside of an NP, as shown in (14).

(14) a. Er hat [ein Buch] ausgeliehen *über Syntax.*
he has a book borrowed on syntax

b. [Ein Witz] hat die Runde gemacht *über Strauß.*
a joke has the round made on Strauß

c. Es wurden [einige Sonaten] gespielt *aus dem 17. Jahrhundert.*
There were some sonatas played from the 17th century

In the examples in (14) a PP modifying the noun in brackets has been extraposed. This raises the question how such PP extraposition is related to the NP-PP-split construction. More precisely, we should clarify whether extraposition is just another linearization possibility for the constituents involved in the construction or whether separating an NP and a PP by extraposition is an independent phenomenon not subject to the same generalizations. To answer this question let us take a closer look at the properties of PP extraposition.

Firstly, the PP without the NP can be extraposed as we saw in (14) but not the NP without the PP as shown in (15).

(15) a. * Er hat über Syntax ausgeliehen [ein Buch].
he has on syntax borrowed a book

b. * Es wurden aus dem 17. Jahrhundert gespielt [einige Sonaten].
it were from the 17th century played some sonatas

For the NP-PP split construction, however, it would be expected that both, the NP and the PP, can be extraposed independently of each other.

Secondly, even relative clauses and postnominal genitives, which can never be fronted or linearized independently of the NP within the *Mittelfeld* as shown in (16), can be extraposed, as the examples in (17) illustrate.

(16) a. * Ich habe [das Buch] in den Ferien, *das du mir*
I have the book during the holidays which you to me
empfohlen hast, gelesen.
recommended have read

[3]See Müller (1999, p. 208ff.) for a discussion of examples with extraposed NPs.

b. * Ich habe [einen Roman] in der Nacht *des großen*
I have a novel during the night of the great
Naturalisten Theodor Fontane gelesen.
naturalist Theodor Fontane read

(17) a. Ich habe [das Buch] gelesen, *das du mir empfohlen hast.*
I have the book read which you to me recommended have
'I read the book which you recommended to me.'

b. Ich habe [einen Roman] gelesen *des großen Naturalisten Theodor*
I have a novel read of the great naturalist Theodor
Fontane.
Fontane
'I read a novel of the famous naturalist Theodor Fontane.'

From the above facts, one can conclude that extraposition of NP dependents is a different phenomenon than fronting of NP dependents or linearization in the *Mittelfeld*. It must be a different mechanism that frees the PP out of the NP so that it can be extraposed than the one that frees the PP out of the NP so that the two can occur independently of each other in the *Vorfeld* or can be reordered within the *Mittelfeld*. Unless one has good independent ways of explaining the above differences, the two construction should thus be analyzed differently.

1.4. NP-PP split across intervening heads. In the previous section, we characterized the possible positions of the two parts of the NP-PP split construction. A second question we now turn to is, how deeply embedded and embedded by which kind of head the NP can be so that the PP can still occur separate from it.

In the examples we saw in the previous sections the NP was always embedded by one or more verbs. In (9a), for example, *ein Buch über Syntax* is the complement of *ausgeliehen* which itself is embedded by the modal verb *hat*. And in (9c), *ausleihen* embedding the NP is the verbal complement of *wollte*.

As shown in (18), the NP-PP split construction can also occur across a sentence boundary.

(18) a. *Über Syntax* hat Maria gesagt, daß Max sich [ein Buch] ausleihen
on syntax has Maria said that Max self a book borrow
wollte.
wanted
'On syntax Maria said Max wanted to borrow a book.'

b. [Ein Buch] hat Maria gesagt, daß Max sich *über Syntax* noch
a book has Maria said that Max self on syntax yet
ausleihen wollte.
borrow wanted

In (18a), the PP *über Syntax* occurs in the *Vorfeld* of the main clause while the NP *ein Buch* remains in the embedded *daß*-clause, and in (18b) it is the NP that has been fronted into the *Vorfeld* of the main clause.

Let us now turn to those case where the NP is not embedded by a verb but by a noun or by a preposition. The examples in (19) show that NP-PP split is not possible if the NP is embedded by a noun.

(19) a. * *Über Fledermäuse* habe ich noch [keine Seite [des Buches]] lesen
on bats have I yet no page of the book read
können.
can

b. * [Des Buches] habe ich noch keine Seite *über Fledermäuse* lesen
of the book have I yet no page on bats read
können.
can

In both examples, the NP *des Buches* occurs as the postnominal genitive of *keine Seite* and neither the PP *über Fledermäuse* can be fronted while the NP remains right after the embedding NP as in (19a), nor can the NP be fronted while the PP remains to the right of the embedding NP as shown in (19b).

The situation is different if the NP is embedded in a PP. Both, Lötscher (1985) and Müller (1999, p. 100) provide examples in which a PP occurs separate from an NP which is embedded in a PP. (20c) is the example provided by Loetscher, (20a) and (20b) the ones by Müller.

(20) a. *Mit Norwegen* befinden wir uns allerdings [in einem
with Norway are we ourselves however in a
langfristigen Stellungskrieg].
long war

'We are, however, at war with Norway for a longer period.'

b. *Für ihren aus Altersgründen ausgeschiedenen*
For her of age reasons quit
Bundestagsvize Burkhard Hirsch hat sie sich noch [auf
vice of the federal assembly Burkhard Hirsch has she herself yet on
keinen Nachfolger] einigen können.
no successor agree be able to

c. *Aus dem Barock* sollten sie sich [auf die wichtigsten
from the baroque should they themselves on the most important
Lyriker] konzentrieren
lyric poets concentrate

'They were supposed to concentrate on the most important lyric poets from the baroque.'

Let us first take a closer look at the example (20a). Müller argues that the PP fronted *mit Norwegen* originates from the PP *in einem langen Stellungskrieg*. In our terms this would mean that the sentence exhibits an NP-PP split construction where the split-PP belongs to an NP inside of a PP. At closer inspection, this turns out to be incorrect. The fronted PP does not originate from the NP but it is a dependent of the main verb *befinden*. The PP is part of the idiomatic expression *sich mit jemandem im Krieg befinden* (to be at war with) in which the verb *befinden* (to be in) selects two PPs, one headed by *im* and one headed by *mit*. Example (20a) is thus not an instance of a NP-PP split construction.

Also for (20b) it is not that clear whether it really is an instance of an NP-PP split construction. The verb *einigen* selects a PP argument, in this sentence realized by the PP *auf keinen Nachfolger*. The fronted PP *für ihren ... Bundestagsvize Burkhard Hirsch* can be interpreted as belonging to the embedded noun *Nachfolger*. But interestingly, the example becomes ungrammatical if the fronted *für*-PP is replaced by a *von*-PP which as shown by the example in (21) can be used in the same function as the *für*-PP.

(21) Sie haben sich noch auf keinen Nachfolger von Burkhard Hirsch einigen
they have self still on no successor of Burkhard Hirsch agree
können.
be able to

'They have not been able yet to agree on a successor of Burkhard Hirsch.'

This ungrammatical example with the fronted *von*-PP is shown in (22).

(22) * *Von ihrem aus Altersgründen ausgeschiedenen*
of her of age reasons quit
Bundestagsvize Burkhard Hirsch hat sie sich noch [auf
vice of the federal assembly Burkhard Hirsch has she herself yet on
keinen Nachfolger] einigen können.
no follower agree be able to

Generally, *für*-PPs can very often be interpreted in two ways in a sentence: either as a dependent of the main verb or as a dependent of one of the NP arguments of the verb. This is for example the case in (23).

(23) *Für meine Mutter* muß ich mich noch um [ein Geschenk] kümmern.
for my mother have to I self still of a present take care
'I still have to take care of a present for my mother.'

The sentence in German can either mean that the present is for the mother or that the speaker has been asked by his or her mother to buy a present (for someone else). So it is not clear if the constructions in (20b) and (23) are only acceptable because the fronted PP could be interpreted as being embedded by the verb.

Other examples with PP arguments different from a *für*-PP tend to be unacceptable. The example in (20c) with a fronted *aus*-PP is much less acceptable then the two examples with fronted *für*-PPs we saw in (20). Also trying to construct examples with other PP-complement taking verbs results in unacceptable examples as shown in (24).

(24) ?? *Von ihrer Schwester* hofft sie [auf eine Urlaubspostkarte].
of her sister hopes she on a vacation postcard

So far we only considered fronted PPs originating from a PP argument headed by a semantically empty preposition. Parallel cases with semantically contentful uses of prepositions, such as the ones in (25), are always ungrammatical.

(25) a. * *Von Sarah* habe ich ein Buch [auf den Schreibtisch] gelegt.
of Sarah have I a book on the desk put

b. * *Von meiner Tante* haben wir den Urlaub [in einer Ferienwohnung] verbracht.
of my aunt have we the holidays in a flat spent

Neither fronting of the PP *von Sarah* originating from *auf den Schreibtisch* in (25a) is possible[4] nor fronting of the PP *von meiner Tante* originating from the PP *in einer Ferienwohnung* in (25b).

Summing up, we can conclude that NP-PP split is usually not possible if the NP is further embedded within a PP. If there are exceptions to this

[4]Of course, the example is perfectly acceptable if the fronted PP is interpreted as originating from the NP *ein Buch*.

rule, they can only involve embedding under semantically empty prepositions.

1.5. Split PPs: Complements or adjuncts? Another important aspect of the NP-PP split construction is the syntactic and semantic status of the PPs which can occur separate from the head noun: are they adjuncts or complements?

Pafel (1993), for example, shows with the sentences in (26) that fronting the PP complement of deverbal nouns results in ungrammaticality.

(26) a. * *Nach der Uhrzeit* habe ich [eine Frage] beantworten müssen.
about the time have I a question answer had-to
' I had to answer a question about the time.'

b. * *Auf Strafmilderung* haben sich [unrealistische Hoffnungen] breitgemacht.
of reducing the penalty have self unrealistic hopes spreaded-out

c. * *Nach exotischen Gerüchen* konnte selbst [ausgefallene Wünsche] befriedigt werden.
of exotic smells could even extraordinary wishes satisfied been
'Even extraordinary wishes of exotic smells could be satisfied.'

This raises the question whether PP complements can never be separated from their head noun so that split PPs such as *über Syntax* we have seen in (9) on page 7 would have to be analyzed as an adjunct.

To answer this question we will have to say more about the semantic properties of different kind of nouns, which we will do in the following section.

2. Semantics and Pragmatics

In this section we want to briefly introduce the semantic and pragmatic factors that seem to influence the acceptability of NP-PP split constructions. Beforehand we come back to the question we already addressed in the previous section, whether the split PPs are complements or adjuncts of the embedding noun and investigate this aspect under a semantic perspective, i.e., whether the split PPs are modifiers or arguments.

2.1. Split-PPs: arguments or modifiers? In this section we want to investigate the semantic status of those PPs that can occur separate from their nominal head: are they arguments or are they modifiers?

This question has been answered quite controversly in the literature. In his discussion of remnant NPs, Müller (1996, p. 10) assumes that the PP *über Syntax* in examples such as (9) and (11) we saw on p. 7 is the "NP-internal THEME argument" of the noun *Buch*. Pafel (1995, p. 147) also assumes that such PPs are arguments of the NP, although he also observes that PPs which are arguments of deverbal nouns cannot occur separate from the nominal head as we saw in example (26) on p. 16. Fortmann (1996, p. 110) on the other hand assumes that the PP *über Syntax* in such examples is an adjunct of the noun. Similarly, Grimshaw (1990, p. 97) argues that in the equivalent English NP *a book about syntax* the PP is a modifier of the head noun and not an argument.

In the following we will look for empirical support for one or the other of these conflicting views. We first address the question which nouns take arguments and which do not.

2.1.1. *Distinguishing arguments from modifiers of nouns.* It is generally acknowledged that the criteria syntactically distinguishing adjuncts from complements of verbal heads are problematic when it comes to classifying the dependents of nominal heads. Some authors, such as Eisenberg (1994, p. 274), go as far as stating that the notion of syntactic valence cannot be sensibly applied to nouns. One of the key observations cited for this view is that, contrary to verbs, nouns never obligatorily require a dependent to be present. For example, the noun *Gespräch* in (27) can occur with a prenominal genitive and a postnominal PP as in (27a), or only with the prenominal genitive as in (27b), only with the postnominal PP as in (27c), or without any dependents as in (27d).

(27) a. Marias Gespräch mit Peter war erfolgreich.
Maria's conversation with Peter was successful
'Maria's conversation with Peter was a success.'

b. Marias Gespräch war erfolgreich.
Maria's conversation was successful

c. Das Gespräch mit Peter war erfolgreich.
the conversation with Peter was successful

d. Das Gespräch war erfolgreich.
the conversation was successful

Gespräch is a deverbal noun derived from the verb *sprechen* (to speak) which selects three arguments: a subject NP, and two PPs, one denoting the addressee of the speaking and the other referring to the topic of the speaking. It has been extensively discussed in the literature on nominalization (cf. Grimshaw (1990)) that derived nouns can take over some, if not all, of the arguments of the underlying verb. In the case of *Gespräch* in (27) the prenominal genitive *Marias* corresponds to the subject of the verb *sprechen* and the PP *mit Peter* corresponds to the PP argument denoting the addressee of the same verb. We can thus conclude that *Gespräch* syntactically selects complements similar to the verb *sprechen* although, different from the verb, it can occur without any of its complements as in (27d).

In the case of deverbal nouns one can thus use the underlying verb as an indicator of whether possible dependents are arguments or not. But what about non-derived nouns? We here need a another criterion which helps us to distinguish arguments from modifiers. The semantics of the nouns seems to be a promising place to look for such a criterion because syntactic complements are understood to be the direct expression of semantic arguments.

Generally speaking, the interpretation of a verb is usually represented by its functor-argument structures with the verb itself as the functor. The arguments of such a semantic predicate correspond to discourse entities introduced by syntactic elements such as, for example, the subject NP and the object NP in the case of a verb like *love*. Its interpretation can thus be represented by the two-place predicate, i.e., the functor-argument structure, $love'(x, y)$.

The interesting question is now whether the interpretation of nouns can also be represented by parallel functor-argument structures. There is a class of nouns which clearly can be assigned such an interpretation— the deverbal nouns we already discussed above. Similar to the underlying verb, the meaning of such nouns can be represented as n-place predicates as is shown for the noun *Gespräch* in (28).

(28) $gespräch'(x, y)$

The two arguments stand for the agent of the relation, the speaker and the “patient”, the one who is talked to. As we saw in example (27a) above both semantic arguments can be realized syntactically while in the examples (27b), (27c) and (27d) one or more arguments are missing.[5]

Similar to intransitive verbs, whose semantic representation is a one-place predicate because they have only one argument, we also find nouns selecting one argument. These nouns are mostly deadjectival nouns like *Schönheit* (beauty) derived from the adjective *schön* (nice). Its meaning can be represented by the one-place predicate shown in (29).

(29) $\mathit{schönheit}'(x)$

The semantic argument x can syntacticly be realized as a post- or prenominal genitive as in (30a) or as a postnominal PP introduced by the preposition *von* as shown in (30b).

(30) a. Stellas Schönheit/ die Schönheit Stellas war unbeschreiblich.
Stella's beauty the beauty Stella's was indescribable

b. Die Schönheit von Stella war unbeschreiblich.
the beauty of Stella was indescribable

We can thus take the semantic valence of a noun as an indicator of whether a syntactic dependent of that noun (pre- or postnominal genitive or a postnominal PP) is an argument or not. The interesting question which remains, though, is whether the criterion is applicable to other classes of nouns apart from the deverbal or deadjectival ones we mentioned so far.

Concrete nouns. By far the biggest group of nouns are the so called concrete nouns, i.e., nouns denoting concrete objects like *Tisch (table)*, *Buch (book)*, *Hund (dog)*, *Haus (house)*, *Kind (child)* etc. These nouns are commonly assumed to translate semantically to one-place predicates, as shown for the noun *Haus* in (31).

(31) $\mathit{haus}'(x)$

[5] Grimshaw (1990) argues that nouns like *Gespräch* in fact have more than one meaning. They can denote a complex event, and they then select arguments and these arguments have to be syntacticly realized. But they can also denote a result - then they are not relational and therefore do not select any arguments. The occurrence of *Gespräch* in (27d) under her view would be such a result noun not selecting any arguments. We will not further investigate this point here. The only important point for us is that the noun *Gespräch* can have a relational meaning in which it selects arguments.

But the fundamental difference between this one-place predicate and the one we saw for deadjectival nouns like *Schönheit* in (29) is that the semantic argument of the former can never be syntacticly realized. The argument x in (31) can only be involved in modification and predication as shown in the semantic representation of the modified noun *schönes Haus (beautiful house)* in (32).

(32) $haus'(x) \wedge sch\ddot{o}n'(x)$

The meaning of a noun like *Haus* is thus not relational like, for example, a noun like *Schönheit*. It does not have any semantic argument which can be syntactically realized. The semantic representation for such nouns nevertheless is generally taken to be a one-place predicate since one needs some way of representing the entity that is modified when the noun combines with an adjunct.

Grimshaw (1990) calls this argument the non-thematic argument "R". It does not appear as the complement of a head in contrast to the arguments that are thematic and can be syntactically realized as complements of the head. As a consequence of such a setup, event denoting nouns like *Gespräch* or other argument-selecting nouns like *Schönheit* also have an additional argument which is never realized but which can be predicated over. Under Grimshaw's view the semantic representation of *Schönheit* would thus be something like $sch\ddot{o}nheit'(X, y)$ where "X" is the non-thematic argument which is never realized but can be predicated over.

Summing up, concrete nouns are not relational in the sense that they do not have semantic arguments that can be realized syntactically. Pre- or postnominal genitives as well as postnominal PPs occurring together with these nouns thus can only be analyzed as adjuncts. If a noun like *Buch* occurs together with a PP as in the phrase *ein Buch über Syntax (a book on syntax)*, the PP can only modify the noun in the way shown in the semantic representation in (33).

(33) $buch'(x) \wedge \ddot{u}ber'(x, s)$

Kinship nouns. When talking about relational nouns we only mentioned deverbal and deadjectival nouns. But there also is a class of non-derived nouns which has been argued to be relational. These are the so-called kinship nouns, i.e., nouns such as *mother, father, sister, brother, wife* etc., as well as nouns like *neighbour* and *friend*. These nouns denote an individual which stands in a certain relation to another individual. This second person standing in a particular relation to the first individual can be expressed as pre- or postnominal genitive or as a postnominal *von*-PP in German, as shown in (34).

(34) a. Peters Schwester / die Schwester Peters
Peter's sister *the sister* *Peter's*

b. die Schwester von Peter
the sister *of* *Peter*

The semantic representation of these nouns thus is a two-place relation, as shown in (35) for the noun *Schwester* (see also Löbner (1985) and Barker (1995) among others).

(35) $schwester'(x, y)$

But as far as we see there is an important difference between such a two-place relation and the two-place relation for a deverbal noun we saw in (28): only the second argument of the relation in (35) can be realized overtly, the other argument is never realized. The observation that this argument corresponding to the entity described by the noun phrase as a whole is syntactically inseparable from the head noun of the noun phrase is also made by Dowty and Barker (1993). They call this argument the "head" argument. Note the close similarity of this notion to the non-thematic argument "R" of Grimshaw (1990) we discussed above which serves as a kind of anchor for modification. The "head" argument serves the same function when a kinship noun is modified: If a noun like *Mutter* is modified as in example (36) it is the non-thematic "head" argument which the adjective predicates over (37).

(36) die liebenswerte Schwester von Peter
the amiable *sister* *of* *Peter*

(37) $schwester'(R, p) \wedge liebenswert'(R)$

The semantic representation of *Schwester* in (37) thus is remarkably similar to Grimshaw's semantic representation of deadjectival nouns such as *Schönheit* discussed above. Both have a special argument which is never realized but which can be predicated over. And both have one argument which can be syntactically realized. But if we compare the two NPs in (38) where both nouns, *Mutter* and *Schönheit* are preceded by a genitive NP, we see that they are not interpreted in a parallel fashion.

(38) a. Marias Schönheit
Maria's beauty

b. Marias Schwester
Maria's sister

In (38a), where *Maria* is clearly the argument of the head noun, something is said about *Maria*, namely that Maria is beautiful. In contrast to this, the meaning of the NP in (38b) describes a person who stands in the mother relation to Maria, i.e., it asserts that "Maria has a sister and not "Maria is a sister". In this respect an expression like the one in (38b) resembles an NP headed by a concrete noun like *Marias Haus*, the semantic representation of which is shown in (39).

(39) $haus'(x) \wedge von'(x, M)$

This means that Maria owns a house which is the same kind of denotation we just derived for the NP in (38b).

Interestingly, the possessive relation in (39) and the family relation expressed in (38b), which can syntactically also be realized as *von*-PPs, can in German also both be realized through the verb *haben (to have)* as shown in (40).

(40) a. Maria hat ein Haus.
Maria has a house
'Maria owns a house.'

b. Maria hat eine Schwester.
Maria has a sister

This leads to the conclusion that the semantic argument of kinship nouns like *Schwester* expressing to whom the individual denoted by the noun stands in a kinship relation is syntactically realized similar to possessive modifiers as an prenominal genitive or a *von*-PP. We will in the following section see that there are more indications that especially the *von*-PPs occurring with kinship nouns behave very similar to possessive *von*-PPs and should probably, like the possessive ones, be analyzed syntactically as adjuncts. This would than be a case where a syntactic dependent of a noun, although it semantically is an argument, is syntactically realized as an adjunct.

Regarding the question which nouns do have valence and which do not we conclude that nouns can be divided into two classes. Those nouns that are derived from verbs or adjectives or that have a verbal or adjectival counterpart usually have a relational interpretation and their semantic arguments can syntactically be realized as pre- or postnominal genitives or as postnominal PP complements. All other nouns, the so-called *concrete nouns* (or *ultra nominals* as Dowty and Barker (1993) call them) are never relational and do not select semantic arguments. All constituents occurring together with these nouns in an NP can thus only construct as adjuncts. One exception to this classification are the kinship nouns. They do select a semantic argument but this argument is syntactically realized very similar to possessive modifiers which might be an argument to analyze these semantic arguments of kinship nouns syntactically as adjuncts.

2.1.2. *Only PP adjuncts can be split-PPs.* Now that we have introduced one way of distinguishing argument-taking nouns from those which do not take arguments, we can turn to the question whether the split PPs in the examples (9), (11) and (26) we saw in section 1.1 and 1.5 are adjuncts or arguments of the embedding noun.

Arguments. The nouns in example (26) are all deverbal, i.e., argument-taking nouns and the fronted PP is the argument of the noun left behind in the *Mittelfeld*. The resulting sentences are all ungrammatical. Example (41) shows further such examples.

(41) a. * Von Maria bewundere ich die Schönheit.
of Maria admire I the beauty
'I admire Maria's beauty'

b. * Mit Hans würde ich kein Gespräch als erfolgreich bezeichnen.
with Hans would I no conversation as successful call
'I would call none of the conversations with Hans successful.'

c. * Einen billigen Flug zu bekommen ist jeder Versuch gescheitert.
a cheap flight to get is every try failed
'All attempts to get a cheap flight failed.'

In (41a), fronting the argument PP of the deadjectival noun *Schönheit* results in ungrammaticality, and in (41b) it is the PP argument of the relational noun *Gespräch* which cannot be fronted. (41c) finally shows that not only PP arguments of argument-taking nouns are excluded from splitting them from the governing NP but also verbal complements like the fronted infinitive *einen billigen Flug zu bekommen.* We conclude from all these examples that splitting an argument from a nominal head in German is ungrammatical.

Adjuncts. Let us take a closer look at the PP adjuncts. For the noun *Buch* (book) occurring in the examples like (9), repeated here as (42), we argued in the previous section that it is a concrete, non-relational noun and thus does not select any arguments.

(42) a. *Über Syntax* hat Hans sich [ein Buch] ausgeliehen.
about syntax has Hans self a book borrowed
'Hans borrowed a book on syntax.'

b. Ich weiß nicht mehr,
I do not remember
worüber Hans [ein Buch] ausleihen wollte.
about what Hans a book to borrow wanted
'on which topic Hans wanted to borrow a book.'

c. Ich kenne kein Gebiet der Sprachwissenschaft,
I do not know any area of linguistics
über das Hans nicht schon [etliche Bücher] ausgeliehen hat.
about which Hans not already several books borrowed has
'on which Hans has not borrowed several books already.'

The PP *über Syntax* occurring as a dependent of this noun in all the sentences in (42) can therefore only be a modifier of the noun and has the syntactic status of an adjunct within the NP. We can easily find more examples where splitting a PP adjunct is possible as shown in (43).

(43) a. *Von Maria* hat er [ein Porträt] anfertigen lassen.
of Maria has he a portrait paint let
'He let a portrait be painted of Maria.'

b. *Für den bevorstehenden Sommer* ist [die Angebotsliste] besonders lang.
for the next summer is the list extremely long
'The list of offers for next summer is extremely long.'

c. *Aus dem 17. Jhd.* erklangen [Tanzsätze von Joh. Seb. Bach].
from the 17th century sounded dances by Joh. Seb. Bach

Interestingly, the examples in (44) show that also splitting the *von*-PP of kinship nouns is perfectly acceptable.

(44) a. *Von Peter* hat [der Vater] angerufen.
of Peter has the father called
'Peter's father called.'

b. [Die Schwester] habe ich gestern *von Sarah* kennengelernt.
the sister have I yesterday of Sarah got to know
'Yesterday, I got to know Sarah's sister.'

In the previous section we observed that the semantic arguments of kinship nouns, here realized as the two PPs *von Peter* and *von Sarah*, syntactically behave very similar to the possessive modifiers occurring with any kind of noun. As exemplified by the examples in (45), such possessive adjunct PPs can also occur separate from the embedding noun.

(45) a. *Von Sarah* habe ich gerade [die Katze] in Pflege.
of Sarah have I right now the cat in care
'I'm taking care of Sarah's cat at the moment.'

b. [Die blonden Haare] gefallen ihm *von Marilyn Monroe* besonders gut.
the blond hair pleases him of Marilyn Monroe especially well
'He especially likes the blond hair of Marilyn Monroe.'

We thus conclude that the *von*-PPs occurring with kinship nouns should syntactically be analyzed similar to possessive *von*-PPs in order to allow for a uniform account of the NP-PP split construction in which PP-complements of nouns can never be split from that noun.

On the other hand one can find many examples with split adjunct PPs that are ungrammatical.

(46) a. * Mit roten Haaren hat er eine neue Freundin
with red hair has he a new girl-friend

b. * Über Syntax hat er ein Buch geklaut.
on syntax has he a book stolen

For some reason the PP adjunct *mit roten Haaren* in example (46a) cannot be fronted. And (46b) shows that also the embedding verb seems to influence the possibility of splitting a PP from its nominal head: with the verb *klauen* embedding the noun *Buch* fronting the PP is ungrammatical whereas it is grammatical when *Buch* is embedded by the verb *ausleihen* as we saw in example 42a on the facing page.

We will take a closer look at the factors restricting the splitting of PP adjuncts from nouns in the chapters 5 and 6 of this thesis. For now it is sufficient to conclude that only PP adjuncts can occur separate from the embedding noun, while PP arguments can never be separated from the head noun.

2.2. Lexical Semantics. Finally, the NP-PP split construction also has interesting semantic properties, in particular it has often been observed that splitting the PP and the NP is subject to lexical-semantic restrictions (cf., Grewendorf (1989), Pafel (1995)). Grammatical examples of NP-PP split like the ones presented in (9) and (11) become ungrammatical when the embedding verb is replaced by a verb which has the same syntactic properties but a different semantics.

(47) a. *Über Syntax* hat er [ein Buch] ausgeliehen.
on syntax has he a book borrowed
'He borrowed a book on syntax.'

b. * *Über Syntax* hat er [ein Buch] geklaut.
on syntax has he a book stolen
'He stole a book on syntax.'

The only difference between the two sentences in (47) is that the verb *ausleihen* (to borrow) is replaced by the verb *klauen* (to steal).

That the above contrast is a peculiarity of the NP-PP split construction is supported by the fact that no lexical-semantic factors seem to influence other word order possibilities of PPs, such as the extraposition of PPs.

(48) a. Er hat [ein Buch] gelesen *über Syntax.*
he has a book read on syntax

b. Er hat [ein Buch] geklaut *über Syntax.*
he has a book stolen on syntax

There is no difference in acceptability between the two sentences in (48) in contrast to the example (47) where the acceptability of the NP-PP split construction seems to depend on the embedding verb.

2.3. Context Effects. An even more interesting property of NP-PP split is that many of the ungrammatical NP-PP split examples become much more acceptable when embedded in the right context which shows that there is not such a clear distinction between those cases where NP-PP split is possible and those where it is not.

For example, (47b) is much improved if it occurs in a context where it is discussed what kind of books were stolen from the library last night.

(49) Gestern wurde in der Bibliothek eine Anzahl von Linguistikbüchern geklaut. Vor allem Syntaxbücher verschwanden dabei.

'Yesterday, a number of linguistics books were stolen from the library. Mostly books on syntax disappeared.'

a. *Über Semantik* wurde jedoch [nur ein einziges Buch] geklaut.
on semantics was however only one single book stolen

This can again usually not be observed with other word order phenomena like for example extraposition as illustrated by the examples in (50).

(50) Gestern wurde in der Bibliothek eine Anzahl von Linguistikbüchern geklaut.

'Yesterday, a number of linguistics books were stolen from the library.'

a. Es wurden dabei nur [Bücher] geklaut *über Syntax*.
there were thereby only books stolen on syntax

b. Es wurden dabei nur [Bücher] geklaut *über Philosophie, Geschichte und Linguistik*.
there were thereby only books stolen on philosophy, history and linguistics

The extraposition of the PP *über Syntax* in (50a) is not more acceptable with the context given in (50) then the sentence in (48b) without any context. What makes a difference though is the "heaviness" of the NP. The extraposition of the enumeration of PPs in (50b) is much more acceptable then the extraposition of a simple PP.

CHAPTER 3

Comparison with other partial NP phenomena

In this chapter, we first compare the NP-PP split construction with other phenomena involving NPs and PPs apparently related to each other, which can also occur separate from each other in sentences, i.e, secondary predication and support verb constructions. As a first step towards the main goal of chapter 4 to find a plausible syntactic analysis for NP-PP split we then compare the construction with split NP phenomena which have been argued to involve extraction from noun phrases.

1. Phenomena involving Split PP Dependents

1.1. Secondary Predication. If a simple sentence contains another predicative element besides the main verb, one generally speaks of secondary predication. Not only non-finite verb forms or adjectives occur as such secondary predicates but also PPs can be found in this construction as illustrated by the example in (51).

(51) Wir essen Pudding sonntags immer mit Schokoladensoße.
we eat pudding on Sundays always with chocolate sauce
'On Sundays we always eat the pudding with chocolate sauce.'

The finite verb *essen* is the main verb of the sentence. Besides this main predicate, the PP *mit Schokoladensoße* functions as a secondary predicate. The object NP *Pudding* is the direct object of *essen* and the subject argument of the PP *mit Schokoladensoße*.

The subject of the secondary predicate can also refer to the subject of the main verb in a sentence as shown in (52).

(52) Das Mädchen schlief mit der Puppe im Arm ein.
the girl fell withe the doll in the arm asleep
'The girl fell asleep with the doll in her arm.'

The NP *das Mädchen* is the subject of the main verb *schlief ein* and of the secondary predicate *mit der Puppe im Arm.*

In both the examples (51) and (52), the secondary predicate predicates over state of affairs that are valid at the time of the event denoted by the main verb. These predicates are thus called *depictive* predicates, in contrast to *resultative* predicates, which specify the result of an event. Mainly past-participles and adjectives occur as such resultative predicates, but no PPs. Only the depictive predicates are thus of interest here for our comparison with the NP-PP split construction.

Because of their temporal character, the use of PPs as depictive predicates is only possible with PPs that can be characterized as stage-level predicates. Or phrased the other way around, secondary predication is not possible with predicative PPs denoting an individual level predicate, i.e., denoting a permanent property. The example in (53) is thus ungrammatical in contrast to (52) because the PP *mit blonden Haaren* denotes a permanent property of the girl.

(53) * Das Mädchen schlief mit blonden Haaren ein.
the girl fall with blond hair asleep

That this property of predicatively used PPs can vary with respect to the context shows the example in (54a).

(54) Die Freundin von Peter hat sich ihre Haare blond gefärbt.
the girl friend of peter has self her hair blond coloured.
'Peter's girl friend dyed her hair blond.'

a. Neulich habe ich sie aber noch mit roten Haaren gesehen.
recently have I her but still with red hair seen
'Recently, I saw her still with red hair.'

In the context of (54) the hair colour is not a permanent property anymore and thus the PP *mit roten Haaren* can be used as a secondary predicate in (54a).

One of the syntactic characteristics of secondary predication which the literature agrees upon is that the secondary predicate and its co-subject do not form a single constituent. If a PP, which could be used as a secondary predicate, occurs together with a NP in the *Vorfeld* where generally only one constituent can occur, the PP can only be interpreted as a simple modifier of the head noun.

(55) a. Pudding mit Schokoladensoße essen wir immer sonntags.
pudding with chocolate sauce eat we always on Sundays
'On Sundays we always eat pudding with chocolate sauce.'

b. Das Mädchen mit der Puppe im Arm schlief ein.
the girl with the doll in the arm fell asleep
'The girl with the doll in her arm fell asleep.'

In the examples in (55), the PPs *mit Schokoladensoße* and *mit der Puppe im Arm* can only be interpreted as simple modifiers of the nouns *Pudding* and *Mädchen* narrowing down the set of entities denoted by the noun and not as secondary predicates of the main verb.

This short overview of the characteristics of secondary predication is sufficient to show that the PPs occurring in NP-PP split constructions do not function as secondary predicates in the respective sentences. First of all, the PP occurring separate from an NP is a simple modifier of the head noun just as if it occurred right adjacent to the NP.

(56) Auf der gestrigen Modenschau wurden auch die neuesten Frisuren der Saison vorgestellt.
'Yesterday at the fashion show also the newest hair cuts were presented. '

a. Mit kurzen Haaren wurden nur drei Modelle gezeigt.
with short hair were only three models presented
'Only three models with short hair were presented.'

b. Nur drei Modelle mit kurzen Haaren wurden gezeigt.
only three models with short hair were presented

With the context given in (56), there is no difference between (56a) and (56b) with respect to the interpretation of the PP *mit kurzen Haaren* even though in the former example the PP occurs separate from the noun it modifies whereas in the latter case, it forms one constituent with it.

If the same PP occurs in a sentence where it can be interpreted as a secondary predicate, the position of the PP enforces a clear difference in interpretation as shown in (57).

(57) Auf der Modenschau liefen die Mannequins mit verschiedensten Frisuren über den Laufsteg.

'At the fashion show, the mannequins were presented with different hair styles.'

a. Mit kurzen Haaren gefielen die Mannequins den Zuschauern am besten.
with short hair pleased the mannequins the audience the most

'When having short hair, the mannequins pleased the audience most.'

b. Die Mannequins mit kurzen Haaren gefielen den Zuschauern am besten.
the mannequins with short hair pleased the audience the most

'The mannequins with short hair pleased the audience most.'

With the context given in (57) the PP *mit kurzen Haaren* in (57a) can be interpreted as a secondary predicate, meaning that "the mannequins pleased the audience most when they appeared with short hair". The same PP in (57b) on the other hand can only be interpreted as a simple modifier of the noun *Mannequins* meaning that "those mannequins who had short hair pleased the audience most." Whenever the word order exhibits an NP-PP split construction, the secondary predication interpretation thus is not available.

Another difference between the two constructions is that in the NP-PP split construction there is no restriction on the type of PP, i.e., whether it is an individual level predicate or a stage-level predicate. In principle, any PP that modifies a noun in a meaningful way can occur separate from that noun.

Summing up, the important difference between secondary predication and the NP-PP split construction is that the PP in the latter case only modifies the NP, it is independent of the main predicate of the sentence, whereas the PP in the former case functions as a predicate of the sentence besides the main predicate and is thus not independent of this main predicate. Nevertheless, it is easy to confuse the two constructions. But one can test which of the two constructions occurs in a given sentence by transforming it so that the NP and the PP must form one constituent, for example, by putting both phrases into the *Vorfeld*. If this changes the meaning of the sentence, the PP of the original sentence was a secondary predicate, if not, it was an ordinary noun modifier such as they occur in the NP-PP-split construction.

1.2. Support Verb Constructions. In section 2.1 of chapter 2 we argued that only PP modifiers occur separate from NPs. But all the examples shown in (58) seem to contradict this claim: they all involve a PP argument of a deverbal noun occurring in the *Vorfeld* independent of that noun.

(58) a. *Auf die Fragen, ob ich wirklich schwanger sei,* habe ich [keine Antwort] mehr gegeben.
to the questions whether I really pregnant were have I no answer anymore given
'I did not answer to the question whether I was really pregnant anymore.'

b. *Auf die seit vergangenem Dezember amtierende neue Koalition* setzten viele in der Türkei [große Hoffnungen].
on the since last December acting new coalition put many in the turkey great hopes
'Many people in Turkey pin their hopes one the new coalition which acts since last December.'

c. *Über Zeitpunkt und Höhe der Förderung* kann das Ministerium derzeit jedoch noch [keine Auskunft] geben.
about time and height of the support can the ministry at present however yet no information give

d. *Auf deutsche Konten* hat das britische Finanzamt vorerst [keinen Zugriff].
on German bank accounts has the British tax office for the time being no access
'For the time being the British tax office has no access to German bank accounts.'

e. *Auf die Sprachübertragung* hat das [keinen störenden Einfluß].
on the language transfer has that no disturbing influence
'This has no disturbing influence on the language transfer.'

f. *Für Tip- und Rechtschreibfehler* übernehme ich [die Verantwortung].
for typing and spelling errors take over I the responsibility
'I take over all responsibility for typing and spelling errors.'

g. *Über die ökonomischen Vorteile dieser Zusammenarbeit* besteht [kein Zweifel].
about the economic advantages of this cooperation exist no doubts
'There are no doubts about the economic advantages of this cooperation.'

All the above examples, however, have something in common: the nouns in brackets all belong to so-called support verb constructions. These noun-verb combinations usually consist of a noun with an argument structure and a semantically deprived support verb which contributes, at least, tense and causativity to the construction.[1] The noun and the verb together form a complex predicate whose argument structure is determined both by the noun and the support verb. The PP arguments of the deverbal nouns involved thus become the arguments of the entire complex predicate. The fronted PPs in (58) can therefore be argued not to occur as the arguments of the deverbal nouns but as the arguments of the entire support verb constructions, i.e. of *Antwort geben*, *Hoffnung setzen*, *Zugriff haben*, *Verantwortung übernehmen*, *Zweifel bestehen.*

We thus conclude, that examples of the kind shown in (58), which involve support verb constructions, are not instances of the NP-PP split construction because the split PP is not a dependent of an NP but of a complex predicate.

2. Other NP Split Phenomena

To situate the construction dealt with here in the general landscape of split NPs, in this section we provide an overview of constructions which have been argued to involve extraction from noun phrases:

- *was-für* split:

  (59) *Was* hast du *für Bücher* gekauft?
  what have you for books bought
  'What kind of books did you buy?'

- *w-alles* split:

  (60) *Was* hast du *alles* erlebt?
  hat have you all witnessed
  'What kind of things did happen to you?'

- Quantifier floating:

  (61) *Die Kinder* haben *alle* ein Eis bekommen.
  the children have all an ice cream got
  'All the children got an ice cream.'

- NP split:

[1] For a more detailed description of the phenomenon see Krenn and Erbach (1994).

(62) *Ein schöneres Buch* habe ich noch *keines* gelesen.
a nicer book have I yet none read
'I haven't read a nicer book yet.'

- Partitive split:

(63) *Von uns* hat *jeder* ein Eis gegessen.
of us has everyone an ice cream eaten
'Each of us ate an ice cream.'

In the following we examine how these constructions behave with respect to the possible word orders of the two parts of the split NP and whether there are similar lexical semantic restrictions as the ones we observed for the NP-PP split.

2.1. *Was-für* Split. *Was-für* split is the most restricted kind of extraction from NP. It appears in verb-second and embedded questions where the *wh*-pronoun *was* is fronted and the *für*-phrase remains in the Mittelfeld:

(64) a. *Was* hast du *für Bücher* gekauft?
what have you for books bought
'What kind of books did you buy?'

b. Ich weiß nicht, *was* er *für Bücher* gekauft hat.
I know not what he for books bought has
'I do not know what kind of books he bought.'

The reverse placement of the *was* and the *für*-phrase is not possible:

(65) * *Für Bücher* hast du *was* gekauft?
for books have you what bought

Neither is the occurrence of *was* at the beginning of the Mittelfeld:

(66) a. * Du hast *was* schließlich *für Bücher* gekauft?
you have what finally for books bought

b. Du hast schließlich *was für Bücher* gekauft?
you have finally what for books bought
'You finally bought what kind of books?'

The only possible word order is the placement of the *was* as the leftmost constituent of a *wh*-question. These facts clearly show that *was-für* split is a different construction than the splitting of PP adjuncts from NPs.

Another difference is the behaviour with respect to lexical semantic factors: there are no restrictions on *was-für* split similar to those for NP-PP split[2] (cf. Pafel (1995)):

(67) a. Was haben die Nazis für Bücher *gelesen*?
what have the Nazis for books read
'What kind of books did the Nazis read?'

b. Was haben die Nazis für Bücher *zerstört*?
what have the Nazis for books destroyed
'What kind of books did the Nazis destroy?'

If NP-PP split also was an instance of extraction from NPs it would be very difficult to explain, why in one case there are some semantic restrictions for extraction whereas in the other case these do not occur.

2.2. *W-alles* Split and Quantifier Floating. The characteristic of these two constructions is that a *wh*-pronoun or an NP is fronted while the quantifier *alle* remains in the Mittelfeld.

(68) a. *Was* hast du *alles* erlebt?
what have you all witnessed
'What kind of things did happen to you?'

b. *Die Kinder* haben *alle* ein Eis bekommen.
the children have all an ice cream got
'All the children got an ice cream.'

Sometimes the quantifier can be fronted while the rest of the NP remains in the Mittelfeld. But this is only possible if the remaining NP is a pronoun as in (69b).

(69) a. *Alle* haben *sie* ein Eis bekommen.
all have they an ice cream got
'They all got an ice cream'

[2]But, as observed by Pafel (1995), there are some other restrictions on *was-für* split. For example, extraction from the subject of a property predicate is impossible:

i. * Was sind für Feuerwehrleute intelligent?
what are for firemen intelligent
'What kind of firemen are intelligent?'

b. * *Alle* haben *die Kinder* ein Eis bekommen.
all have the children an ice cream got

The fronted NP in example (68b) can also occur at the beginning of the Mittelfeld as observed in Pafel (1993), but the quantifier *alle* cannot:

(70) a. Doch haben *die Kinder* erst gestern *alle* ein Eis bekommen.
but have the children yesterday all an ice cream got
'But already yesterday all the children got an ice cream.'

b. * Doch haben *alle* erst gestern *die Kinder* ein Eis bekommen.
but have all yesterday the children an ice cream got

Similar to *was-für* split there are no lexical semantic restrictions on the embedding verb:

(71) *Die Bücher* habe ich *alle* gelesen/ gewonnen/ ausgeliehen/ geklaut.
the books have I all read won borrowed stolen

The above examples show, that *w-alles* split and quantifier floating behave different from NP-PP split.

2.3. NP Split. In the cases of NP split, the range of elements which can be fronted is, again, very restricted:

(72) a. *Bücher* hat sie *noch keine spannenden* geschrieben.
books has she yet none exciting written
'She has not written any exciting books yet.'

b. * *Noch keine spannenden* hat sie *Bücher* geschrieben.
yet none exciting has she books written

Only the part of the NP containing the head noun can be fronted while the rest remains in the Mittelfeld.

None of the two parts of the split NP can occur at the beginning of the Mittelfeld:

(73) a. * Dieses Jahr hat *Bücher* sie *noch keine* geschrieben.
this year has books she yet none written

b. * Dieses Jahr hat *noch keine* sie *Bücher* geschrieben.
this year has yet none she books written

There is one phenomenon which at a first glance gives the impression that NP split has similar properties as the NP-PP split: the split NP can be part of a topicalized VP parallel to the interaction of NP-PP split and VP topicalization discussed in De Kuthy and Meurers (to appear):

(74) *Bücher* geschrieben hat sie *noch keine.*
books written has she yet none
'She hasn't written any books yet.'

On the other hand, there are cases of NP split which are problematic for any theory assuming that the two sorts of a split NP originate from one constituent:

(75) a. *Schönere Bücher* habe ich noch *keine* gelesen.
nicer books have I yet none read
'I haven't read any nicer books yet.'

b. Ich habe noch *keine schöneren/*schönere Bücher* gelesen.
I have yet no nicer books read

In (75a), the adjective *schönere* as part of the topicalized NP has to be in the strong form whereas in the non-split NP in (75b) it must occur in the weak form. This corresponds to the general pattern of adjective forms within NPs: NPs lacking a determiner require strong declension on adjectives and NPs without a determiner require weak declension. The morphological shape of the topic constituent in (75a) thus suggests that it is an independent determiner-less NP.

Thus on the one hand the observations presented above suggest that NP split should not be analyzed as extraction from NP. On the other hand this construction should also not be analyzed along the lines of NP-PP split because the two parts of split NPs have to occur as two completely independent categories, whereas the PP and the NP of the NP-PP split construction can always occur as one single constituent, for example in the Vorfeld.

2.4. Partitive Split. In the case of partitive quantifiers like *niemand von uns* (none of us), *viele von den Büchern* (many of the books) either the quantifier or the *von*-PP can be fronted independently of each other:

(76) a. *Niemand* hat *von uns* gestern das Fußballspiel gesehen.
no-one has of us yesterday the football match watched
'None of us watched the football match yesterday.'

b. *Wer* hat *von euch* gestern das Fußballspiel gesehen?
who has of you yesterday the football match watched
'Has anyone of you seen the football match yesterday?'

c. *Von uns* hat gestern *niemand* das Fußballspiel gesehen.
of us has yesterday no-one the football match watched

Similar to NP-PP split, either the quantifier or the partitive PP can occur at the beginning of the Mittelfeld:

(77) a. Erstaunlicherweise hat *niemand* gestern *von uns* das Fußballspiel gesehen.
surprisingly has no-one yesterday of us the football match watched
'Surprisingly, none of us watched the football match yesterday.'

b. Erstaunlicherweise hat *von uns* gestern *niemand* das Fußballspiel gesehen.
surprisingly has of us yesterday no-one the football match watched

Finally, the quantifier can also take part in the Oberfeldformation:

(78) a. Ich hätte nicht gedacht,
I would not have believed,
daß er *von den Büchern* würde *so viele* kaufen wollen.
that he of these books would so many buy want
'I wouldn't have believed that he would want to buy so many of these books.'

All these data show that partitive split behaves parallel to NP-PP split and thus should also be analysed via reanalysis of the quantifier and the partitive PP and not as extraction from NP. The only difference is the behaviour of partitive split with respect to the embedding verb:

(79) *Von den Büchern* habe ich *nur eines* ausgeliehen/ geklaut/ gelesen/ verloren.
of the books have I only one borrowed / stolen / read / lost

As quantifiers like *viele*, *eines* have a structural kind of semantics, one could possibly argue that they always combine with any verb in such a way that splitting of the *von*-PP is possible.

In section 1.4 of chapter 2 we discussed that it is questionable whether NP-PP split is also possible if the NP is further embedded by a PP.

The example in (80a) provided by Lötscher (1985), however shows that partitive split is possible even when the quantifier NP occurs inside of a PP, here headed be the preposition *bei*.

(80) a. *Von diesen 109 Belegen* fallen [bei 57 %] Topic, Thema und
of these 109 examples with 57 % topic theme and subject
Subjekt zusammen.
together

'In 57 % of these 109 examples topic, theme and subject coincide with each other.'

b. * *Aus der Renaissance* sind [bei vielen Sonaten] die Komponisten
from the renaissance are with many sonatas the composers
nicht bekannt.
not known

The example in (80b) on the other hand shows that a parallel sentence with an NP-PP split is ungrammatical.

Similarly, in section 1.1 of chapter 2 we showed that the partial NP in an NP-PP split construction can occur embedded in a VP in the *Vorfeld*, while the PP cannot. This is again exemplified by the example in (81b). The example in (81a) on the other hand shows that a PP as part of a partitive split construction can occur inside of a VP in the *Vorfeld*.

(81) a. *Von Euch* bekannt sind leider bisher [nur zwei Leute].
of you known are unfortunately so far only two people

'Only two people of you are well known so far.'

b. * *Über Fledermäuse* ausgeliehen habe ich bisher nur [ein Buch].
on bats borrowed have I so far only one book

We thus conclude that also partitive split, although it shows many similarities to the NP-PP split construction, is a different phenomenon.

All the constructions investigated in this section have been argued in the literature to be instances of extraction from NP. This raises of course the question what kind of syntactic phenomenon NP-PP split, which we have shown to be different from many other NP split phenomena, is: Is the split PP extracted from the NP or is it a different mechanism that separates the two constituents? We will turn to this question in the following chapter where we first discuss different approaches provided in the literature and then develop our own approach within the framework of HPSG.

Part II

Aspects of a Theoretical Interpretation

CHAPTER 4

Syntactic Aspects

1. Reanalysis contra Extraction

In this section, we discuss a number of proposals from the literature dealing with the syntactic properties of embedded PP dependents. We start with a work dealing with the phenomenon in English, the dissertation of Horn (1975). To our knowledge it is the first work that discussed the phenomenon of PP movement extensively and many of the observations made for English also carry over to the German data.

1.1. The Noun Phrase Constraint (Horn, 1975). Horn starts his investigations with the observation that the four constraints that were proposed by Ross (1967) to prohibit movement of any element which is dominated by NP except the object of the preposition in an NP of the form [NP PP]$_{NP}$ are not sufficient to account for the whole range of data. The four constraints which Ross (1967) proposed are (i) the *Complex NP Constraint*, which prohibits movement out of S nodes embedded by an NP, (ii) the *Left Branch Condition*, which disallows movement out of the left branch of an NP if this branch is again an NP, (ii) the *Sentential Subject Constraint*, which prohibits movement from an embedded sentence when it is dominated by an NP which is immediately dominated by S and, finally, (iv) the *PP Movement Constraint* disallowing movement of an entire PP out of an NP. The only kind of movement that is still allowed is the one shown in (82)[1] where the object of the embedded PP *about* has been moved.

(82) Who did John read a statement about?

Horn (1975) observes that these constraints also incorrectly license sentences as in (83) and (84).

[1] All the example sentences in this section, are taken from Horn (1975, ch. 2.3).

(83) * Who were books about read by John?

(84) a. * What did John destroy a book about?
b. * Who did Ralph steal a picture of?
c. * Which factory did everyone deplore the damage to?

In (83) an NP has been moved out of a PP embedded in the subject of a passive sentence. And in (84) the objects of the preposition are moved out of non-subject NPs.

Horn (1975) thus concludes that what is needed is a constraint which forbids movement from prepositional phrases embedded in an NP. He further observes that if such a constraint is added to the above four constraints formulated by Ross (1967) one obtains a grammar in which no element may be moved out of a dominating NP. He therefore proposes to replace all the restrictions of Ross' with one constraint, the NP Constraint, which he states as follows:

> The NP Constraint (NPC): No constituent which is dominated by NP can be moved from that NP by a transformational rule.

This constraint accounts for the ungrammaticality of all the examples in (83) and (84). It can also account for the ungrammaticality of the examples shown in (85) in which the object of a PP embedded in a "derived or mixed NP" has been fronted.

(85) a. * Who did Chomsky review his criticism of?
b. * Who did we deplore the brutal murder of?

But there exists a large class of sentences like (82) and the ones shown in (86) that appear to be strong counter-examples to the NP Constraint.

(86) a. Who did Bill write a book about?
b. Who did Ralph paint a picture of?
c. What did Einstein formulate a theory about?

Horn observes that these kinds of examples show some properties which the ungrammatical ones as in (84) do not show. Firstly, not only the object of the preposition can be fronted as in (86), but also the entire prepositional phrase, as shown in (87).

(87) About whom did Bill write a book?

As shown in (88), this is not possible with the sentences in (84).

(88) a. * About whom did Bill destroy a book?
b. * Of whom did Ralph steal a picture?

Another difference according to Horn is that in passive sentences, the NP of sentences like in (86) can appear as the subject at the beginning of the sentence independently of the PP object. This is illustrated by (89).

(89) a. A book was written about Nixon by Bill.
b. A picture was painted of Henry VIII by Ralph.

This option is not available with sentences such as the ones in (84), which is exemplified by (90).

(90) a. * A book was destroyed about Nixon by Bill.
b. * The damage was deplored to the factory by everyone.

The conclusion Horn draws from this difference is that the sentences for which this transformation is grammatical, such as (91), such as those in (92), where the PP is a verb modifier and not part of the NP.

(91) Bill wrote a book about Nixon.

(92) Bill put the tools in the shed.

In sentences like (92), one can either front the object of the PP or the entire PP as shown in (93) and passive transformation can apply to the object NP leaving the prepositional PP behind, as shown in (94).

(93) a. Which shed did Bill put the tools in?
b. In which shed did Bill put the tools?

(94) The tools were put in the shed by Bill.

Horn thus proposes to assign sentence like (91) the deep structure in (95), where the NP and the PP do not form one constituent. Sentences as in (84) on the other hand have a deep structure where the PP is part of the object NP.

(95) Bill [$_{VP}$ wrote [$_{NP}$ a book] [$_{PP}$ about Nixon]].

The NP Constraint Horn provides then disallows movement for sentences as in (84), but movement of the PP or the object of the PP is possible as in (86) and (87) because nothing has to be moved out of an NP.

However, since sentences like (96), where the NP object including the PP occurs as the subject of a passive sentence, are grammatical, Horn has to assume that sentences like (91) have in fact two deep structures. In addition to the one shown in (95), they also have a deep structure where the NP and the PP form one constituent as shown in (97).

(96) A book about Nixon was written by Bill.

(97) Bill $[_{VP}$ wrote $[_{NP}$ a book about Nixon]].

In other words, Horn proposes that verbs like *write* are subcategorized so that they can occur in the two frames shown in (98).

(98) a. $[\_\_ \text{(NP)}]_{VP}$
b. $[\_\_ \text{(NP)(PP)}]_{VP}$

Verbs like *destroy*, on the other hand, are limited to the structure (98a).

Horn further observes that this "two-structure analysis" can explain some other phenomena in connection with NPs and PPs which could not easily be accounted for in an alternative "one-structure analysis". First of all, the two-structure analysis can account for certain facts about quantifier scope. When certain quantifiers as *his first five* occur in sentences like (91), they are ambiguous as illustrated by the example in (99).

(99) John wrote <u>his first five</u> books about Nixon in 1965.

In one reading, the scope of the quantifier includes *books*, i.e., one talks about the first five books John ever wrote. In the other reading, the scope includes *books about Nixon*, i.e., one talks about the first five books about Nixon that John wrote (while these might be his sixteenth through twentieth books he wrote in total). According to Horn, if the same quantifier occurs in a sentence like (100), it is unambiguous and the scope of the quantifier can only be *books about Nixon.*

(100) John destroyed his first five books about Nixon.

He thus concludes that the two possible scopes for (99) correspond to the two possible structures for this sentence in the two-structure analysis, while the single scoping for (100) corresponds to its single possible structure. Horn further notices that a sentence like (101) is unambiguous in that it can only mean the first five books John ever wrote.

(101) Who did John write his first five books about?

This follows under Horn's approach from the fact that one can only front the object of the preposition in the deep structure where the NP and the PP do not form one constituent, in which case the quantifier does not have scope over the PP.

Another argument Horn provides in favour of his two-structure analysis concerns pronominalization. He observes that in an NP containing modifiers it is not generally possible to replace the head noun together with the determiner by a pronoun as the sentences in (102) show.

(102) a. * I saw the large it yesterday
b. * John destroyed it about Nixon
c. * Einstein attacked it about relativity

But in sentences like (91), this is possible as shown in (103).

(103) a. Bill wrote it about Nixon.
b. John painted it of Henry VIII.

Again, Horn argues that the difference in grammaticality between the examples in (102) and (103) can easily be accounted for in his two-structure analysis by deriving the grammatical examples in (103) from a deep structure in which the NP object and the PP are separate constituents in the VP.

Although Horn (1975) can cover a broad range of data with his two-structure approach to NP-PP split in English, his approach still misses two important generalizations. First of all, how can it be motivated that some transitive verbs have two subcategorization frames, one where they select one object NP and one where they select a PP in addition to the object NP? Can these two frames be related to each other or can one be derived from the other systematically? Secondly, Horn distinguishes sentences with VPs containing picture nouns and VPs like *write a book* from other VPs containing an object NP like *destroy a book* without providing an independent criterion determining which VP falls into which class explaining what the difference between these VPs is.

1.2. A Reanalysis Rule for German. In his discussion of extraction regularities of German, Fanselow (1987) also comes to the conclusion that extraction of PPs from NPs should be disallowed. Such a restrictive assumption of course raises the question how to account for examples like (104) where a PP has been fronted while the embedding NP remains in the *Mittelfeld*.

(104) a. Von Goya hat er auch viele Bilder zerstört.
of Goya has he also many pictures destroyed
'He also destroyed many pictures of Goya.'

b. Aus Wien ist wieder keine Post dabei.
from Vienna is again no mail there
'There is again no mail from Vienna.'

Fanselow remarks that there are other cases of NP-PP split which show that the construction cannot be explained by extraction. First of all, he observes that the PP can occur separate from the NP (105) in the *Mittelfeld* as well.

(105) Es hängen sicherlich *von Rubens* [mehr Bilder] bei mir als bei Dir.
there hang certainly of Rubens more pictures at me than at yours
'There are certainly more pictures by Rubens at my place than at yours.'

Because the *Mittelfeld* is usually not a landing site for extraction, it is unclear how the order of the PP *von Rubens* and the NP *mehr Bilder* could be derived via extraction of the PP.

Secondly, Fanselow notices that also the NP can be fronted independently of the PP as shown in (106).

(106) [Den Vater] habe ich *von Karl* noch nicht gesehen.
the father have I of Karl yet not seen
'I have not seen Karl's father yet.'

He remarks that it is not obvious how fronting of the NP *den Vater* can be derived via extraction. The PP cannot be extracted from the NP in fronted position because it has not been moved into a position which usually is a landing site for extraction. On the other hand the NP *den Vater* can also not be separated from the PP via movement because it does not form one constituent in the NP [*den* [*Vater* [*von Karl*]]].

Fanselow concludes that the above data should not be derived by extraction. Instead, he assumes that a reanalysis rule breaks up the NP such that besides the structure in (107a) the structure in (107b) exists as well.

(107) a. $(_{VP}(_{NP}$ det N PP$)V)$
b. $(_{VP}(_{NP}detN)(PP)V)$

After reanalysis, the NP and the PP are sisters in the VP. Independent of each other they can be extracted or permuted within the *Mittelfeld*.

Unfortunately, he does not discuss when the reanalysis rule that splits up NPs should apply. He remarks that it is not generally possible to separate the PP from the NP and proves the examples in (108) to illustrate this. But he does not explain why the reanalysis rule should not apply in these cases.

(108) a. * Auf welchen Planeten sahen wir die Landung?
on which planet saw we the landing

b. * Mit welchem Hund haben wir eine Frau getroffen?
with which dog have we a women met

1.3. A Refinement of the Reanalysis Approach. In his investigation of the properties of NP-PP split in German, Grewendorf (1989) generally agrees with Fanselow (1987) in that the construction should not be licensed by movement but with the help of a reanalysis rule which breaks up the NP into two sister constituents, an NP and a PP. But he states that "Fanselow's suggestion is indeed a step in the right direction, but it does not go far enough."(Grewendorf, 1989, p. 42). Grewendorf claims that it is incorrect to assume that the NP and the PP are on the same structural level within the VP as proposed by Fanselow in his reanalysis approach. Instead, Grewendorf (1989, p. 45) suggests a second reanalysis process which "not only breaks up the NP, but forms a *complex verbal expression* with the head NP and the verb", as shown in (109).

(109) $[_{VP}$ PP NP+V$]$

The plus in the structure is intended to represent the formation of this complex verbal expression.

Grewendorf provides the following empirical arguments for such a second reanalysis process. First of all, the NP can take part in the so-called *Oberfeld* formation. In the ordinary *Oberfeld* construction (cf. Bech (1955)), particular verbs can precede the verbal cluster instead of following it as illustrated in (110).

(110) a. daß er sie tanzen sehen *wird*
that he her dance see will

b. daß er sie *wird* tanzen sehen
that he her will dance see
'that he will see her dance'

Grewendorf observes with the examples in (111) and (112) that in the NP-P split construction, it is possible to relocate the NP without the PP to the right of the *Oberfeld* verb.

(111) Niemand hätte gedacht,
'No one would have thought'

a. daß Hans einen Sieg über Becker [erringen können würde].
that Hans a victory against Becker win be able to would

b. daß Hans *über Becker* würde [einen Sieg] erringen können.
that Hans against Becker would a victory win be able to
'Nobody would have thought that Hans could win against Becker.'

(112) a. daß ihm ein Sieg über Becker glücken können würde
that him a victory against Becker succeed in be able to would

b. daß ihm *über Becker* würde ein Sieg glücken können
that him against Becker would a victory succeed in be able to
'that he would be able to succeed in winning against Becker'

The (b)-examples show that not only the verbs *erringen* and *glücken* can be part of the verbal complex, but also the argument NP *ein Sieg* without its PP dependent *über Becker*. He takes this to show that the NP and the main verb form a particular kind of unit.

The second argument that Grewendorf provides in favour of his two-step reanalysis approach is related to topicalization phenomena. The NP-constituent, but not the PP-constituent of a reanalyzed NP can be topicalized together with the embedding verb, as shown in (113) and (114).

(113) a. Einen Sieg errungen hat Hans über Becker.
a victory attained has Hans over Becker
'Hans attained a victory over Becker.'

b. * Über Becker errungen hat Hans einen Sieg.
over Becker attained has Hans a victory

(114) a. Ein Sieg glücken wollte ihm über Becker nicht.
a victory succeed would him over Becker not
'He could not succeed in winning against Becker.'

b. * Über Becker glücken wollte ihm ein Sieg nicht.
over Becker succeed would him a victory not

Finally, Grewendorf very briefly hypothesizes under what conditions reanalysis of an NP into an NP and a PP can take place. He observes that after reanalysis, the syntactic configuration has changed in such a way that the PP then has the status of a V complement. Grewendorf concludes that a reanalysis should thus only be possible "if some kind of thematic restructuring takes place to the effect that the verb alone or the complex verbal expression formed by NP-incorporation theta-marks the isolated PP" (Grewendorf, 1989, p. 47).

1.4. Criticism of the Reanalysis Approach. Although the reanalysis approach to NP-PP split in German proposed by Fanselow (1987) and Grewendorf (1989) seems plausible and makes correct predictions concerning possible word orders, the approach has been rejected by several authors. On the one side this is motivated with technical problems, but, more interestingly, certain empirical problems are brought forward. We will discuss these works criticizing the reanalysis approach in the following subsections.

1.4.1. *Abstract Incorporation (Müller, 1991).* The main objection in the work of Müller (1991) is that it is unclear how the posited reanalysis rule can be formalized within the GB framework. Müller nevertheless also wants to base his account on the assumption that NPs are strict barriers for extraction and thus needs another way of explaining the grammaticality of the NP-PP split data.

The solution he suggests is so-called "abstract N-V incorporation" as proposed in Baker (1988). Baker develops the notion of noun incorporation for languages in which the root noun of the argument of a verb appears as part of the verb form rather than as an independent phrase. Syntactically, noun incorporation is derived by adjoining the root noun to the verb in question by Move-α. Overt noun incorporation cannot be found in German. But, as Müller and Sternefeld (1995) in citing Chomsky (1987) adhere to, "if some phenomenon is observed overtly in certain languages, then it probably applies covertly in all languages in some manner". In addition, Baker (1988) introduced the notion of covert (or abstract) incorporation. In case of such abstract noun incorporation, "head movement of the root noun applies only at LF and can be read off at S-structure by means of coindexation of N and V, thus producing S-structural non distinctness" Müller and Sternefeld (1995). Müller (1991) assumes that this coindexation of N and V makes the complex NP transparent for *wh*-movement of the PP. The idea behind this abstract incorporation is that on LF, complex predicates are build, like *Buch-schreiben* or *Film-sehen* For others, like *Buch-klauen* such noun incorporation is not possible and thus the NP is opaque for extraction of the PP. Müller (1991) further assumes that N-V incorporation for subjects is never possible to be able to account for ungrammatical examples as in (115).

(115) * *Über wen* hat Diedrich Diederichsen [ein Buch] beeindruckt?
on whom has Diedrich Diederichsen a book impressed

According to Baker (1988), abstract incorporation of X^0 heads of subjects leads to a violation of the ECP because of lacking c-command. The trace of the incorporated subject *Buch* in (115) therefore is not licensed and the example is ungrammatical.

Although Müller (1991) assumes that NPs are strict barriers for extraction he does not propose a theory which accounts for the NP-PP split data without extraction. Instead, he suggests a mechanism which for certain constructions permits extraction from NP. This has the disadvantage that he cannot account for the data which Fanselow (1987) and Grewendorf (1989) took to motivate reanalysis, in particular examples showing fronting of the NP without the (106), reordering in the *Mittelfeld* (105) or topicalization including the partial NP (113).

1.4.2. *Against Incorporation (Fanselow, 1991).* Fanselow (1991) returns to the subject himself and in trying to falsify his reanalysis approach searches for arguments showing that in the NP-PP split construction, the PP has been really extracted from the NP.

He also rejects, however, the incorporation approach proposed by Müller (1991) as discussed above. Fanselow (1991, p. 184) argues that such an approach cannot capture the lexical differences between sentences as in (116) with the assumption that abstract incorporation is only possible if the N+V combination can be a "possible predicate".

(116) a. Über wen hast Du ein Buch gelesen?
about whom have you a book read
'Who did you read a book about?'

b. * Über wen hast Du ein Buch zerrissen?
about whom have you a book destroyed
'Who did you destroy a book about?'

According to Fanselow it should be expected that languages differ only slightly with respect to what a possible predicate is. But the possible incorporations one finds throughout languages do not show any universal notions of "possible predicate" which could provide an explanation why *Buch lesen* (*to read a book*) in (116) is such a possible predicate but not *Buch zerreissen* (*to destroy a book*).

Secondly, Fanselow observes that sentences like (116b) (Fanselow, 1991, p. 185) become much more acceptable when occurring in the right context as in (117).

(117) Schau her, was Britt, deine Tochter, mit meiner Biographiensammlung angestellt hat! Die Bücher sind zerrissen, bemalt und mit Brei bekleckert! Zwei meiner Bände über Carnap sind entzwei! Drei von meinen Biographien über Bloomfield sind zerfetzt und über Chomsky hat sie sogar alle Bücher zerrissen.

'Look, what Britt, your daughter, did with my collection of biographies! The books are torn up, coloured and stained with pap! Two of the volumes on Carnap are broken! Three of my biographies of Bloomfield are torn up and on Chomsky she tore up all of the books.'

Fanselow concludes that context-dependent factors should not determine grammatical principles regulating syntactic processes like incorporation.

On the syntactic side, Fanselow (1991, p. 187) argues that in a sentence as in (118a) the PP could also be analyzed as an argument of the verb *schreiben*, which is supported by sentences like (118b) where *schreiben* occurs only with a PP argument.

(118) a. Über welches Thema hast du einen Aufsatz geschrieben?
about which topic have you a paper written
'Which topic did you write a paper about?'

b. Über welches Thema schreibst Du denn?
about which topic write you then
'Which topic do you write about?'

According to Fanselow, the sentence in (119) shows that this PP-argument of *schreiben* can also be licensed if the NP-argument is present.

(119) Günter schrieb sein erstes Buch über Chomsky.
Günter wrote his first book about Chomsky

The sentence has two readings: in the one reading one talks about the first book Günter ever wrote and this was about Chomsky, (120a) shows the appropriate structure representation for this reading. In the other reading Günter already wrote several books and now one talks about the first book he wrote about Chomsky. According to Fanselow, this reading corresponds to the structural representation in (120b).

(120) a. [$_{NP}$ sein erstes Buch] [$_{PP}$ über Chomsky] schreiben
b. [$_{NP}$ sein erstes Buch [$_{PP}$ über Chomsky]] schreiben

As a further argument for the existence of a structure in which the NP and the PP are sisters, he provides the example in (121).

(121) Was hat er über Chomsky geschrieben?
what has he about Chomsky written
'What did he write about Chomsky?'

He argues that in the fronted *wh*-pronoun *was* there is no possible position for a trace of the PP *über Chomsky* left behind in the *Mittelfeld*.

Thus the above data show cases where the NP and the PP occur as sisters. To show that there are also cases where the PP cannot be a sister of the NP although they occur separate from each other Fanselow provides the example (122). He argues, that the two possible readings of the question can only be explained if the PP can also be extracted from the NP.

(122) Über welches Thema hat Günter alle Bücher geschrieben?
about which topic has Günter all books written
'Which topic did Günter write all his books about?'

The first possible reading of (122) is: What is the topic of all the books Günter ever wrote? This reading corresponds to the structure in (120a) with the NP and the PP as two sister constituents. But in the second reading, the PP is in the scope of the quantifier *alle*: Which topic is such that only Günter wrote books about it? Fanselow concludes that the only possible underlying structure is the one in (120b), that the PP has been extracted from the NP and that thus the possibility of PP extraction from NPs in German exists. But it is questionable whether the fact that the PP is on scope of a quantifier really means that the two have to be part of the same NP. The example in (123).

(123) *Über welches Thema* hat Günter [alles] geschrieben?
about which topic has Günter everything written
'About which topic did Günter write everything?'

Parallel to the *wh*-pronoun in (121) there is no position for a trace of the fronted PP *über welches Thema* within the quantifier *alles*. The question should thus have only one possible reading: What is the topic of everything Günter ever wrote? But similar to the question in (122) also this question has a second reading: Which topic is such that it is Günter who wrote everything about it? Under the assumption that the quantifier *alles* cannot contain a trace of the fronted PP this reading is possible with the PP and the NP as two sister constituents.

Fanselow further remarks that not all verbs license an additional PP-complement like *schreiben*. In examples with a verb which does not take such a PP complement, like *verfassen* in (124) the fronted PP thus has to be extracted from the NP.

(124) Über welches Thema hat er einen Hetzartikel verfaßt?
about which topic has he an agitational article written
'Which topic did he write an agitational article about?'

Under this assumption it is again predicted that a parallel question containing a quantifier in the NP should have only one possible reading. The question with such a quantified NP shown in (125), however, has the same two possible readings as the question in (122).

(125) Über welches Thema hat Günter alle Bücher verfaßt?
about which topic has Günter all books written

Summing up, none of Fanselow's arguments convincingly motivates that in case of NP-PP split data there are two possibilities: either the PP has been extracted from the NP or the embedding verb allows an additional PP complement in which case the PP is a sister of the NP within the VP. Furthermore, Fanselow does not elucidate under which circumstances and with which verbs apart from *schreiben* this second possibility should exist.

Instead, Fanselow provides more data supporting his original reanalysis approach. With extraction, some kind of subject-object asymmetry disallowing extraction from subject NPs would be expected. But Fanselow provides the examples in (126) showing that PPs embedded in subject NPs can be fronted equally well.

(126) a. Über Boris Becker hätte ihm ein Sieg eher geschadet als genützt.
over Boris Becker had him a victory more harmed than been of advantage

b. Auch über Maria erreichte ihn eine schlimme Nachricht.
also about Maria reached him a terrible news

c. Über Boris Becker würde mich ein Sieg von Ivan Lendl schon beeindrucken.
about Boris Becker would me a victory of Ivan Lendl surely impress

The verbs in (126) are so-called theme-verbs, i.e., their subject argument bears the theme role. These verbs are generally assumed to select ordinary non-ergative subjects. Fanselow concludes that the examples show that subjects in German are not barriers for PP extraction.

Fanselow's general conclusion thus is that movement of PPs out of NPs is possible. We already showed that his arguments supporting such an approach are questionable. In addition, he leaves many of the questions which come with such an approach to NP-PP split unanswered. It is, for example, not clear how he could account for data as in (127), the counterpart to (124), where the NP instead of the PP has been fronted.

(127) Wieviele Hetzartikel hat er über Syntax verfaßt?
how many articles has he about syntax written
'How many agitational articles did he write about syntax?'

According to Fanselow, in this case the PP must have been extracted from the NP because *verfassen* is not a verb like *schreiben* which allows an additional PP object. If one wants to maintain an extraction analysis for such data, one is forced to adopt a remnant-movement analysis at this point, i.e., an analysis which allows an NP containing a trace, as *wieviele Hetzartikel* in (127) to occur in the *Vorfeld.*

Furthermore, it is not clear how Fanselow wants to account for data which he provided in connection with his reanalysis approach, where the PP and the NP occur separate from each other in the *Mittelfeld* such as the example (105) we showed on page 48.

1.4.3. *Against Reanalysis (Fortmann, 1996).* Fortmann (1996) takes Fanselow's reanalysis rule as his main object of criticism but in the end makes a very similar proposal for the NP-PP split construction as Fanselow (1991): In some cases, the PP has been extracted from the NP, in others it can occur outside of the NP as an adjunct to the embedding verb.

Fortmann's objection to the reanalysis approach is that on the one hand it licenses too many constructions and on the other hand it is too restrictive.

Fortmann (1996, p. 26) provides the example pair in (128) to show that a reanalysis approach is not restrictive enough.

(128) a. Welche Startbahn hat der Oberhirte ein Verlangen zu küssen verspürt?
which airstrip has the pope a desire to kiss felt
'Which airstrip did the pope want to kiss?'

b. * Welche Startbahn hat der Oberhirte ein Verlangen seiner Schafe zu küssen verspürt?
which airstrip has the pope a desire of his sheep to kiss felt

In both examples in (128), the NP *welche Startbahn* has been fronted out of the VP *zu küssen* which is a complement of the object NP *ein Verlangen.* The only difference between the two examples is that in (128b) the NP *ein Verlangen* further contains a postnominal genitive, the NP *seiner Schafe.* Under a reanalysis approach, the NP *ein Verlangen* and the VP *zu küssen* would be reanalyzed as two sister constituents embedded by the main verb *verspürt* and the fronted NP *welche Startbahn* would have been extracted from the VP *zu küssen.* The genitive NP in (128) would not be involved in this reanalysis process and would remain within the NP. There would thus be no difference between the structures of the two examples which could explain the difference in grammaticality.

Fortmann's line of argumentation in this case is very questionable because it is usually assumed that in German VPs embedded by an NP are strict islands for extraction and examples like (128a) are judged as ungrammatical. Lutz (1995, p. 36), for example, provides the example in (129) showing that fronting an NP out of an infinitive embedded by an NP results in ungrammaticality.

(129) * Wen hat Peter ihm die Behauptung gestört zu haben geglaubt?
whom has Peter him the claim disturbed to have believed

In our opinion, the sentence in (128a) is thus ungrammatical as well so that no contrast in the example pair in (128) is to be explained.

Fortmann argues the reanalysis approach of Fanselow (1987) to be too restrictive because it does not license those cases where the separated PP originates from a subject NP as shown in (130).

(130) *Von Fritz* hat [der Bruder] angerufen.
of Fritz has the brother called
'Fritz's brother called.'

The reanalysis rule as proposed by Fanselow (1987) only applies to constituents within the VP. As it is commonly assumed within the GB framework that the subject is not base-generated within the VP,[2] it is predicted that subject NPs cannot be reanalyzed so that an embedded PP should not be allowed to occur separate from the subject NP. The grammaticality of the example in (130) is thus unexplained.

Fortmann (1996) therefore concludes that in the case of fronted PPs these have been extracted from the embedding NP. He then observes that not all cases of fronting a PP are grammatical as the examples in (131), taken from Fortmann (1996, p. 108), show.

(131) a. *Von wem* hat [der Bruder aus Köln] angerufen?
of whom has the brother from Cologne called
'Whose brother called?'

b. * *Aus welcher Stadt* hat [der Bruder] angerufen.
from which city has the brother called

c. *Von wem* hat er [ein Buch] gekauft/ verkauft?
of whom has he a book bought sold
'Who did he buy/sell a book of?'

d. * *Worüber* hat er [ein Buch] gekauft verkauft?
about what has he a book bought sold

e. * *Wogegen* hat er [ein Buch] gekauft verkauft?
against what has he a book bought sold

[2]The base position of subjects in German has widely been discussed in the GB literature of the last 20 years. As far as we see, the result of this discussion is inconclusive. In particular, Haider (1993) maintains that subjects originate from within the VP.

f. *Von wem* hat er [ein Buch] gelesen?
of whom has he a book read
'Who did he read a book of?'

g. *Worüber* hat er [ein Buch] gelesen?
about what has he a book read
'What did he read a book about?'

h. * *Wogegen* hat er [ein Buch] gelesen?
against what has he a book read

i. *Worüber* hat er [einen Artikel] geschrieben?
about what has he an article written
'What did he write an article about?'

Fortmann takes these examples to show that extraction of a *von*-PP is always possible whereas it is more restricted in the case of other prepositions. The question thus is, in which respect the *von*-PPs differ from other PPs and how this can explain the differences in extraction possibilities.

Fortmann observes that in those cases where a PP different from a *von*-PP is fronted, as shown in (132), this PP can also occur as a dependent of the verb without an embedding NP.

(132) a. Worüber hast du gelesen?
about what have you read
'What did you read about?'

b. Worüber hat er geschrieben?
about what has he written
'What did he write about?'

He therefore assumes that in the examples (131g) and (131i) the fronted PP *worüber* has not been extracted from the NP left behind in the *Mittelfeld*, but has been fronted as an adjunct of the main verb.

With *von*-PPs this is not possible, as Fortmann shows with the examples in (133).

(133) a. * Von wem hat angerufen?
of whom has called

b. * Von wem hast du gelesen?
of whom have you read

He thus concludes that the *von*-PPs in (131) have been extracted from the embedding NP. He further assumes that *von*-PPs receive a theta-role from the embedding noun and are thus generated in an argument position of the noun.

All other PPs are generated in a non-argument position, i.e., in an adjunct position of the NP. Extraction from this position results in a violation of the Empty Category Principle and Fortmann thus has to provide a different explanation for the grammaticality of examples like (131g) and (131i). He therefore uses his above observation that in some cases the PP can also occur as an adjunct of the VP. He claims that the only possible explanation for examples as (134), where the NP has been fronted leaving the PP behind, is that the PP has already been generated as an adjunct of the VP and not of the NP.

(134) [Eine Geschichte] hat er *darüber* erzählt.
a story has he about that told
'He told a story about this.'

If the PP were extracted from the NP the topicalized constituent would contain a trace which is not c-commanded by the PP in the *Mittelfeld*. Under Fortmann's view, a movement analysis thus is not available for these examples.[3] He claims that this is further supported by the fact that with *von*-PPs, a word order as in (134) is not possible, as (135) shows.

(135) * [Eine Geschichte] hat er *von Fritz* erzählt.
a story has he of Fritz told

Under the assumption that *von*-PPs can be extracted from NPs and do not occur as adjuncts of the main verb, the only possible structure for (135) would be the one, where the fronted NP contains a trace of the *von*-PP left behind in the *Mittelfeld*. The reason for the ungrammaticality of the example according to Fortmann is thus the missing c-command relation between the PP and its trace in the fronted NP.

But this line of argumentation is again very questionable because there does not seem to be such a big difference between the acceptabilities of the examples (134) and (135) as Fortmann assumes. If embedded in some context, as indicated by the question in (136), the example (135) is as acceptable as (134).

[3] This is, of course, exactly the remnant movement configuration assumed by Müller (1996), who suggests a highly technical solution to overcome the missing c-command problem.

(136) Was hat er von Fritz erzählt?

'What did he tell about Fritz?'

a. Eine Geschichte hat er von Fritz erzählt.
a story has he about Fritz told

'He told a story about Fritz.'

One can easily construct more examples with a fronted NP and a *von*-PP remaining in the *Mittelfeld* which are perfectly acceptable as the one in (137a).

(137) Hat nicht der Bruder von Peter angerufen?

'Didn't Peter's brother call?'

a. Nein, [der Vater] hat *von Peter* angerufen.
no the father has of Peter called

'No, Peter's father called.'

There is another set of examples that is problematic for Fortmanns approach. These are those cases where the PP is, according to him, an adjunct of the NP and should thus not be extractable from this NP. He claimed, as shown in (132), that in these cases the PP can only occur separate from the NP if the PP can also occur as and adjunct of the verb, even without the NP. Such PPs, however, occur separate from the NP although they cannot occur as an adjunct of the VP on their own as shown in (138).

(138) a. *Über Syntax* hat Fritz [ein Buch] ausgeliehen.
on syntax has Fritz a book borrowed

'Fritz borrowed a book on syntax.'

b. * *Über Syntax* hat Fritz ausgeliehen.
on syntax has Fritz borrowed

This either shows that the PP can occur separate from the NP as a sister of the NP although it is not an independent adjunct of the VP or that the PP is extracted from the NP also in examples as in (138a).

Summing up, although Fortmann tries to give precise criteria to distinguish those cases where a separated PP has been extracted from an NP from those where it is an adjunct of the main verb and thus a sister of the NP, it remains questionable whether these two analyses are really necessary for NP-PP split. We provided several examples showing that the two cases Fortmann distinguishes are not so different frome each other, which, in our opinion, shows that a uniform analysis for all NP-PP split cases is preferable.

1.5. Arguments for extraction? Now that we have seen that approaches which assume two different analysis for NP-PP split data, extraction for some of the cases, generation of the PP outside the NP for other cases, are quite problematic let us now take a closer look at approaches which only use extraction to explain the word order possibilities of the NP and the PP.

1.5.1. *Extraction of adjuncts from NP (Pafel, 1993).* One of the motivations for the reanalysis approaches we discussed in section 1.1 was that NPs are usually assumed to be strict barriers for extraction within the GB framework. Pafel (1993) also assumes that complements of a noun cannot be extracted, since, according to the Barriers framework (Chomsky, 1986), they would have to cross two barriers: the NP and the DP. The ungrammaticality of examples as in (139) in which the PP complements of deverbal nouns have been fronted is taken to support this assumption.

(139) a. * *Nach der Uhrzeit* habe ich [$_{DP}$ eine [$_{NP}$ Frage *t*]] beantworten
about the time have I a question answer
müssen.
must
'I had to answer a question about the time.'

b. * *Auf Strafmilderung* haben sich [$_{DP}$[$_{NP}$
on extenuation of the punishment have self
unrealistische Hoffnungen *t*]] breitgemacht.
unrealistic hopes spread
'Unrealistic hopes on extenuation of the punishment have spread out.'

For those PPs which can occur separate from an NP, Pafel assumes that they occupy a different syntactic position — they are adjuncts of NP. Such PPs can be extracted from NP because they have to cross only one barrier, the DP. It is further predicted that this is only possible under certain circumstances since contrasts in acceptability of the NP-PP split construction as in (140) taken from Pafel (1993, p. 219) show that the extraction of adjuncts of NP is restricted.

(140) a. Über wen hat er ein Buch verfaßt?
about whom has he a book written

b. * Über wen hat er ein Buch zerrissen?
about whom has he a book torn up

According to Pafel, these differences should not be accounted for by syntactic means. Instead, they should be analyzed as semantic or pragmatic effects. We turn to this idea in chapter 5 and 6.

What Pafel does not address is the question how his extraction analysis of NP-PP split can account for those cases where the NP has been fronted leaving the PP behind such as the sentence (136) we saw above and for those cases where the PP and the NP occur separate from each other in the *Mittelfeld* such as in example (105) we saw on page 48. But there is a movement approach to NP-PP split which, at least partly, tries to address the former problem and we will take a closer look at it in the following.

1.5.2. *Remnant movement (Müller, 1996).* In his work on incomplete category fronting in German, Müller (1996), among other partial constituents as VPs and APs, extensively deals with partially fronted NPs as in (137a) on page 61. His underlying assumption is that constituents occurring in the *Vorfeld* have to be full XPs and that therefore fronted NPs like *der Vater* in (137a) must contain traces of the dependents that have been extracted prior to fronting. The fronted NPs is thus a remnant NP and this approach to partial fronting is called *remnant movement*. Such an approach raises a number of problems. The most apparent theoretical problem was already mentioned in the discussion of Fortmann's proposal in section 1.4.3, namely that the condition that traces have to be properly bound is not met by the trace in the fronted NP. The only possible binder, the PP, occurs tree configurationally too low as part of *Mittelfeld*. Müller (1996) provides a technical solution to this problem within Chomsky's minimalist program which is not of interest here.

What is of more importance for our discussion here is that G. Müller (1996, pp. 10ff) argues for a remnant-movement analysis by showing that the NP remaining in the *Mittelfeld* as in (131a) and the fronted NP in (137a) obey the restrictions to be expected from a constituent containing a trace. In the following we take a closer look at these restrictions and whether they really apply to the NP-PP split construction.

Subject-object asymmetries. Firstly, Müller (1996) claims that fronting a PP argument of a subject NP and the reverse case of fronting an incomplete subject NP result in ungrammaticality, as is shown in (141). Since it is usually assumed that subjects in German may not contain a gap, this behaviour would be predicted under a remnant-movement account.

(141) a. * *Worüber* hat [ein Buch] Karl beeindruckt?
about what has a book$_{NOM}$ Karl$_{ACC}$ impressed
'A book about what impressed Karl?'

b. * [Ein Buch] hat Karl *über Syntax* beeindruckt.
a book has Karl on syntax impressed

But we already cited several authors in showing that such subject-object asymmetries do not exist with respect to the NP-PP split construction. Fanselow (1991) provides the examples in (126) we saw on page 56 which show that even PPs embedded in non-ergative subjects can be fronted. And Fortmann (1996) observed that PPs originating from a subject NPs can occur separate from that NP with the example (130) which we saw on page 58. Similarly, Pafel (1993, p. 220) remarks that fronting PPs of agentive subject of PPs is sometimes possible as shown in (142).

(142) a. Von Wittgenstein haben die Erben protestiert.
of Wittgenstein have the inheritors protested
'Wittgenstein's inheritors protested.'

b. Von Brahms sind die Eltern gekommen.
of Brahms have the parents come
'Brahm's parents came.'

And finally, in discussing the issue of the base position of the subject in German, Haider (1993, p. 173) provides the example (143a) showing that extraction out of subjects cannot be generally ruled out.

(143) a. *Über Strauß* hat [ein Witz] die Runde gemacht.
about Strauß has a joke the round made
'A joke about Strauß went round.'

b. [Ein Witz] hat *über Strauß* die Runde gemacht.
a joke has about Strauß the round made

Interestingly, fronting the partial-NP subject from Haider's example is also grammatical, as shown by our example (143b) above. The parallel behaviour of the two examples in (141) and those in (143) is expected under a remnant-movement and a reanalysis approach – either both NPs contain a gap or both NPs have been reanalyzed as a NP and a PP, which is then extracted in the a. examples.

The above observations mean that the assumption on which G. Müller (1996) builds his argument for a remnant-movement analysis of (141b) is incorrect. In light of the grammaticality of the partial-subject examples in (126), (130), (142), and (143), both approaches lack an explanation of why the sentences in (141) are ungrammatical. As it stands, the issue discussed in this section thus does not motivate a preference for one or the other analysis.

Specificity effect. Secondly, G. Müller (1996) uses examples like (144) to show that both fronting out of an NP and the reverse case exhibit the so-called specificity effect, a classical restriction on extraction (see, e.g., Chomsky 1973, fn. 19; Fiengo and Higginbotham 1981, pp. 402ff; Chomsky 1981, p. 235; Mahajan 1992; Webelhuth 1992, p. 170).

(144) a. * *Über Syntax* hat Karl [**das** Buch] gelesen.
on syntax has Karl the book read
'Karl read the book on syntax.'

b. ?? [**Das** Buch] hat Karl *über Syntax* gelesen.
the book has Karl on syntax read

Similar to the issue discussed in the previous section, an observation made independent of the remnant movement vs. reanalysis debate sheds some doubt on this conclusion. Pafel (1993) observes that the specificity of an NP in German does not disallow fronting of its argument PP in general (145a).

(145) a. *Über Syntax* hat Karl nur **dieses**, aber nicht **jenes** Buch gelesen.
on syntax has Karl only this but not that book read
'Karl only read this book on syntax and not that one.'

b. [Nur dieses Buch] hat Karl *über Syntax* gelesen.
Only this book has Karl on syntax read
'Karl only read this book on syntax.'

Transforming Pafel's examples so that the partial NP is fronted as in (145b) also results in grammatical examples. Parallel to the last section, we thus conclude that in light of the grammatical examples in (145), the ungrammaticality of the examples in (144) cannot simply be reduced to a general restriction on movement. Both the remnant movement and the reanalysis approach thus are equivalent in that they lack an explanation for the contrast.

Specified subjects. Thirdly, G. Müller (1996, p. 12) claims that fronting the PP and the reverse case of fronting the NP is impossible if a pre-nominal possessor is present as shown in 146.

(146) a. * *Worüber* hat Antje [Karls Buch] gelesen?
about what has Antje Karl's book read

b. * [Karls Buch] hat Antje *über die Liebe* gelesen.
Karl's book has Antje about the love read

G. Müller refers to the Specified Subject Condition formulated by Chomsky (1973, p. 244) to explain the ungrammaticality of the examples in (146). This condition, which prohibits *wh*-movement across a specified subject, was introduced by Chomsky to rule out examples as in (147).

(147) * Who did you see John's picture of?

The example under this explanation is ungrammatical because the fronted *wh*-word has been extracted out of an NP containing a specified subject, the prenominal genitive *John's*. Under a remnant-movement approach, the same explanation could be given for the two examples in (146): the NP *Karls Buch* contains a specified subject and thus the PP can not be extracted.

But again Pafel (1993, p. 219) observes, independent of the remnant movement vs. reanalysis discussion, that the presence of a prenominal genitive in an NP does not prohibit fronting of the PP in general as (148a) shows.

(148) a. *Über Bismarck* habe ich [Galls Buch] gelesen.
on Bismarck have I Gall's book read
'I read Gall's book on Bismarck.'

b. [Nur Galls Buch] habe ich *über Bismarck* gelesen.
only Gall's book have I on Bismarck read
'I read only Gall's book on Bismarck.'

Also the reverse case in (148b), where the NP containing the prenominal genitive has been fronted, is grammatical.

Interestingly, Pustejovsky (1985, p. 48) and Kuno (1987, p. 13) discuss that even in English not all prenominal genitives disallow fronting of the PP, which is illustrated by their examples in (149).

(149) a. Which theorem did you read Kripke's proof of?

b. This is the story I haven't been able to get Mary's version of.

Pustejovsky and Kuno analyze such sentences as involving extraction from NP and conclude that the ungrammaticality of example (147) cannot be explained as the result of a general restriction on extraction. With respect to our topic, both the remnant movement and the reanalysis approach are thus equivalent in that they lack an explanation for the ungrammaticality of the examples in (146).

Freezing effect. Finally, G. Müller (1996, p. 23) refers to the so-called freezing effect (Ross 1967, p. 173, Wexler and Culicover 1980, p. 119) as a restriction on extraction: "extraction of one XP α from another XP β is possible only if β [. . .] has not undergone movement itself". G. Müller argues that this constraint is responsible for ruling out sentences like (150), under the assumption that the PP *worüber* has been extracted from the NP *ein Buch* which has been scrambled to the beginning of the *Mittelfeld.*

(150) * Worüber hat [ein Buch] keiner gelesen?
about what has a book nobody read
'On what topic has nobody read a book?'

Fanselow (1991, p. 187ff) shows, however, that the empirical basis of this argumentation is not convincing. He provides the example (151), which is grammatical even though it also contains the configuration supposedly causing the ungrammaticality of example (150).

(151) Worüber kann [einen Südkurier-Artikel] selbst Peter nicht am
about what can a Südkurier article even Peter not at the
Strand verfassen?
beach write
'For which topic is it the case that even Peter cannot write an article about it for the Südkurier while being at the beach.'

Instead Fanselow (1991, p. 189) correlates the ungrammatical sentence (150) with example (152), which is ungrammatical despite the fact that the PP in this example could be a dependent of the verb *schreiben*, so that the freezing effect does not apply.

(152) * *Worüber* kann [einen Südkurier-Artikel] jeder Schwachkopf am
about what can a Südkurier article every idiot at the
Strand schreiben?
beach write

'For which topic is it the case that every idiot can write an article about it for the Südkurier while being at the beach.'

Fanselow (1991) concludes that whatever is responsible for ruling out (152) would also cause the ungrammaticality of (150), i.e., the ungrammaticality of (150) is not a consequence of a restriction on the extraction of PPs from NPs. The example discussed by G. Müller (1996) thus has no bearing on the question whether the fronted PP is extracted from the NP or whether the PP is reanalyzed as a sister of the NP and then topicalized.

Summing up, neither the supposed subject-object asymmetries, the specificity nor the freezing effect data provided as evidence by G. Müller (1996) convincingly motivate the remnant-movement assumption that argument PPs are extracted out of NP. In the next section, we turn to the empirical claims made by the alternative hypothesis, the assumption that the complex NP is reanalyzed as two sister categories, a partial NP and a PP.

1.6. Predictions of a reanalysis theory. We now turn to the alternative hypothesis, the assumption that the complex NP is "reanalyzed" as two sister categories, a simple NP and a PP. Such a theory would predict that the simple NP and the PP should appear separately from each other as other sister constituents do. In the following, we want to investigate whether the data really support such a reanalysis theory.

1.6.1. *Possible Word Orders.* Regarding the word order possibilities in the Mittelfeld, we already mentioned in section 1.2 of chapter 2 that both the simple NP and the PP can appear independently at the beginning of the Mittelfeld. This was illustrated by the example (12) here repeated as (153).

(153) a. Hans hat *über Syntax* während seines Studiums [nur drei Bücher]
Hans has on syntax during his studies only three books
ausgeliehen.
borrowed

'During his studies, Hans borrowed only three books on syntax.'

b. Hans hat [nur drei Bücher] während seines Studiums *über Syntax*
Hans has only three books during his studies on syntax
ausgeliehen.
borrowed

According to observations made by Webelhuth (1992) and Diesing (1992), material occurring before sentence modifiers like *während seines Studiums* in (12) is realized outside the VP, i.e., such material has been scrambled. Thus the examples in (12) show that both the NP and the PP of an NP-PP split construction can independently be scrambled to the beginning of the Mittelfeld.

The examples in (154) on the other hand show that even if the two parts of NP-PP split occur after a sentence adverbial, other material can appear in between them.

(154) a. Hans hat schließlich [drei Bücher] bei Osiander *über Syntax*
Hans has finally three books at Osiander on syntax
gekauft.
bought
'Hans finally bought three books on syntax at Osiander.'

b. Hans hat schließlich *über Syntax* bei Osiander [drei Bücher]
Hans has finally on syntax at Osiander three books
gekauft.
bought

Further support comes from an observation made by Grewendorf (1989, p. 46): independently of the PP, the NP can be included in the so-called Oberfeldformation (cf., Bech 1955):

(155) Niemand hätte gedacht,

a. daß Hans *über Becker* würde [einen Sieg] erringen können.
that Hans against Becker would a victory win be able to
'Nobody would have thought that Hans could win against Becker.'

b. daß er *über Syntax* würde [ein Buch] ausleihen müssen.
that he on syntax would a book to borrow have to
'Nobody would have thought that he would borrow a book on syntax.'

Under a reanalysis approach one would also expect that the reverse case, where the PP instead of the partial NP is included in the Oberfeld, should be grammatical. But example (156) shows that this word order is ungrammatical in German.

(156) Niemand hätte gedacht,
nobody would have thought

a. * daß Hans [einen Sieg] würde *über Becker* erringen können.
that Hans a victory win would against Becker be able to

b. * daß er [ein Buch] würde über Syntax ausleihen müssen.
that he a book would on syntax borrow have to

A similar contrast arises with partial NPs embedded in fronted verbal constituents.

(157) a. [Ein Buch ausleihen] will niemand *darüber*.
a book borrow wants to nobody on-this
'Nobody wants to borrow a book on this topic.'

b. * [Über Syntax ausleihen] will niemand *ein Buch*.
on syntax lend wants to nobody a book

A partial NP can occur embedded inside of a fronted verbal constituent as in (157a), but its PP adjunct cannot, as shown in (157b). De Kuthy and Meurers (to appear) show, that the restriction on PPs in examples (156) and (157b) follows from a general constraint on argument realization which they formulate in the following way: "If as the result of a reanalysis process (argument attraction) a head selects both a complement and a complement of this complement then it can only combine with the indirect complement if the direct complement is realized in the projection of this head as well." The above examples are thus no counter-examples to the prediction of the reanalysis approach that the PP and the partial NP behave like independent sister constituents.

The above data thus confirm the prediction of a reanalysis-like theory that analyzes NP-PP split as involving a PP and a simple NP as two independent sister categories.

1.6.2. *Arguments from the Binding Theory?* We now want to take a look at PPs containing a referential element. The binding conditions for these elements might give us an indication of whether the position of the PP is inside or outside of the NP.

Frey (1993, p. 119) observes the following contrast for German:

(158) a. Hans_i sah die Schlange neben ihm_i.
Hans saw the snake beside him
'Hans saw the snake next to him.'

b. * Die Schlange sah Hans$_i$ neben ihm$_i$.
the snake saw Hans beside him

The explanation that Frey (1993) gives for these data, is that in (158a) the PP *neben ihm* must be part of the NP *die Schlange*, otherwise the personal pronoun *ihm* could not be coindexed with the subject NP since principle B of the Binding Theory requires personal pronouns to be free within their binding domain. In (158b), the PP is not part of the NP *die Schlange* and thus the pronoun cannot be bound by the NP *Hans*. With an anaphora inside the PP, both examples in are grammatical:

(159) a. Hans$_i$ sah die Schlange neben sich$_i$.
Hans saw the snake beside himself
'Hans saw the snake next to him.'

b. Die Schlange sah Hans$_i$ neben sich$_i$.
the snake saw Hans beside himself

Frey's explanation for this is that the PP *neben sich* in (159a) is not part of the NP *die Schlange* so that the anaphora *sich* can be bound by the NP *Hans*. According to Frey, the position of the *nach*-PP is thus ambiguous: in (158a) it is inside the NP whereas in (159a) it is outside.

If we could find a similar contrast as in (158) for NPs with PP dependents containing a pronoun, this would show, along the lines of Frey's explanation, that a PP occurring separate from its nominal head has a different syntactic structure than a PP immediately following it. (160) shows such an example pair.

(160) a. ?? Hans$_i$ las [ein Buch über ihn$_i$].
Hans read a book about him.
'Hans read a book about himself.'

b. * [Ein Buch] las Hans$_i$ *über ihn$_i$*.
a book read Hans about him

Example (160b), where the PP *über ihn* containing a pronoun occurs separate from the head noun *Buch*, is clearly ungrammatical. Example (160a), where the PP immediately follows the head noun, is more acceptable than (160b) and one can find examples where the binding of a pronoun inside a PP dependent of a noun by some other element in that sentence is even more acceptable as shown in (161).

(161) a. Kohl$_i$ sah [Filme über ihn$_i$] mit großer Genugtuung.
Kohl saw films about him with great satisfaction
'Kohl saw the film about him with great satisfaction.'

b. * [Filme] sah Kohl *über ihn$_i$* mit großer Genugtuung.
films saw Kohl about him with great satisfaction

Frey (1993, p. 125) provides the examples in (162) which show that there are other factors which influence binding of pronouns in PPs which are embedded by an NP.

(162) a. Hans$_i$ schenkte mir ein Buch von ihm$_i$.
Hans donated me a book from him
'Hans gave me a book of him as a present.'

b. * Hans$_i$ schenkte mir ein Buch über ihn$_i$.
Hans donated me a book about him
'Hans gave me a book about him as a present.'

The binding of the pronoun *ihm* inside of the PP *von ihm* by the subject of the sentence *Hans* is perfectly acceptable in (162a), whereas it is ungrammatical in (162b). The only difference between the two sentences is that the pronoun occurs in a different PP inside an NP.

An anaphor inside the PP is acceptable in both cases, as shown in (163).

(163) a. Hans$_i$ schenkte mir ein Buch von sich$_i$.
Hans donated me a book from himself
'Hans gave me a book of him as a present.'

b. Hans$_i$ schenkte mir ein Buch über sich$_i$.
Hans donated me a book about himself
'Hans gave me a book about himself as a present.'

Frey's explanation for the contrast in (162) is that in (162a), the PP *von ihm* realizes the external theta role, i.e., the subject, of the noun *Buch*. This is compatible with the Binding Principle B given in Frey (1993, p. 120), according to which a pronoun must be free within the minimal complete functional complex (CFC) that contains a subject. In (162b), the PP *über ihn* realizes the internal argument of the noun *Buch* and thus the entire sentence is the minimal CFC in which the pronoun must be free. But under this explanation there should also be a contrast between the examples in (163).

What the examples in (162) show for our considerations is that not only the syntactic position of a pronoun influences its binding properties, but there must be other factors that play a role. Thus, until we do not know what these factors are, we cannot use these examples as arguments for or against our theory.

2. An HPSG Analysis

In section 1 of the current chapter, we showed that the empirical facts support a reanalysis-like approach over an account that extracts PPs from NPs. In section 2.1 of chapter 2 we already established that only PP *adjuncts* can occur separate from an NP, i.e., can be reanalyzed, whereas PP *complements* can only occur inside the NP. We now turn to the issue of formalizing such a reanalysis-like theory in an HPSG architecture.

2.1. Dependent Raising. To capture the notion of reanalysis in HPSG we will employ the argument raising technique as introduced by Hinrichs and Nakazawa (1989) for verbal complement taking verbs. The origin of this technique lies in the analysis of verbal cluster formation in German which arises when a particular class of verbal complement taking verbs, the so-called coherent verbs (cf. Bech (1955)), combine with their verbal complement.

(164) daß er das Meer hören wollen wird
that he the sea hear want will
'that he'll want to hear the sea.'

In (164) the verb *hören* is embedded by the modal verb *wollen* which itself is embedded by the auxiliary *wird*. It is not easy to determine what the constituent structure of (164) is. One possibility would be that *hören* forms a constituent with its complement *das Meer* which then forms a constituent with the modal verb *wollen* and this constituent is the complement of *wird*. Example (165) on the other hand supports the opposite conclusion that the modal verb forms a constituent with the main verb since they can be topicalized together, leaving the arguments of the main verb behind in the *Mittelfeld*.

(165) [Hören wollen] wird er das Meer.
hear want will he the sea
'He'll want to hear the sea.'

The idea to account for these constructions in HPSG was the following: When a verb V combines with its verbal governor V instead of with its own arguments, the resulting constituent must take over the unrealized subcategorization requirements of V. To formalize this inheritance of subcategorization requirements, Johnson (1986) suggested to incorporate the idea of functional composition from categorial grammar (Geach, 1970). Hinrichs and Nakazawa (1989) picked up this idea and showed how the relevant aspect of functional composition can be integrated into the HPSG architecture in form of a specific lexical specification of coherently constructing verbs. This lexical specification often referred to as *argument attraction* or *argument raising* adds the unsaturated subcategorization requirements of the verbal complement to the subcategorization requirements of the verbal head as shown in figure 1.

$$\left[\textsc{synsem}|\textsc{loc}|\textsc{cat}|\textsc{val}|\textsc{comps}\ \boxed{1} \oplus \left\langle\left[\textsc{loc}|\textsc{cat}|\textsc{val}|\textsc{comps}\ \boxed{1}\right]\right\rangle\right]$$

FIGURE 1. Argument attraction as lexical specification

With respect to the example (165), this lexical specification is part of the lexical entries of *wollen* and *wird*. The verb *wollen* raises the complement *das Meer* from its verbal complement *hören* and the verb-second verb *wird* raises that argument from the COMPS list of *wollen* onto its own subcategorization requirements, from which it is realized together with the subject as part of the Mittelfeld.

We will base our approach to NP-PP split developed in the following on this argument raising technique, which can be viewed as capturing the spirit of a reanalysis rule lifting the argument of an embedded head to a higher head, similar to the idea proposed by Fanselow (1987) which we discussed in section 1.2 of chapter 4.

2.1.1. *Argument raising as lexical principle.* In De Kuthy and Meurers (to appear), argument raising is introduced as a general option for verbal heads with different kinds of complements. The idea of a 'general option is realized in form of a lexical principle. As discussed above, previous HPSG approaches introduce argument raising as part of the lexical specification of coherently constructing verbs. Argument raising in these setups thus is an idiosyncratic specification in particular lexical entries. On the other hand Meurers (1997a,b) showed that argument raising can also be introduced as a generalization in the mapping between the argument structure and the valence specifications of verbs. To express this generalization over the class of verbal words, one can specify so-called lexical principles, i.e., implicational universal principles with descriptions of words as antecedent.[4] Lexical principles thus are parallel to the phrasal principles standardly assumed in HPSG to express constraints on particular phrases, such as the Head Feature Principle as constraint on all headed phrases.

The lexical principle shown in figure 2 shows the argument raising principle as introduced in (De Kuthy and Meurers, to appear). The principle expresses how the argument structure specified in the ARG-ST list of the lexical entries of base form verbs determines the values of the valence attributes (SUBJ and COMPS). The first element ($\boxed{1}$) of the argument

$$\begin{bmatrix} \textit{word} \\ \text{S}|\text{L}|\text{C}|\text{HEAD} \begin{bmatrix} \textit{verb} \\ \text{VFORM} \;\; \textit{bse} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \text{S}|\text{L}|\text{C}|\text{V} \begin{bmatrix} \text{SUBJ} & \left\langle \boxed{1} \right\rangle \\ \text{COMPS} & \textit{raised}\left(\boxed{3}\right) \oplus \boxed{2} \end{bmatrix} \\ \text{ARG-ST} \left\langle \boxed{1} \mid \boxed{2} \right\rangle \;\wedge\; \left(\boxed{3} \bigcirc \textit{indep}\right) \end{bmatrix}$$

FIGURE 2. The basic lexical argument-raising principle (LARP)[5]

structure is assigned to be the subject and the rest of the arguments ($\boxed{2}$) are specified to surface on the COMPS list.

Appended ($\oplus$) to the beginning of the COMPS list are the arguments possibly raised from an element on list $\boxed{3}$.[6] The list $\boxed{3}$ can only contain an element, the so-called *argument-raising source*, if it satisfies the requirements specified in the relation *raised* discussed below. For many of the verbs, $\boxed{3}$ will thus simply be the empty list from which no arguments can be raised.

[4]See Meurers (2000, ch. 4) for more details on lexical principles in contrast to macros or templates and a more general discussion of vertical and horizontal lexical generalizations in HPSG.

[5]Here and throughout the paper relations are written in the functional notation commonly used in HPSG; the operator $\oplus$ stands for list concatenation (*append*) and $\bigcirc$ for shuffling of two lists as explained in the text below. For space reasons, attribute names are sometimes abbreviated by their first letter, in particular P(HONOLOGY), S(YNSEM) L(OCAL), C(ATEGORY), V(ALENCE), H(EAD), N(ONLOCAL), I(NHERITED), T(O-BIND), and A(RGUMENT-STRUCTURE).

[6]Note that De Kuthy and Meurers assume argument raising to only take place on the COMPS attribute, not on ARG-ST. S. Müller (1999, sec. 20.4.2) shows that circular o-command relations result if the binding theory operates on raised arguments, a finding which supports this restrictive use of ARG-ST. A more extended use of ARG-ST is proposed for French by Abeillé et al. (1998).

To the right of the conjunction ($\wedge$) in the specification of ARG-ST, a second restriction on the argument structure is formulated. Intuitively speaking, this restriction identifies one (or no) element on ARG-ST as an argument-raising source. All other elements on ARG-ST are required to be *indep(endent)*, a notion encoding that these arguments have realized their own complements, which formally is expressed by a unary relation in functional notation introduced below. Formally, the argument-raising source is picked out from the list of independent arguments by shuffling ($\bigcirc$) the list $\boxed{3}$ into the list of independent arguments. The list $\boxed{3}$ is either an empty list or a singleton list containing an argument-raising source. In the latter case, shuffling corresponds to inserting the argument-raising source at any place in the list. Note that any argument can be an argument-raising source, including the subject. This correctly licenses the occurrence of partial subjects in examples like the ones we showed in (143) on p. 64.

The *indep(endent)* relation is defined in figure 3. An argument is indepen-

$$\begin{array}{l} \textit{indep} := \langle\rangle. \\ \textit{indep} := \left\langle \begin{bmatrix} \text{L|C|V|COMPS} & \langle\rangle \\ \text{LEX} & - \end{bmatrix} \middle| \ \textit{indep} \right\rangle. \end{array}$$

FIGURE 3. Definition of independence

dent if it includes all of its complements and is [LEX $-$]. The argument thus cannot contribute its complements to an argument-raising process and it cannot construct as part of a lexical head cluster. The intuition behind calling such arguments independent thus is that they independently take care of realizing their own complements.

The relation *raised* defined in figure 4 parameterizes the argument-raising

$$\begin{array}{l} \textit{raised}\big(\langle\rangle\big) := \langle\rangle. \\ \textit{raised}\left(\left\langle \begin{bmatrix} \text{LEX} & + \\ \text{L|C} & \begin{bmatrix} \text{HEAD} & \textit{verb} \vee \textit{adj} \\ \text{V|COMPS} & \boxed{1} \end{bmatrix} \end{bmatrix} \right\rangle\right) := \boxed{1}\ \textit{lex-minus-list}. \\ \textit{raised}\left(\left\langle \begin{bmatrix} \text{L|C} & \begin{bmatrix} \text{HEAD} & \textit{noun} \\ \text{V|COMPS} & \boxed{1} \end{bmatrix} \end{bmatrix} \right\rangle\right) := \boxed{1}\ \textit{prep-list}. \end{array}$$

FIGURE 4. Definition of possible argument-raising sources

principle with respect to the different kinds of argument-raising sources.

The first clause specifies that if there is no argument-raising source, no arguments can be raised.

The second clause of the definition of *raised* deals with adjectival and verbal argument-raising sources, which are restricted to be [LEX +]. The relation *raised* returns the complements which were not realized by the argument-raising source itself (and thus still occur on its COMPS list) in order for them to become complements of the embedding verb to which the argument-raising principle applied. The raised complements are required to be [LEX −] by the relation *lex-minus-list*.[7] Taken together, the two LEX specifications (adjectival and verbal argument-raising sources are [LEX +] and raised complements [LEX −]) ensure that verbal or adjectival heads from which arguments have been raised cannot be raised themselves.

Finally, the third clause of the definition of the *raised* relation in figure 4 deals with nominal argument-raising sources. In this case, we restrict the elements which can be raised to prepositional arguments (*prep-list*). No restriction on the argument-raising source is imposed since a partial NP and its PP complement are supposed to occur as two ordinary sister constituents in the *Mittelfeld*. To license them as independent sister constituents in sentences with a verbal complement, we need to allow nominal heads from which a PP argument has been raised to be raised as well — a case which is excluded for the verbal and adjectival complements via the LEX specifications in the second clause.

2.1.2. *From argument raising to dependent raising.* In a further step, De Kuthy and Meurers (2000) extend this argument raising approach to general dependent raising, so that adverbal, adnominal and adadjectival adjuncts can now undergo the raising process as well. The key problem of integrating adjuncts in the raising process is that in the traditional

[7] Note that we here use the relation *lex-minus-list* and not the relation *indep* of figure 3 since we do not want to exclude raising of NPs which are unsaturated since a PP argument was raised from them. The relations *lex-minus-list* and *prep-list* have the following definitions:

$$\textit{lex-minus-list} := \langle\rangle. \qquad \textit{prep-list} := \langle\rangle.$$
$$\textit{lex-minus-list} := \left\langle [\text{LEX } -] \,|\, \textit{lex-minus-list} \right\rangle. \qquad \textit{prep-list} := \left\langle [\text{L}|\text{C}|\text{HEAD } \textit{prep}] \,|\, \textit{prep-list} \right\rangle.$$

It might appear nicer to use a generic, two place list relation to impose such requirements on every list element, e.g., to use $\textit{list}([\text{LEX } -])$ and $\textit{list}([\text{L}|\text{C}|\text{HEAD } \textit{prep}])$ instead of *lex-minus-list* and *prep-list*. However, defining such a relation in the way shown below would incorrectly require all elements to be structure shared.

$$\textit{list}(\boxed{1}) := \langle\rangle.$$
$$\textit{list}(\boxed{1}) := \left\langle \boxed{1} \mid \textit{list}(\boxed{1}) \right\rangle.$$

HPSG framework (Pollard and Sag (1994)) on which the argument raising analysis is build, adjuncts are not represented lexically but inserted syntactically in head-adjunct structures. The lexical head therefore does not represent whether its projection includes a modifier or not, which is incompatible with the lexical encoding of argument raising which we adopted from Hinrichs and Nakazawa (1989). If one wants adjuncts to undergo such raising, one thus needs to ensure that the selection of adjuncts is lexically represented.

The idea to lexicalize the selection of adjuncts has been argued for in a line of work in HPSG going back to Miller (1992) and Van Noord and Bouma (1994). De Kuthy and Meurers (2000) build their proposal on the recent incarnation of such an approach proposed by Bouma et al. (to appear) (henceforth: BMS). BMS specify a lexical principle which maps the elements of the argument structure and a list of adjuncts of unspecified length onto a so-called dependents list. The definition of this *Argument Structure Extension* is shown in figure 5. A second principle

$$\textit{verb} \;\rightarrow\; \left[\textsc{s}|\textsc{loc}\;\left[\begin{array}{ll}\textsc{cat} & \left[\begin{array}{ll}\textsc{head} & \boxed{3}\\ \textsc{deps} & \boxed{1} \oplus \textit{list}\left(\left[\textsc{l}|\textsc{c}|\textsc{h}|\textsc{mod}|\textsc{loc}\;\left[\begin{array}{ll}\textsc{cat}|\textsc{head} & \boxed{3}\\ \textsc{cont}|\textsc{key} & \boxed{2}\end{array}\right]\right]\right)\\ \textsc{arg-st} & \boxed{1}\end{array}\right]\\ \textsc{cont} & \left[\textsc{key}\;\boxed{2}\right]\end{array}\right]\right]$$

FIGURE 5. Argument Structure Extension of BMS

entitled *Argument Realization* maps the arguments and adjuncts collected on DEPS onto the valence attributes SUBJ and COMPS. The combined effect of these two principles is that selection of adjuncts and complements is lexically represented as part of the head, and both kind of dependents can be realized as part of ordinary head-complement structures.

De Kuthy and Meurers (2000) integrate this lexicalized adjunct selection into their general argument raising theory and obtain as the heart of their theory the Lexical Dependent-Raising Principle (LDRP) shown in figure 6. The essential part of the principle is that the value of the valence attribute COMPS is defined to consist of the non-subject[8] elements of the argument structure ($\boxed{2}$) plus (potentially) some elements raised from $\boxed{3}$.

[8]Which of the arguments, if any, fills the subject valence is specified by the relation *distrib(ute)-arg(ument)s* defined below – a task which requires special attention to subjectless and raising verbs, which here are assumed to be recognizable by their head subtype:

$$\textit{lexeme} \rightarrow \begin{bmatrix} \textsc{s}|\textsc{loc} & \begin{bmatrix} \textsc{cat} & \begin{bmatrix} \textsc{head} & \boxed{4} \\ \textsc{val} & \begin{bmatrix} \textsc{subj} & \boxed{1} \\ \textsc{comps} & \left(\textit{raised}\left(\boxed{4},\boxed{3}\right) \oplus \boxed{2}\right) \bigcirc \\ & \textit{list}\left(\begin{bmatrix}\textsc{l}|\textsc{c}|\textsc{h}|\textsc{mod}|\textsc{loc} & \begin{bmatrix}\textsc{cat}|\textsc{head} & \boxed{4}\\ \textsc{cont}|\textsc{key} & \boxed{5}\end{bmatrix}\end{bmatrix}\right)\end{bmatrix}\end{bmatrix} \\ \textsc{cont}|\textsc{key} & \boxed{5}\end{bmatrix} \\ \textsc{arg-st} & \textit{distrib-args}\left(\boxed{4},\boxed{1},\boxed{2}\right) \wedge \left(\boxed{3} \bigcirc \textit{indep}\right)\end{bmatrix}$$

FIGURE 6. The Lexical Dependent-Raising Principle (LDRP)

In addition, a list of adjunct requirements is shuffled ($\bigcirc$) into the list of complements.

Furthermore, the LDRP has a more general antecedent than the Lexical Argument Raising Principle shown in figure 2. This is necessary to introduce adjuncts as dependents of heads of different categories. De Kuthy and Meurers therefore introduce a type *lexeme* as subtype of *sign*. Inflectional lexical rules then ensure the necessary lexeme to word mappings.

What exactly can be raised and whether there are additional restrictions empirically depends on the category of the argument raising source, i.e., the element from which an argument is raised. This is again captured by the definition of the relation *raised* in figure 7. Because of the general antecedent *lexeme* of the LDRP, the relation *raised* now also needs to take the category of the head that can raise arguments into account. De

$$\begin{array}{l}
\textit{raised}\left(\textit{verb}, \left\langle \begin{bmatrix} \textsc{lex} & + \\ \textsc{l}|\textsc{c} & \begin{bmatrix} \textsc{head} & \textit{verb} \vee \textit{adj} \\ \textsc{v}|\textsc{comps} & \boxed{1} \end{bmatrix} \end{bmatrix} \right\rangle \right) := \boxed{1}\ \textit{lex-minus-list}. \\
\textit{raised}\left(\textit{verb}, \left\langle \begin{bmatrix} \textsc{l}|\textsc{c} & \begin{bmatrix} \textsc{head} & \textit{noun} \\ \textsc{v}|\textsc{comps} & \boxed{1} \end{bmatrix} \end{bmatrix} \right\rangle \right) := \boxed{1}\ \textit{prep-list}. \\
\textit{raised}\left(\textit{head}, \langle\rangle\right) := \langle\rangle.
\end{array}$$

FIGURE 7. Definition of possible argument-raising sources

Kuthy and Meurers (2000) deal with verbs that can raise arguments from verbal, adjectival or nominal complements. They define three clauses of the relation *raised*, one for adjectival or verbal argument raising sources

$$\begin{array}{lll}
\textit{distrib-args}\left(\textit{subj-less-verb}, \langle\rangle, \boxed{2}\right) & := & \boxed{2} \\
\textit{distrib-args}\left(\textit{subj-raising-verb}, \boxed{1}, \boxed{2}\right) & := & \boxed{2} \left\langle \begin{bmatrix} \textsc{l}|\textsc{c}|\textsc{v}|\textsc{subj} & \boxed{1} \end{bmatrix} \right\rangle \\
\textit{distrib-args}\left(\textit{subj-verb}, \left\langle \boxed{1} \right\rangle, \boxed{2}\right) & := & \left\langle \boxed{1} | \boxed{2} \right\rangle
\end{array}$$

embedded by a verb, one for nominal raising sources embedded by the verb, and one for all other head categories and complements where no raising is possible. Since as the result of the argument structure extension with adjuncts, adjuncts are also represented on COMPS lists they can be subject to raising as well.

We are here only interested in nominal argument raising sources headed by a verb. In the following we will therefore investigate how the second clause of the relation *raised* dealing with such nominal raising sources can be modified so that we can account for the more refined analysis of the properties of raised PPs developed in the previous sections.

2.2. A revised analysis for raising of PP adjuncts. De Kuthy and Meurers (2000) assume that both adnominal PP arguments and PP adjuncts can undergo raising, i.e., both types of PPs can occur separate from the embedding noun. We showed in section 2.1.2 of chapter 2 that this is not restrictive enough. Only PP adjuncts should be licensed as split PPs. We therefore modify the dependent raising approach so that only PP adjuncts can be raised from nominal complements.

To encode this requirement, the second clause of the relation *raised* shown in figure 7 has to be redefined so that it takes the status of the element on the nouns COMPS list into account. The otherwise unchanged definition is shown in figure 8. The PPs on a nouns COMPS list which can be raised are

$$\mathit{raised}\left(\mathit{verb}, \left\langle \left[\textrm{L|C} \begin{bmatrix} \textrm{HEAD} & \boxed{2}\,\mathit{noun} \\ \textrm{V|COMPS} & \boxed{1} \end{bmatrix}\right]\right\rangle\right) := \boxed{1}\,\mathit{list\text{-}of\text{-}mod\text{-}PP}\left(\boxed{2}\right)$$

FIGURE 8. Definition of possible rasing sources

now restricted to those that modify the embedding noun. This is ensured with the help of the relation *list-of-modifying-PP* as defined in figure 9 which requires the raised PPs to select a nominal head (i.e., modify a noun) via their *mod* specification.

The realization of a split-PP adjunct, such as the PP *aus dem englischen Theater* modifying the noun *Modelle* in (166), now works as follows.

(166) *Aus dem englischen Theater* stehen [zwei Modelle] in den Vitrinen.
of the English Theatre are two models in the display

According to the Lexical Dependent-Raising Principle in figure 6, the occurrence of the noun *Modelle* in example (166) as shown in figure 10

$$\textit{list-of-mod-PP}\Big(\Big) := \langle\rangle.$$

$$\textit{list-of-mod-PP}\Big(\boxed{2}\Big) := \left\langle \left[\text{L|C}\ \begin{bmatrix}\text{HEAD} & \begin{bmatrix}\textit{prep}\\ \text{MOD|L|C|HEAD}\ \boxed{2}\end{bmatrix}\\ \text{VAL} & \begin{bmatrix}\text{SPR} & \langle\rangle\\ \text{SUBJ} & \langle\rangle\\ \text{COMPS} & \langle\rangle\end{bmatrix}\end{bmatrix}\right] \middle|\, \textit{list-of-mod-PP} \right\rangle.$$

FIGURE 9. Definition of relation *list-of-modifying-PP*

has one element on its COMPS list, the SYNSEM value of the PP adjunct *aus dem englischen Theater*.

$$\begin{bmatrix}\text{PHON} & \langle \textit{Modelle}\rangle\\ \text{S|L|CAT} & \begin{bmatrix}\text{HEAD} & \boxed{2}\\ \text{VAL|COMPS} & \left\langle \boxed{1}\Big[\text{L|C|H|M|L|C|HEAD}\ \boxed{2}\Big]\right\rangle\end{bmatrix}\\ \text{ARG-ST} & \langle\rangle\end{bmatrix}$$

FIGURE 10. The description of *Modelle* in (166)

But the PP adjunct is not realized as a dependent of *Modelle*. Instead, the LDRP ensures that it is raised onto the COMPS list of the embedding verb *stehen*. The trace of the topicalized PP and the NP *zwei Modelle* can then be realized as complements of *stehen*, whereas the PP itself is realized in a head-filler structure.

2.3. Further Principles. Before we turn to two detailed examples analyzes, we want to briefly introduce the ID schemata and other principles used in the detailed descriptions.

First of all, we should explain how the dependent-raising principle in figure 6, which applies to lexemes, also becomes effective for inflected words: As we already mentioned, we assume that words are derived from lexemes via inflectional lexical rules. In particular, finite verbs are derived from their base forms by a lexical rule which among other things removes the subject from SUBJ and encodes it together with the complements on COMPS in the tradition of Pollard (1996). This finitivization lexical rule also ensures that the subject is encoded as the first argument of the COMPS valence.

Constituent structure is licensed by the ID Principle in figure 11.

$$
\begin{array}{rll}
\begin{bmatrix} \textit{phrase} \\ \text{DTRS}\ \ \textit{headed-struc} \end{bmatrix} \rightarrow &
\begin{bmatrix} \text{DTRS} & \begin{bmatrix} \textit{head-comps-struc} \\ \text{HEAD-DTR}\ \textit{word} \end{bmatrix} \end{bmatrix} & \text{(HC)} \\
\vee & \begin{bmatrix} \text{DTRS}\ \ \textit{head-spr-struc} \end{bmatrix} & \text{(HSPR)} \\
\vee & \begin{bmatrix} \text{DTRS} & \begin{bmatrix} \textit{head-adj-struc} \\ \text{ADJ-DTR|S} & \begin{bmatrix} \text{L|C|H|MOD}\ \boxed{1} \end{bmatrix} \\ \text{HEAD-DTR|S}\ \boxed{1} \end{bmatrix} \end{bmatrix} & \text{(HA)} \\
\vee & \begin{bmatrix} \text{DTRS} & \begin{bmatrix} \textit{head-filler-struc} \\ \text{HEAD-DTR|S} & \begin{bmatrix} \text{L|C} & \begin{bmatrix} \text{H|VF}\ \textit{fin} \\ \text{V} \begin{bmatrix} \text{SBJ} & \langle\rangle \\ \text{CPS} & \langle\rangle \end{bmatrix} \end{bmatrix} \\ \text{NL} & \begin{bmatrix} \text{I|SLASH} & \boxed{1} \\ \text{T|SLASH} & \boxed{1} \end{bmatrix} \end{bmatrix} \\ \text{FILLER-DTR|S|L}\ \boxed{1} \end{bmatrix} \end{bmatrix} & \text{(HF)}
\end{array}
$$

FIGURE 11. The ID Principle

The Head-Complement Schema (HC) allows head-complement structures in which a *word* combines with any number of complements to form a constituent. As the subjects of finite verbs occur on the COMPS list, subjects are realized together with all other complements in a flat head-complement structure.

To license nominal structures, we adopt the Head-Specifier Schema (HSPR) and the Head-Adjunct Schema (HA) of Pollard and Sag (1994). While these two schemata are sufficient for our purpose of analyzing partial NPs, naturally a full theory of German nominal constituents is more complicated. The reader interested in more details at this point is referred to Netter (1996, sec. 4.9.2), who discusses how the Pollard and Sag (1994) theory we rely on here can be modified to account for the full range of German NP data.

It should be noted that the principle in figure 6 allows all kinds of modifiers to occur on the DEPS list. But in the case of nouns all modifiers except for postnominal PPs should be excluded from the occurrence on the COMPS list. All other elements that can modify a noun, like APs, should be realized via the head-adjunct schema and should not occur on the head's COMPS list. This is similar to the assumption in Bouma et al. (to appear), that preverbal modifiers, like “usually”, are realized via the head-adjunct schema, whereas postverbal modifiers occur on the DEPS list of the head they modify and are then realized as complements. We assume that APs are realized via the head-adjunct schema because they can only occur left adjacent to the noun they modify. If they could also occur on the COMPS list of a noun, we would predict that they could be raised from the noun's COMPS list and then occur separately from that noun. A more elaborate theory of adjunct realization will therefore have to restrict the subclass of adjuncts which are intended to construct as dependents and which are not.

Regarding the other principles, we assume the traditional HPSG architecture of Pollard and Sag (1994, ch. 9). In particular, the SPEC-Principle applies to head-specifier structures to ensure identity of the SPEC value of the non-head with the head. And in headed structures, the different valences are realized according to the Valence Principle shown in figure 12. Note that this principle requires the elements occurring last on a valence

> In a headed phrase, for each valence feature $\mathcal{F}$, the $\mathcal{F}$ value of the head daughter is the concatenation of the phrase's $\mathcal{F}$ value with the list of SYNSEM values of the $\mathcal{F}$-DTRS value.

FIGURE 12. The Valence Principle of Pollard and Sag (1994)

list to be realized first. This requirement makes it impossible to combine an argument with a head in a tree that does not also include all of the more oblique arguments. In particular, since the LDRP adds raised arguments in front of the argument-raising source, these raised dependents cannot be realized before the argument-raising source is removed from the COMPS list, i.e., realized as well.[9]

3. EXAMPLE ANALYSES

Now that the relevant machinery has been introduced, let us look at two NP-PP split examples in more detail, one where the PP is fronted and one where the NP independently of the PP is fronted.

---

[9]Note that what is encoded here is a more restrictive variant of the empirical generalization of De Kuthy and Meurers (to appear) we cited at the end of section 1.6.1. It is more restrictive in that it requires a complement to be realized before its complements are, instead of only requiring both to be realized as part of the same head projection. While for our flat analysis of the *Mittelfeld* this makes no difference, it excludes some possibly more appealing binary branching analyses of the Mittelfeld of examples like the ones with partial NPs at the beginning of the *Mittelfeld* we showed in (153) on p. 68.

3.1. Fronting the PP. The structure for the example (167), a simplified version of example (43c) we saw on page 24, where the PP adjunct *aus dem 17. Jhd.* of the noun *Tanzsätze* has been topicalized, can be seen in figure 13.

(167) Aus dem 17. Jhd. erklangen Tanzsätze von J. S. Bach.
from the 17th century sounded dances of J. S. Bach
'Dances from the 17th century by J. S. Bach were played.'

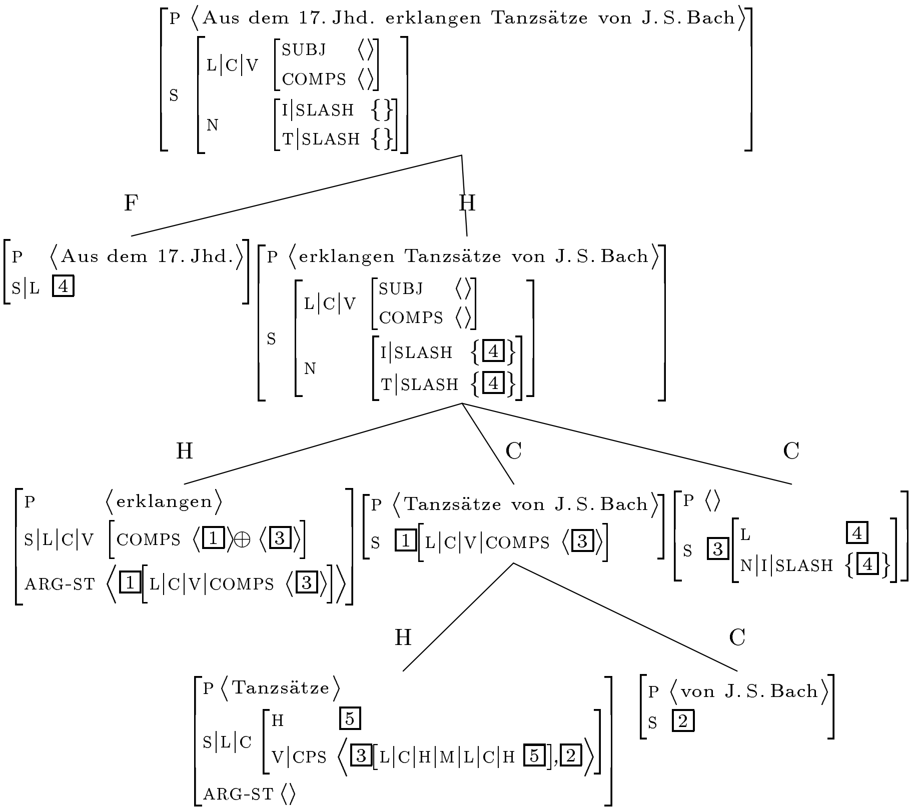

FIGURE 13. An example for adjunct raising from an NP argument

The important detail here is that the adjunct *aus dem 17. Jhd.* has been raised from the NP *Tanzsätze von J. S. Bach* ($\boxed{1}$) and its trace ($\boxed{3}$) is thus realized as a complement of *erklangen*. The LDRP in figure 6 allows the modifying PPs ($\boxed{2}$) and ($\boxed{3}$) to occur on the COMPS list of the noun *Tanzsätze*. The PP *von J. S. Bach* is realized as a complement daughter of *Tanzsätze*, whereas the PP ($\boxed{3}$) is raised onto the COMPS list of *erklangen*. The trace ($\boxed{3}$) of the topicalized split PP and the subject of the sentence

Tanzsätze von J. S. Bach ($\boxed{1}$) are then realized in a flat head-complement structure, whereas the topicalized PP is realized in a head-filler structure.

It should be noted that nothing so far prevents the trace of the topicalized PP *aus dem 17. Jhd.* to be realized as a direct complement of the noun *Tanzsätze*, similar to the PP complement *von J. S. Bach.* This would then correspond to an analysis, where the topicalized PP has been extracted from the NP. But we have argued in section 1 of this chapter that PPs occurring separate from the NP they are dependent of are not extracted from this NP. We therefore have to exclude the possibility of extracting from an NP. This can be done with the constraint shown in figure 14, which allows nouns to have a non-empty SLASH set only if the element on the SLASH list is token identical to their own *local* value. This ensures

$$\left[\textsc{synsem}\ \begin{bmatrix}\textsc{loc}|\textsc{cat}|\textsc{head} & \textit{noun}\\ \textsc{nonloc}|\textsc{inher}|\textsc{slash} & \textit{ne-set}\end{bmatrix}\right] \rightarrow \left[\textsc{synsem}\ \begin{bmatrix}\textsc{loc} & \boxed{1}\\ \textsc{non-loc}|\textsc{inher}|\textsc{slash} & \left\{\boxed{1}\right\}\end{bmatrix}\right]$$

FIGURE 14. NP Island Constraint

that only traces can introduce a non-empty SLASH set on nouns so that the entire noun can still be extracted, but no dependents of that noun. The only way for a dependent of a noun not to be realized within the NP is now to be raised onto the COMPS list of the embedding verb.

3.2. Fronting the NP. The structure for example (168) with the partial topicalized NP *ein Buch* as licenced by our theory is shown in figure 15.

(168) [Ein Buch] will er *über Syntax* ausleihen.
a book wants he on syntax to-borrow
'He wants to borrow a book on syntax.'

The important detail here is again how the partial NP *ein Buch* and its PP adjunct *über Syntax* are licenced as sister constituents. The occurrence of *ausleihen* ($\boxed{5}$) in the tree in figure 15 raises the PP adjunct *über Syntax* ($\boxed{3}$) from its nominal complement, as specified in the LDRP in figure 6. The verb *ausleihen* is the argument of the argument-raising verb *will*, which thus raises all complements of *ausleihen* onto its own COMPS list. The subject NP *er* ($\boxed{2}$), the trace ($\boxed{1}$) of the topicalized partial NP *ein Buch*, the raised PP *über Syntax* ($\boxed{3}$), and the verbal complement *ausleihen* ($\boxed{5}$) are then all realized in a flat head-complement structure.

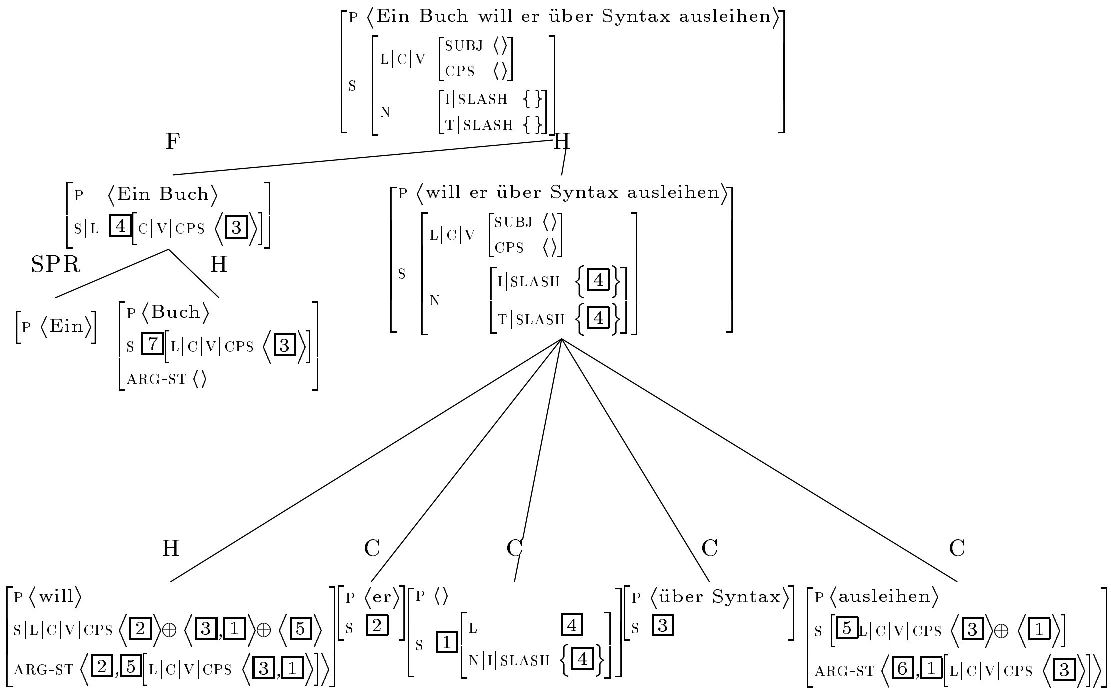

FIGURE 15. An example for argument raising from an NP argument

3.3. Partial NPs and VP Topicalization. We now take a closer look at the two examples for an interaction of partial NPs with VP topicalization which we discussed in section 1.6.1 of this chapter. The observation was that topicalization including a partial NP is possible (169a), whereas topicalization of the VP including only the PP argument of an NP is ungrammatical (169b).

(169) a. [Ein dickes Buch ausleihen] will niemand *darüber*.
a thick book borrow wants-to nobody on-this
'Nobody wants to borrow a thick book on this topic.'

b. * [Darüber ausleihen] will niemand *ein dickes Buch*.
on-this borrow wants-to nobody a thick book

The structure for the grammatical example (157a), is shown in figure 16. We first focus on how the partial topicalized constituent *ein dickes Buch ausleihen* is licensed. The structure of the NP *ein dickes Buch* is licensed by the Head-Specifier and the Head-Adjunct Schema. Relevant for the following is that the PP dependent ($\boxed{3}$) of the noun *Buch* is never saturated and thus appears on the COMPS list of the NP ($\boxed{1}$). The lexical

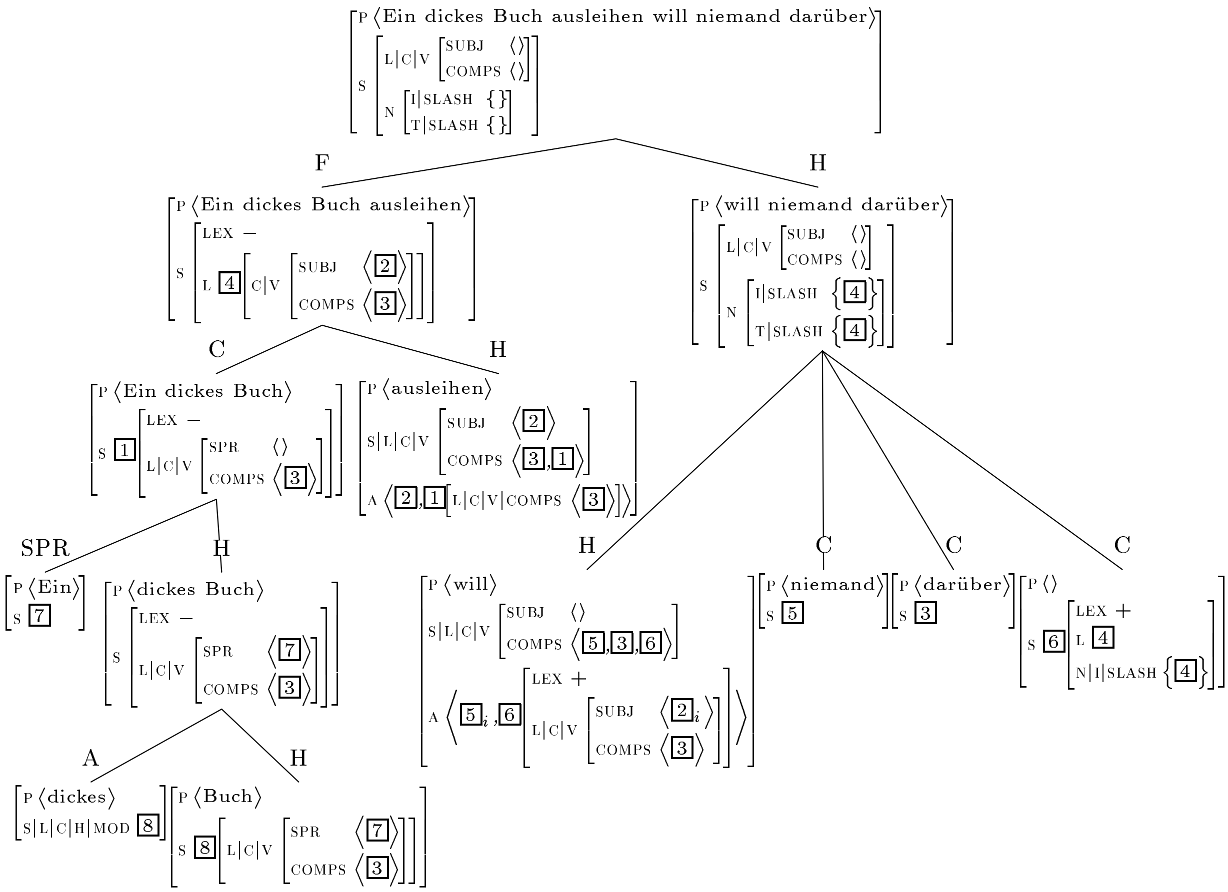

FIGURE 16. Topicalization of a VP including a partial NP

entry of the verb *ausleihen* interacts with the LDRP of figure 6 and the occurrence of *ausleihen* in the tree in figure 16 raises the PP *darüber* ($\boxed{3}$) from its nominal complement ($\boxed{1}$). The remaining partial-NP complement *ein dickes Buch* ($\boxed{1}$) is then realized in a head-complement structure. The resulting VP *ein dickes Buch ausleihen* is [LEX −] and has one element left on its COMPS list, the raised PP *darüber* ($\boxed{3}$).

The verb *will* belongs to the obligatorily coherent verbs and the LDRP ensures that the occurrence of *will* in the tree in figure 16 raises the PP *darüber* ($\boxed{3}$) from (the trace of) its verbal complement *ein dickes Buch ausleihen* ($\boxed{6}$). The subject NP *niemand*, the raised PP *darüber*, and the trace of the partial-VP complement are then all realized in a flat head-complement structure. The PP ($\boxed{3}$) has thus been raised twice and is realized separate from its original head *Buch*, as a complement of the verb *will*.

The ungrammatical example (169b) involves a PP that has been topicalized with the VP, leaving the NP behind. The most promising structure for this example is shown in figure 17. The example is interesting since

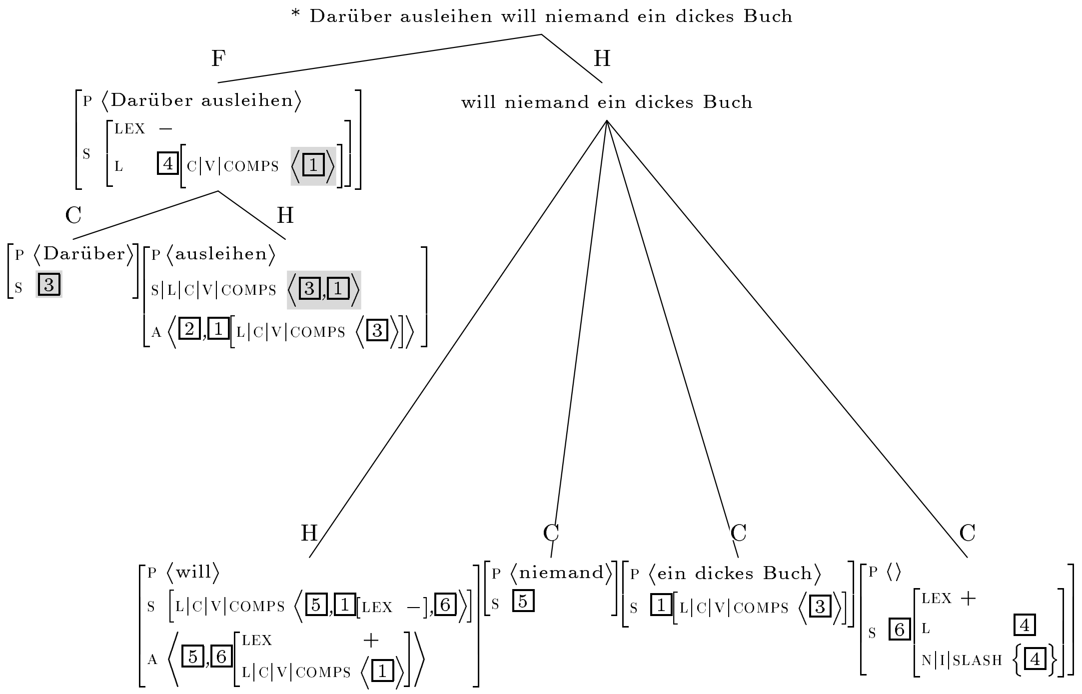

FIGURE 17. Topicalization of a VP including a raised PP

in the *Mittelfeld* both the NP and the PP can appear separately. This is reflected in our theory by allowing the PP to raise and become a sister of the NP. So why is the example (169b) ungrammatical?

The conflict in this example arises in the topicalized constituent: The verb *ausleihen* in the example in figure 17 can raise the PP *darüber* ($\boxed{3}$) of the NP *ein dickes Buch* ($\boxed{1}$). To build the topicalized constituent *darüber ausleihen*, the raised PP has to be realized in a head-complement structure before its governor *Buch* is realized. But according to the Valence Principle shown in figure 12, more oblique complements have to be realized first. The LDRP defined in figure 6 adds the raised complements to the beginning of the COMPS list, i.e., as less oblique than the other complements. One of these complements is the raising source, which therefore has to be realized before (or together with) any of the arguments raised from it. As a result, the head-complement structure *darüber ausleihen* cannot be licensed by our theory.

3.4. Scrambling in the *Mittelfeld*. While our discussions of analyses so far focused on topicalization examples, our theory also provides an explanation for the patterns of grammaticality arising with the NP-PP split construction in the *Mittelfeld* which we discussed at the beginning of section 1.6.1.

Scrambling of the NP and the split PP independently of each other is possible as illustrated again in (170).

(170) a. Hans hat *über Syntax* während seines Studiums [nur drei Bücher]
Hans has on syntax during his studies only three books
ausgeliehen.
borrowed

'During his studies, Hans borrowed only three books on syntax.'

b. Hans hat [nur drei Bücher] während seines Studiums *über Syntax*
Hans has only three books during his studies on syntax
ausgeliehen.
borrowed

Our theory licenses these examples in a similar way as the examples with topicalization into the *Vorfeld*. The Lexical Dependent Raising Principle allows the verb *ausgeliehen* in the two examples in (170) to raise the PP dependent *über Syntax* from its nominal complement *drei Bücher*. The PP and the NP can then be realized as two independent sister constituents in the *Mittelfeld*. A theory further restricting German *Mittelfeld* word order naturally is needed to license possible orders of the NP, its PP dependent and other material in the *Mittelfeld* but is a topic of its own outside the scope of this thesis.

3.5. Dependent raising and traceless extraction. The argument raising approach of De Kuthy and Meurers (to appear) and the dependent raising approach of De Kuthy and Meurers (2000) on which we have built our account of NP-PP split presented in this chapter, includes the basic trace-based extraction theory of Pollard and Sag (1994). The Bouma et al. (to appear) proposal, however, from which the idea of lexicalizing the selection of adjuncts was taken over in the above approaches, includes a traceless analysis of argument and adjunct extraction. Our dependent-raising approach could also be integrated with a traceless analysis, but we will show in the following that the traceless variant differs from the trace-based one in a relevant aspect.

BMS provide a lexical account of extraction to replace the configurational nonlocal-feature theory included in Pollard and Sag (1994). A lexical principle, the SLASH Amalgamation Constraint, serves to collect the SLASH values of a word's dependents. A constraint on phrases, the SLASH Inheritance Principle, defines the SLASH inheritance on head-valence phrases (those phrases involving head, complement and/or subject daughters). Third, a constraint is introduced which ensures the correct binding of the SLASH values in head-filler phrases. Finally, BMS replace traces or lexical rules as mechanisms for introducing slashed dependents by an underspecification approach. Dependents in the lexicon are specified as *synsem* objects. Two subtypes of *synsem* are introduced: *canon-synsem* and *gap-synsem*, the latter of which cannot be realized as part of a word but introduces a slash as shown in figure 18. The Dependent Realization

$$\textit{gap-ss} \rightarrow \begin{bmatrix} \text{LOC} & \boxed{1} \\ \text{NONLOC}|\text{SLASH} & \boxed{1} \end{bmatrix}$$

FIGURE 18. Constraint of *gap-synsems*

Principle of BMS ensures that only objects of type *canon-synsem* occur on the COMPS list, as shown in figure 19.

$$\textit{word} \rightarrow \begin{bmatrix} \text{SUBJ} & \boxed{1} \\ \text{COMPS} & \boxed{2} \ominus \textit{list}\Big(\textit{gap-ss}\Big) \\ \text{DEPS} & \boxed{1} \oplus \boxed{2} \end{bmatrix}$$

FIGURE 19. Dependent Realization (BMS, complete version)

At first sight it looks as though we can simply integrate this traceless extraction theory into the account of dependent realization which we developed in the present section. One would adopt the lexical nonlocal-feature percolation, assume the division of *synsem* objects into *canon-synsem* and *gap-synsem*, and extend our version of the Lexical Dependent-Raising Principle such that it allows only *canon-synsem* objects to occur on the COMPS list of word.

Interestingly, such a combination of traceless extraction with argument raising in some cases results in different analyses than under a trace-based approach. Take for example the NP-PP split construction shown in (171), where the PP has been topicalized leaving behind the NP.

(171) *Über Syntax* will er [ein Buch] ausleihen.
on syntax wants he a book borrow
'He wants to borrow a book on syntax.'

Under the trace-based analysis we pursued in this section, the fronted constituent (in italics) is raised from the constituent in brackets before it is extracted. Figure 20 shows the analysis of example (171) under the trace-based theory. The verb *ausleihen* in the tree in figure 20 raises the

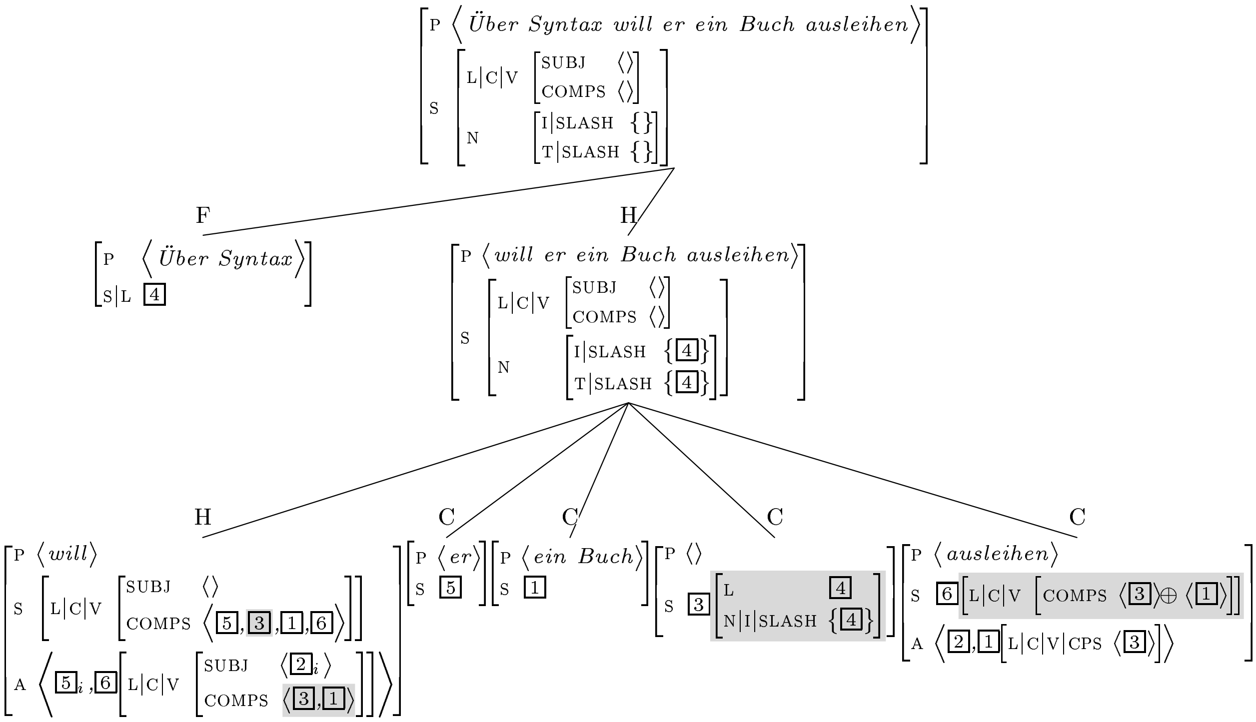

FIGURE 20. Trace-based analysis for (171)

unrealized PP dependent ($\boxed{3}$) from its nominal argument *ein Buch*. The argument raising verb *will* then raises the two unrealized complements ($\boxed{3}$ and $\boxed{1}$) from its verbal argument *ausleihen* $\boxed{6}$ and realizes them as its own complements, together with the subject NP ($\boxed{5}$) and the verbal argument ($\boxed{6}$).

Under the traceless approach of BMS the example in (171) is analyzed differently. Figure 21 shows the sketch of an analysis tree for (171) under the revised theory combining our argument raising approach and the traceless account of BMS. The dependent ($\boxed{3}$) of *ein Buch* in the tree in figure 21

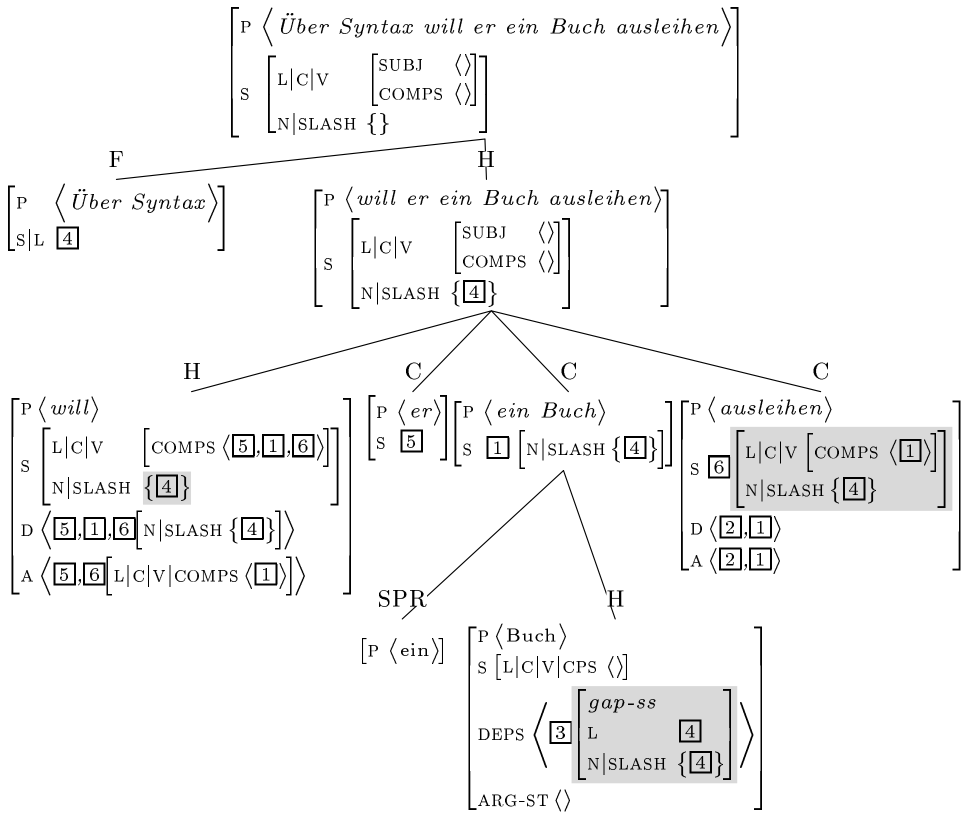

FIGURE 21. Traceless analysis for (171)

is of type *gap-ss* and, according to the Dependent Realization Principle in figure 19 on page 90 it does not occur on the COMPS list. Instead, the SLASH value introduced by this *gap-ss* object is amalgamated by *Buch*. The verb *ausleihen* cannot raise any dependents from its argument *Buch* since the COMPS list of *Buch* is empty. Instead, *ausleihen* amalgamates the SLASH value from *Buch*. The argument raising verb *will* then raises the unrealized complement ($\boxed{1}$) from its verbal argument *ausleihen* $\boxed{6}$ and amalgamates the SLASH value from *ausleihen*. The subject NP *er*, the raised NP *ein Buch* and the verbal argument *ausleihen* are then realized in a head-complement structure.

The crucial difference between the two analyses thus is that under the traceless analysis the fronted constituent *über Syntax* is extracted from the nominal head *Buch* of which it is a dependent, whereas under the trace-based analysis the fronted constituent is extracted as a complement of the higher verb *will* to which the valence requirement had been raised. This rather subtle difference has a clear effect: Under the trace-based analysis one obtains the same analysis independent of whether the PP *über Syntax* and the NP *Buch* are realized in the Mittelfeld separate from each other or whether the PP is extracted and realized in a fronted position. In both cases the embedding verb raises the PP onto its own COMPS list and either realizes the raised PP or the trace of the raised PP in a head-complement structure. On the other hand, the traceless approach licenses two different structures. For the Mittelfeld realization one obtains the same structure as under the trace based analysis: *über Syntax* is obligatorily raised if it occurs separate from the NP. For the realization in fronted position the element is not raised since extraction always takes place from the lowest lexical head, i.e., the lexical head of which it is a dependent. This contradicts our idea of reanalysis as the adequate approach to the NP-PP split construction. Under such an approach, the NP and the PP should always occur separate from each other as the result of raising the PP from the NP. Future research has to show whether there are other possibilities to integrate our dependent raising approach into a traceless approach which are more in line with the idea behind reanalysis.

CHAPTER 5

Semantic Aspects

1. Introduction

In our syntactic account of the NP-PP split construction presented in the previous chapter we mainly focussed on examples where splitting of a noun and its PP adjunct *is* possible. But several times already we touched upon the fact that for certain examples splitting of the PP adjunct is not possible, even though for syntactically parallel ones it is.

As we mentioned in section 1 of the previous chapter several authors, among them Fanselow (1991), Pafel (1993) and Fortmann (1996), and others observed that grammatical examples of NP-PP split become ungrammatical when the embedding verb is replaced by a verb which has the same syntactic properties but a different semantics. This was for example shown in example (140) on p. 62 taken from Pafel (1993, p. 219) here repeated as (172).

(172) a. *Über wen* hat er [ein Buch] verfaßt?
about whom has he a book written

b. * *Über wen* hat er [ein Buch] zerrissen?
about whom has he a book torn up

The only difference between the two sentences in (172) is that the verb *verfaßt* (written) is replaced by the verb *zerrissen* (torn up).

Pafel (1993) is one of the few authors who actually tries to account for differences in acceptability of the NP-PP split constructions as in (172) and we will briefly discuss his approach in the following section.

Although it is often mentioned that the reason why some of the NP-PP split examples are ungrammatical is that splitting of the two elements, the NP and the PP, might be subject to lexical semantic restrictions it has to our knowledge never been investigated what the nature of these lexical restrictions could be. After the discussion of the account of Pafel

(1993) we will therefore take a closer look at the possible nature of such lexical restrictions and show how one can integrate such restrictions into our syntactic account of the NP-PP split construction.

2. Thematic hierarchy (Pafel 1993)

Starting from the contrast in (172) Pafel (1993) observes that if a different PP occurs as the dependent of *Buch* a verb like *zerreissen* or *zerstören* does not block the fronting of the PP anymore as shown in (173).

(173) a. Von welchem Philosophen würdest du gerne ein Buch lesen?
of which philosopher would you like a book to read
'Which philosopher would you like to read a book of?'

b. Von welchem Philosophen würdest du gerne ein Buch zerstören?
of which philosopher would you like a book to destroy
'Which philosopher would you like to destroy a book of?'

Pafel assumes that all the PPs that can occur separate from an NP receive a thematic role from the embedding noun , although they origin from an adjunct position within the NP. A PP like *über wen* in (172) is thus the theme argument of *Buch* and a PP like *von welchem Philosophen* in (173) is the agent of the noun *Buch*. He concludes that an agent PP can occur separate from the embedding noun more easily than a PP bearing the theme role. He further observes that in an example as in (174) where the same *von*-PP can be assigned different thematic roles, the fronted *von*-PP can only be interpreted as the possessor argument of the noun *Bild*.

(174) a. Von wem hat er ein Bild zerstört? PP=Possessor
b. * Von wem hat er ein Bild zerstört? PP=Thema

He therefore assumes that the hierarchy of thematic roles shown in (175) determines the possibility of separating a PP from the embedding noun.

(175) Possessor > Agens > Thema

Possessor PPs are thus predicted to be the least restricted in occurring separate from an NP, whereas theme PPs should be restricted the most.

Pafel (1993, p. 220) further observes that not only the kind of PP influences the separability but that also the thematic role of the embedding NP with respect to the governing verb plays an important role in the

NP-PP split construction. Fronting of a PP embedded in an agent NP is possible, but only if no further argument of the embedding verb is present as shown in (176).

(176) a. Von Wittgenstein haben die Erben protestiert.
of Wittgenstein have the inheritors protested

b. * Von Wittgenstein verwalten die Erben den Nachlaß.
of Wittgenstein administrate the inheritors the inheritance

Fronting of the PP *von Wittgenstein* is possible if the embedding NP is the subject of the intransitive verb *protestiert* as in (176a), but it is not if the embedding noun is the subject of a transitive verb like *verwalten* as in (176b).

Fronting the PP of an object NP of a psyche verb is mostly quite unacceptable as shown in (177)

(177) a. ? Von Brahms liebt sie nur eine Sinfonie.
of Brahm's loves she only one symphony

b. ? Von Kundera gefallen ihr keine Romane.
of Kundera please her no novels

The examples in (178) furthermore show that fronting of a PP embedded by an indirect object or a genitive NP is ungrammatical.

(178) a. * Von Bismarck habe ich einem Verehrer die Meinung gesagt.
of Bismarck have I an admirer my opinion told

b. * Von Bismarck hat er dem Vater geholfen.
of Bismarck has he the father helped

c. * Von Picasso erinnern wir uns gerne der späten
of Picasso remember we ourselves with pleasure of the late
Zeichnungen.
drawings

In (178a) and (178b) the fronted PP *von Bismarck* refers to the indirect objects of the verbs *sagen* and *geholfen* and in (178c) the embedding NP is a genitive object of the main verb *erinnern*.

Finally, Pafel supposes that the contrast in (179) arises because a predicate like *verfügbar* assigns the theme role to its subject and a predicate like *unansehnlich* assigns the role "holder of a property". Fronting of a PP embedded in a theme object thus seems to possible while it is not if it is embedded in the subject of individual level predicates.

(179) a. Von wem sind einige Bilder verfügbar?
of whom are some pictures available

b. * Von wem sind einige Bilder unansehnlich?
of whom are some pictures unsightly

He concludes that arguments of verbs are ordered with respect to the hierarchy shown in (180).

(180) theme > agent/experiencer > patient > holder of a property/a stage

To account for the above observed contrasts he formulates the restriction that fronting of a PP embedded in an NP with the thematic role R is only possible if in the same sentence no other argument is present with a higher (according to the hierarchy in (180)) thematic role. Secondly, the acceptability of fronting a PP decreases with respect to the rank of the thematic role of the embedding NP.

Although Pafel's approach to account for the differences in acceptability occurring with respect to the NP-PP split construction on a first sight seems to provide an explanation for many of the cases, at a closer look it leaves many questions unanswered.

First of all: What is the motivation for assuming that the thematic role of the embedded PP or the NP involved in the construction influences the acceptability of fronting the PP? Are there other constructions where the same effect occurs? And secondly: why are there then two different thematic hierarchies with different orders of the thematic roles involved? What one would expect is, that if arguments are ordered with respect to their thematic role and if the rank of the thematic role influences possible word orders of arguments that then all arguments are ordered with respect to the same hierarchy.

Finally, Pafel's approach cannot explain the contrast in acceptability shown in (172). In both sentences, the PP *über wen* would receive the thematic role theme from the governing noun *Buch* in Pafel's set up. And both verbs *verfassen* (to write) and *zerreissen* (to tear up) assign the same thematic role to the object NP *ein Buch*. But according to the tow thematic hierarchies both sentences should then be equally acceptable because the PP and the NP in both sentences have the same thematic roles. The reason for the contrast in acceptability in this case thus must result from other factors.

3. Lexical Restrictions

To investigate the possible nature of contrasts of acceptability occurring with the NP-PP split construction as in (172) we will now take a closer look at more data where such contrasts arise.

More examples of the kind of contrast as in (172) can be seen in (181) and (182).[1]

(181) a. *Aus dem 17. Jahrhundert* erklangen in dynamisch differenziertem
from the 17th century sounded in dynamically differentiated
Spiel [Tanzsätze von Johann Sebastian Bach].
manner dances by Johann Sebastian Bach
'Some dances from the 17th century by Johann Sebastian Bach were played in a dynamically differentiated manner.'

b. ?? *Aus dem 17. Jahrhundert* wurden in der neuen Musikzeitung
from the 17th century were in the new journal
[Tanzsätze von Johann Sebastian Bach] besprochen.
dances by Johann Sebastian Bach discussed

(182) a. *Aus dem "English Theater"* stehen [zwei Modelle] in den Vitrinen.
of the English Theatre are two models in the display
'There are two models from the English Theater on display.'

b. * *Aus dem "English Theater"* wurden [zwei Modelle] aus den
of the English Theatre were two models from the
Vitrinen entfernt.
display removed

These example pairs have in common that in the grammatical examples, the verb and its nominal complement embedding the topicalized PP have a different kind of relationship than in the ungrammatical examples: In (172a), the verb *verfaßt* (written) and its complement *ein Buch* are semantically "more closely related" than the verb *zerrissen* (torn up) and this NP are in (172b). While the exact meaning of this relationship needs to be further investigated we here mean that 'to write a book' (the same holds for to read, to buy a book) is a more common, contextually unmarked action than 'to tear up a book'. Additional information in form of the PP argument *über Syntax* can then be separated from the contextually unmarked phrase *ein Buch verfaßt*, but not from the contextually marked phrase *ein Buch zerrissen*.

[1] The example sentences (181a) and (182a) are both taken from the "Frankfurter Rundschau" corpus.

Similarly, a noun like *Tanzsatz* in (181), a piece of music, is more closely related to a verb like *erklingen* (sound) than to a verb like *besprechen* (review). And finally in (182) it is more common that models are displayed than that they are removed from displays. So in this sense the verb *stehen* is more closely related to a noun like *Modell* than the verb *entfernen* is and thus splitting the PP from the NP is only acceptable in (182a).

As could be expected, this semantic effect not only occurs if the selecting verb, but also if the NP complement is replaced with a semantically different one as the following examples show:

(183) a. *Über Quantenpysik* sind schon [viele Aufsätze] veröffentlicht worden.
about physics have already many essays published been
'Many essays on physics have already been published.'

b. * *Über die Liebe* sind schon [viele Briefe] veröffentlicht worden.
about the love have already many letters published been
'Many love letters have been published.'

Again, the phrase *viele Aufsätze veröffentlicht* in (183a) is contextually less marked than the phrase *Briefe veröffentlicht* in (183b). Thus the PP can be topicalized independently only in (183a).

To include these observations in the HPSG account of NP-PP split we presented in section 2 of chapter 4, we adopt Pustejovsky (1995) generative lexical approach to semantics. In the generative lexicon, all lexical items are analyzed as being relational to a certain degree. This relational force of any lexical item is captured in the 'qualia structure'. In such a framework it is possible to make the idea stated above more precise.

4. Combining lexical semantics and dependent raising

So far, our argument raising theory allows any PP adjunct of a noun that meets the syntactic requirements specified in figure 8 to be raised onto the COMPS list of the embedding verb. That means that in every sentence containing an NP with a PP adjunct, this PP could occur separate from its nominal head. But, as we saw in section 3, the possibility of splitting the two elements is subject to lexical-semantic restrictions. To capture this fact in our theory we assume that the possibility of argument raising is triggered by the semantic properties of the verb and of the nominal argument from which a PP has to be raised.

First of all we need a way of encoding the relational properties of nouns in their CONTENT value. Pustejovsky (1995) proposes to encode the "relational force" of lexical items, especially nouns, in the so called *qualia structure*. This structure serves to express "that set of properties or events associated with a lexical item which best explain what the word means". The core elements of a noun's meaning can thus be captures by the four features CONSTITUTIVE, FORMAL, TELIC, AGENTIVE. For our purposes we also need a way of encoding events associated with a noun in the noun's CONTENT to express our notion of "special relationship" between a predicate and its nominal complement. We will therefore adopt Pustejovsky's notion of the qualia structure. To encode this qualia structure in lexical entries of noun's CONTENT values, we extend their CONTENT in the following way: the semantic relation of a noun is expressed in one of the *qfpsoas* in its CONTENT|RESTRICTION set. We assume that *qfpsoas* are all appropriate for the feature QUALIA[2] taking an object of sort *qualia* as its value which itself is appropriate for the four above cited features. The value of RESTRICTIONS is no longer a set, but a list of *psoa*. The semantic relation of the head of an NP is always the first element on this RESTRICTIONS list.[3] This enables us to have access to the semantic relation and the qualia structure expressed by the head noun in any NP. The revised nominal CONTENT value can be seen in figure 22. We specified

$$\begin{bmatrix} \textit{npro} & \\ \text{INDEX} & \boxed{1}\begin{bmatrix}\text{PER} & \textit{person}\\ \text{NUM} & \textit{number}\\ \text{GEND} & \textit{gender}\end{bmatrix} \\ \text{RESTR} & \left\langle \begin{bmatrix} \textit{psoa} & \\ \text{QUANTS} & \langle\rangle \\ \text{NUCLEUS} & \begin{bmatrix} \textit{qfpsoa} & \\ \text{INST} & \boxed{1} \\ \text{QUALIA} & \begin{bmatrix}\text{TELIC} & \textit{list-of-qfpsoa}\\ \text{AGENTIVE} & \textit{list-of-qfpsoa}\end{bmatrix}\end{bmatrix}\end{bmatrix}\right\rangle\end{bmatrix}$$

FIGURE 22. CONTENT value of nouns

[2]We are only concerned with nominals here. Whether other parts of speech should be treated along the same line must be left to future research.

[3]Singling out the central predicate as the first element is similar to the KEY attribute used in minimal recursion semantics Copestake et al. (1997).

only the features TELIC and AGENTIVE as being appropriate for the qualia structure because they encode, following Pustejovsky (1995), the events associated with a noun. In a more explicit account of lexical semantics other properties of nouns would also have to be specified in the qualia structure.

We now have a way of specifying how the semantics of a verb and its nominal argument must interact so that argument raising of a PP adjunct is possible. To illustrate this interaction the lexical entries of *ausleihen* and *Buch*, a verb-noun combination where argument raising of the noun's PP adjunct is possible (as for example in examples (9) and (11)), are shown in figure 23 and 24.

$$\begin{bmatrix} \textsc{phon} & \langle \textit{ausleihen} \rangle \\ \textsc{s}|\textsc{l} & \begin{bmatrix} \textsc{cat}|\textsc{head} & \textit{verb} \\ \textsc{cont}|\textsc{nucleus} & \textit{borrow-rel} \end{bmatrix} \\ \textsc{arg-st} & \left\langle \textit{NP}, \textit{NP} \right\rangle \end{bmatrix}$$

FIGURE 23. Lexical entry for *ausleihen*

$$\begin{bmatrix} \textsc{phon} & \langle \textit{Buch} \rangle \\ \textsc{s}|\textsc{loc} & \begin{bmatrix} \textsc{cat}|\textsc{head} & \textit{noun} \\ \textsc{cont}|\textsc{restr} & \left\langle \begin{bmatrix} \textsc{nucl}|\textsc{qual}|\textsc{tel} & \langle \textit{...,borrow-rel,...} \rangle \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

FIGURE 24. Lexical entry for Buch

As explained in section 3, the reason why argument raising is possible with these two elements is that they are semantically closely related. In our theory this relatedness is expressed by the fact that the verb's CONTENT|NUCLEUS value (the semantic relation expressed by the verb) also occurs on the noun's TELIC list. Thus, in exactly those cases where the verb's NUCLEUS value is identical to one of the elements on the noun's TELIC list argument raising of a PP dependent on the noun's COMPS list must be permitted.

We therefore revise the definition of the relation *raised* shown in figure 8. The new definition of the clause for nominal complements can be seen in figure 25. The definition now encodes the fact that a nominal argument can be the source for argument raising, only if one of the elements of its TELIC list is identical with the verb's NUCLEUS value. The first argument of the relation *raised* therefore not only contains the HEAD value of the

$$
\textit{raised}\left(\begin{bmatrix}\textsc{cat}|\textsc{head} & \textit{verb}\\ \textsc{cont}|\textsc{nucl} & \boxed{2}\end{bmatrix}, \left\langle\begin{bmatrix}\textsc{l} & \begin{bmatrix}\textsc{cat} & \begin{bmatrix}\textsc{head} & \textit{noun}\\ \textsc{val}|\textsc{comps} & \boxed{1}\end{bmatrix}\\ \textsc{cont}|\textsc{rstr}|\textsc{fst}|\textsc{ncl}|\textsc{qual}|\textsc{telic} & \textit{element}\left(\boxed{2}\right)\end{bmatrix}\end{bmatrix}\right\rangle\right)
$$
$$
:= \boxed{1}\,\textit{list-of-mod-PP}
$$

FIGURE 25. Nominal Arguments Raising Sources

embedding verb but its entire LOCAL value so that also the CONTENT value is accessible in the relation.

4.1. Further Remarks on the Qualia Structure. The way we used Pustejovsky's notion of "qualia" in the previous section to explain the semantic factors involved in the possibility of splitting PP complements from their nominal heads needs some further remarks.

The qualia structure for a noun like 'book' as given in Pustejovsky (1995) can be seen in figure 26. In this qualia structure, the feature TELIC takes

$$
\begin{bmatrix}\textsc{qualia} & \begin{bmatrix}\textsc{formal} & \textit{book}\left(\textsc{x}\right)\\ \textsc{telic} & \textit{read}\left(\textsc{y},\textsc{x}\right)\\ \textsc{agentive} & \textit{write}\left(\textsc{y},\textsc{x}\right)\end{bmatrix}\end{bmatrix}
$$

FIGURE 26. Qualia structure of the noun book

as its value the relation *read*.

Pustejovsky intends this TELIC value to encode the inherent purpose of a noun. Among other things he wants to capture the fact that a sentence like (184) has the meaning "Mary enjoyed reading the book".

(184) Mary enjoyed the book.

This is done via complement coercion, i.e., the verb 'enjoy' coerces the NP 'book' into an event denotation, in particular into that event denotation that is available from the NP's qualia structure.

In our theory, we also need a way of encoding the events associated with a noun and therefore introduced the qualia structure into the CONTENT of nouns. But we assume that the relationship represented in the qualia structure via the feature TELIC encodes activities associated with the noun in a more general way than in Pustejovsky's approach. The lexical entry for the noun *Buch* according to our theory, given in figure 27, shows that the feature TELIC takes a list of semantic relations (*psoas*) as its value. We want to express that semantic relations like *borrow, buy, read*

$$\begin{bmatrix} \text{PHON} & \langle \textit{Buch} \rangle \\ \text{S}|\text{LOC} & \begin{bmatrix} \text{CAT}|\text{HEAD} & \textit{noun} \\ \text{CONT}|\text{RESTR} & \left\langle \begin{bmatrix} \text{NUCL}|\text{QUAL}|\text{TEL} & \langle \textit{borrow-rel,buy-rel,read-rel,write-rel} \rangle \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{ARG-ST} & \left\langle \textit{PP} \right\rangle \end{bmatrix}$$

FIGURE 27. Qualia Structure of *Buch*

are activities that are typically associated with a noun like 'book'. Our feature TELIC is thus not only appropriate for one semantic relation of the sort *qfpsoa*, but takes a list of *qfpsoas* as its value.

In Pustejovsky's approach to the lexical semantics of nouns, it is not only the feature TELIC that encodes events associated with a noun, but also the feature AGENTIVE. In the approach presented here, we assume that the semantic relation encoded in the feature AGENTIVE is also a member of the TELIC list, because this relation, expressing how something is created, also expresses a semantic relation typically associated with that noun and should therefore also trigger the possibility of argument raising as defined in figure 25.

The fact, that the feature TELIC encodes a list of semantic relations, might be helpful with respect to another phenomenon. As observed in section 3, the possibility of splitting a PP from an NP is influenced by the context in which the respective sentence occurs. One way of accounting for the fact, that splitting of the two elements becomes much more acceptable in certain contexts, could be, that the TELIC list of the noun involved can be extended by the verb's semantic relation with which it is associated within that context. How exactly this idea could be integrated into our argument raising approach must be left to future research.

5. Problems of the lexical-semantics approach

5.1. How can the contextual dependence be explained? The lexical semantics approach to NP-PP split makes clear distinctions between those verb-noun combinations where NP-PP split is possible and those where this construction is not possible.

But another interesting fact about all the above unacceptable NP-PP split examples is that they become much more acceptable in the appropriate context.

As discussed in section+1 of the previous chapter, this was already observed by Fanselow (1991) as shown in (117) on p. 53, here repeated as (185).

(185) Schau her, was Britt, deine Tochter, mit meiner Biographiensammlung angestellt hat! Die Bücher sind zerrissen, bemalt und mit Brei bekleckert! Zwei meiner Bände über Carnap sind entzwei! Drei von meinen Biographien über Bloomfield sind zerfetzt und *über Chomsky* hat sie sogar [alle Bücher] zerrissen.

'Look, what Britt, your daughter, did with my collection of biographies! The books are torn up, coloured and stained with pap! Two of the volumes on Carnap are broken! Three of my biographies of Bloomfield are torn up and on Chomsky she tore up all of the books.'

The example shows that a sentence like (172) is much improved if it occurs in a context where the topic is the destruction of books.

Examples of NP-PP split where the NP is modified by a PP introduced by *mit* (with) are mostly judged to be unacceptable and Pafel (1995) cites example (186) to show that fronting of PP adjuncts from NPs is generally unacceptable in German.

(186) * *Mit roten Haaren* hat Peter [eine neue Freundin].
with red hair has Peter a new girl friend

But again embedded in the right context one can find acceptable examples where the *mit*-PP occurs separate from the head noun.

(187) Auf einer Show in Düsseldorf wurden die neuesten Frisurmodelle vorgestellt.

a. *Mit kurzen Haaren* wurden dabei nur [drei Modelle] gezeigt.
With short hair were there only three models presented.

'The newest haircuts were presented during a show in Düsseldorf. Only three of the models shown had short hair.'

The example in (187) shows that with the right kind of context the sentence in (187a) is acceptable even though we saw in (186) that an example of this kind on its own is ungrammatical.

On a first sight it seems as though one could integrate these context dependency into our lexical-semantics approach. The idea of such an approach to semantics is to provide a model of meaning in language that "captures the means by which words can assume a potentially infinite number of senses in context while limiting the number of senses actually stored in the lexicon" (Pustejovsky, 1995, p. 105). To account for this polymorphic behaviour of language, a set of generative devices (such as type coercion or co-composition) connect the different levels of lexical semantics, providing for the compositional interpretation of words in context. To account for the context dependency of the acceptance of an example like (172b) one would need a device that allows the qualia structure of a noun like *Buch* to be changed such that it can be combined with the verb *zerreissen* (tear up) in the same way as it is combined with *verfassen* (write).

While we showed how the general approach can be integrated into our account of NP-PP split, the above described context dependency needs to be further investigated.

But how can we explain this contextual influence under a lexical-semantic view? Does the qualia structure of words change in certain discourses? If so, what are the properties of those discourse structures that can change the lexical semantics of lexical elements?

Under closer inspection it does not seem to be very plausible to assume that the value of the qualia structure can change if the respective word occurs in a certain context. All semantic properties of words which are subsumed under the *content* value (and this is also the idea of Pustejovsky's lexical semantic structure) should be inherent properties of that word which cannot be changed. Properties which depend on certain contexts in which a word occurs should not be specified in lexicon but should only be specified within the relevant context. A possible place for such context-dependent properties could be the CONTEXT value of signs.

In chapter 6 we will take a closer look at the contextual influence on NP-PP split. We will determine in which contexts exactly NP-PP split can occur and we will provide an HPSG theory which specifies in which contexts a phrase could possibly occur.

5.2. Limitations of the QUALIA structure. Another drawback of the lexical-semantics approach to NP-PP split is that in the noun's qualia structure via the feature TELIC, on which it depends whether raising of a PP is licensed or not, only activities associated with the noun are specified. But NP-PP split is quite often also licensed in noun-verb combinations where the verb does not represent an activity directly associated with that noun. For the noun *Buch*, for example, NP-PP split is also possible with the verbs *geben (give)*, *empfehlen (recommend)*, *bewundern (admire)*, as shown in (188).

(188) a. Über Syntax habe ich Dir noch kein Buch gegeben.
on syntax have I you yet no book given
'I have not yet given you a book on syntax.'

b. Über Semantik kann ich Dir das Buch von Arnim sehr empfehlen.
on semantic can I you the book by Arnim strongly recommend
'I can strongly recommend you the Arnim's book on semantics.'

c. Von Thomas Mann bewundere ich alle Romane.
of Thomas Mann admire I all novels
'I admire all novels of Thomas Mann'

All three verbs involved in these NP-PP-split examples express very general activities which can be associated with all kinds of nouns and which will probably never be specified by any noun's TELIC value.

Does that mean that the noun's TELIC value is not always the trigger for the possibility of raising a PP? Or is it a different lexical semantic property of the verb and the noun involved in NP-PP split which triggers the raising of the PP? Or is lexical-semantics not at all the factor that triggers the possibility of splitting a PP from an NP?

We will come back to the last question in chapter (6) and show a different place where lexical semantic factors might play a role in the NP-PP split construction.

CHAPTER 6

Pragmatic Aspects

1. Introduction

In this chapter we investigate the exact nature of "context effects" in connection with the NP-PP split construction.

At the end of the last chapter we criticized our lexical-semantics approach to the NP-PP-split construction based on the observation that certain examples ruled out by our theory improve when they are embedded in an appropriate context. We also tacitly assumed that those examples that are licensed by our theory are always acceptable, independent of any given context. But example (189)[1] shows that a sentence like (168) we discussed on p. 85 is not a felicitous continuation of the given context.

(189) Gestern war Klaus seit langem mal wieder in der Bibliothek.

'Yesterday, Klaus went to the library.'

a. # [Ein Buch] wollte er dort *über Syntax* ausleihen.
a book wanted he there on syntax borrow
'He wanted to borrow a book on syntax there.'

What determines the acceptability of a sentence within a certain context is its focus-background structure. In the remainder of this chapter we thus explore the possible focus-background-structures of NP-PP split constructions. Furthermore, we develop an approach to represent such focus-background structures within the HPSG framework to be able to express restrictions on the focus-background structures of NP-PP split within our analysis of the construction.

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[1]Throughout this chapter we will use "#" in examples to indicate that the corresponding sentence is not a felicitous utterance in the given context. Sentences marked like that can nevertheless be grammatical sentences of German and might be acceptable in some other context.

That it is the possibility of certain constituents to act as the focus or the topic of a sentence which influences the acceptability of certain constructions was already observed by Kuno (1987) for data similar to the NP-PP split construction in English. In the following, we therefore discuss his approach as a starting point for our own investigations of the focus-background structures of NP-PP split.

2. A functional syntax approach (Kuno 1987)

Starting point for Kuno's investigation is the Specified Subject Condition which we already discussed in section 1 of chapter 4 and which has been evoked by syntacticians to account for the contrast in grammaticality exemplified in (190).

(190) a. Marilyn Monroe, I don't want to buy a portrait of.
b. * Marilyn Monroe, I don't want to buy Mary's portrait of.

According to this condition the example in (190b) is ungrammatical because the NP out which the topicalized NP has been extracted contains a specified subject in form of a possessor NP. Kuno (1987, p. 13), however, observes that there are parallel examples that are perfectly acceptable as shown in (191).

(191) a. This is the story that I haven't been able to get Mary's version of.
b. This is the event that I liked CBS's reporting of best all.

Horn concludes that the Specified Subject Condition is not a plausible constraint for English and that one needs to look for a new explanation for the unacceptability of (190b) compared to the acceptability of the examples in (191).

In investigating the reason for this differences in acceptability he observes that the possessor NPs *Mary's* and *CBS's* in (191) can be interpreted contrastively: the expression *Mary's version of the story* suggests that there are other people's versions of the same story and the expression *CBS's reporting of the event* suggests that there are other station's reportings of the same event. In contrast, the possessor NP *Mary's* in (190) cannot be interpreted contrastively because the expression *Mary's picture of Marylin Monroe* does not imply that there are other people's portrait's of Marilyn Monroe. He further observes that these contrastively used elements are pronounced with a focus intonation.

That focus plays an important role in these examples is further supported by the example shown in (192) which, according to Kuno, is quite unacceptable without any given context.

(192) ?? This is the story that I haven't been able to get Mary's latest version of.

In this case, *latest* is more likely to be interpreted as the focus and not *Mary's*. Kuno's conclusion from the above data is that extraction from picture noun's with possessive NPs is allowed when the possessive NP represents focus information.

Kuno further hypothesizes that it is not only the discourse function of the possessor NP which influences the extraction from the respective NP, but also the discourse function of the PP from which the fronted NP is extracted. His idea is that "only those constituents that qualify as topics can undergo unbounded movement transformations". Kuno thus tries to explain the contrast in acceptability between the examples in (193) and (194) with the help of the influence of topic.

(193) a. Q you bought a portrait of Marilyn Monroe.
b. Who did you buy a portrait of?

(194) a. Q you bought Mary's portrait of Marilyn Monroe
b. * Who did you buy Mary's portrait of?

In (193) the PP *of Marilyn Monroe* can qualify as the topic of the sentence and thus fronting of the embedded NP is acceptable. In (194) the possessor NP *Mary's* qualifies more readily as the topic and fronting of the embedded NP is thus unacceptable because a constituent which is not very likely to be the topic of the clause has undergone *wh*-movement.

In the examples in (191), where according to Kuno the possessive NPs are interpreted as contrastively focused constituents, fronting of the embedded NP is thus possible because the NPs qualify as topics.

Not only in the so far discussed cases of NPs containing a possessor NP one can observe differences in the acceptability of fronting an embedded NP, but Kuno observes that also without the presence of possessor NPs such difference can be observed as shown in (195) and (196).

(195) a. What did you buy a book on?
b. Who did you see a picture of?

(196) a. * What did you lose a book on?
b. * Who did they destroy pictures of?

Here again he hypothesizes that the topic-hood of the fronted NP plays an important role. He observes that in the examples in (197), the parallel examples to (195a) and (196b) but without a fronted *wh*-word, the fact that the book under discussion is about John Irving is much more relevant in (197a) than in (197b).

(197) a. Yesterday, on my way home, I bought a book on John Irving.
b. Yesterday, on my way home, I lost a book on John Irving.

He concludes that (195a) is more acceptable than (196b) because in the former one the fronted NP more readily qualifies as the topic of the sentence than in the latter one.

Whether an embedded NP qualifies as a topic also depends on the context in which the respective sentence occurs as Kuno demonstrates by the example in (198).

(198) Speaker A: Right after Chairman Mao died, they started taking pictures of the Central Committee members off the wall.
Speaker B: Who did they destroy more pictures of, Chairman Mao or Jiang Qing?

The utterance of speaker B in (198) is acceptable in contrast to (196b) because in the discourse in (198) the content of the picture is relevant to the rest of the sentence. According to Kuno, the fronted NP in the utterance of speaker B referring to Chairman Mao or Jiang Qing thus qualifies as the topic of the sentence and can therefore be fronted.

Kuno's observations clearly illustrate the pragmatic nature of the phenomenon of fronting embedded NPs in English. Although his ideas for an account of the phenomenon based on the topic-hood of certain constituents leave many questions open, for example what exactly does Kuno mean by topic or how can one determine when a constituent qualifies as the topic, they will nevertheless serve us as a first hint where to start with our investigations of the pragmatic nature of the NP-PP split construction.

3. Background assumptions

3.1. Some terminology. Sentences are uttered by people to exchange information. The information provided by a sentence is based on its meaning. A major goal of linguistics is thus to explain how meaning is encoded in linguistic structure. One branch of linguistic research has focussed on truth-conditional semantics, in which the meaning of a sentence is formally represented with the help of a set theoretic semantics. But it has long been noted that two sentences which are truth-conditionally equivalent can differ in the way how they say what they say about the world, i.e., they do not provide the same information. This kind of non-truth-conditional meaning of a sentence depends on the context in which the sentence is uttered and has been studied under the name *information packaging* (cf., Vallduví 1992, p. 2) in the area of pragmatics.

Which part of a sentence can be informative in which way is dependent the linguistic context in which the sentence occurs. Depending on the discourse, one and the same sentence may provide different sets of information. One therefore speaks of the *information structure* of a sentence which divides an utterance into the part which is informative with respect to a certain discourse, i.e., the focus, and into the part which is uninformative, i.e., the background. Since the part of a sentence which is in the focus usually provides information that has not been mentioned in the discourse before, the term "new information" is often used as an equivalent to focus, and consequently, the background is referred to as "old" or "given" information. But there is an ongoing discussion whether referential terms like new and given should be used for the definition of a relational notion like focus, cf., (Vallduví, 1992, p.16). A counterexample to the claim that the focus can generally be interpreted as providing new information are examples like (199) taken from Rochemont and Culicover (1990) are provided.

(199) a. Who does John's mother like?
b. John's mother likes him.

The part of the example (199b) which is informative in the question-answer pair in (199), is the pronoun *him*, i.e., it is the focus of the sentence. But the pronoun does not provide new information in the sense that it introduces a new referent into the discourse because it anaphorically refers to a person that has been mentioned in the discourse before. Taking such problematic aspects into account, Höhle (1982), Jacobs (1988), Vallduví

(1992), and Kubon (1999) among others provide different ways of defining the notion *focus*.

Before we can make use if the notion of information structure with respect to the NP-PP split phenomenon, we need to make the central notions of focus, topic and background more precise.

3.2. Focus, Topic and Intonation. Languages differ with respect to how the information structure (IS) of utterances is represented. Linguistic means to mark IS that can be found are, for example, word order, morphology or prosody. German is, like English and French, a so-called intonation language and focussed constituents are signaled by pitch accent (cf., Féry 1993). Only one syllable is stressed by this pitch accent, but a larger part of the utterance can be focussed. Accordingly the syllable bearing the pitch accent is called *focus exponent*. If the focus is restricted to the word bearing the pitch accent, one speaks of *narrow focus* and if it is not, one speaks of *broad focus*. Sometimes a pitch accent is ambiguous as to which constituent is focussed. To determine the exact range of the focus in an utterance one can use the widespread question test for focus. This test[2] consists of a question-answer pair where the focus of an utterance corresponds to the interrogative constituent in the question if the utterance under consideration is a felicitous answer to the question. Example (200a), for example, with the pitch accent on the subject *Maria*, is a felicitous answer to the question in (200b).[3]

(200) a. $[\text{MARIA}]_F$ hat heute Geburtstag.
Maria has today birthday
'It is Maria's birthday today.'

b. Wer hat heute Geburtstag?
who has today birthday?
'Whose birthday is it today?'

The interrogative pronoun *wer* in (200b) corresponds to the subject *Maria* in (200a) which means that this is a sentence with a narrow focus on the subject.

[2]Höhle (1982, p .92) remarks that this question test is not a realistic test, because the answer of the question-answer pair is usually not a natural answer to the question. In "natural" answers to questions, pronouns are usually used or only the constituent which is asked for is uttered, whereas in the answers in the question test all words of the question are repeated.

[3]We write the word that bears the pitch accent in capital letters and mark the entire domain of the focus by the brackets $[]_F$.

The pitch accent on *Buch* in the example (201) taken from Höhle (1982) is ambiguous between a broadly focussed reading and a narrow focussed reading.

(201) Karl hat dem Kind das BUCH geschenkt.
Karl has the child the book given.
'Karls has given the book to the child.'

(202) a. Was hat Karl dem Kind geschenkt?
what has Karl the child given
'What has Karl given to the child?'

Karl hat dem Kind [das BUCH]$_F$ geschenkt.
Karl has the child the book given

b. Was hat Karl hinsichtlich des Kindes getan?
what has Karl with respect to the child done
'What has Karl done with respect to the child?'

Karl hat dem Kind [das BUCH geschenkt]$_F$.
Karl has the child the book given

c. Was hat Karl getan?
what has Karl done
'What did Karl do?'

Karl hat [dem Kind das BUCH geschenkt]$_F$.
Karl has the child the book given

d. Was ist geschehen?
what is happened
'What happened?'

[Karl hat dem Kind das BUCH geschenkt]$_F$.
Karl has the child the book given

The sentence in (201) can be the answer to all the questions given in (202) and Höhle (1982) lists even further possible questions. The corresponding answers show which constituent is focussed in each case. In (202a), only *das Buch* is focussed, the accent thus indicates narrow focus. In (202b), the available broad focus consists of the constituent *das Buch geschenkt*, and in (202c) of *dem Kind das Buch geschenkt*. Finally, (202d) shows that with the accent on *Buch* even the entire sentence can be focussed. Höhle (1982) discusses more focus projection data and Jacobs (1988), Jacobs (1991) provides an account of the regularities of focus projection in German. The exact principles of how focus can project in German are not of interest for our purposes - it suffices to know that we can determine the domain of the focus projecting from the focus exponent with the help of the question test. In section 4.1 we will say a bit more about how focus projects in NPs and PPs in German.

So far, we only mentioned that there is one pitch accent in a sentence which determines where the focus of the sentence is. But there is more to say about accents and information structure. First of all, there can be more than one accent in a sentence which influences the focus-background structure and secondly, the intonation contour of the accent also plays an important role.

In (201), for example, there is only one pitch accent in the entire clause. It is called a *nuclear accent* (cf., Féry 1993), because it is the last accent in the sentence. The accent in (200a) is a nuclear accent, too. The accents in both examples have a so-called falling contour (cf., Féry 1993) which means that the stressed syllable starts at a high intonation level and the intonation falls on the following syllable. This falling contour can be represented as shown in (203).

(203) [MARIA\\]$_F$ hat heute Geburtstag.
Maria has today birthday
'It's Mary's birthday today.'

Example (204) shows a sentence with two pitch accents.

(204) GABI/ fährt nach BERLIN\\.
Gabi travels to Berlin

The first accent is called *pre-nuclear accent* and the second accent is the already mentioned nuclear accent. The two accents have two different intonation contours. The nuclear accent on *Berlin* has a falling contour as the ones in (203) and (201). But the pre-nuclear accent on *Gabi* has a so-called *raising contour* (indicated by "/"): the stressed syllable starts at a low level and the intonation rises on the following syllable.

With these two accents, (204) can serve as an answer to the question in (205a) and thus has the focus-background structure shown in (205b).

(205) a. Wer fährt wohin?
who travels where

b. [GABI/]$_F$ fährt [nach BERLIN\\]$_F$.
Gabi travels to Berlin

Such constructions with two focussed constituents, each with its own focus accent, are called *multiple-focus* constructions.

A pre-nuclear accent with a rising contour cannot only be found in multiple-focus constructions. As discussed by Féry (1993), topicalized constituents like *geschlafen* in (206) have a rising contour.

(206) GESCHLAFEN/ hat KEINER\ von uns.
slept has no-one of us
'None of us slept.'

The focus accent, which is realized with a fall, is on *keiner*, but the rising accent on *geschlafen* cannot be understood as marking the focus, as the ill-formed question-answer pair in (207) shows.

(207) Was hat keiner von uns getan?
'What did none of do?'

\# GESCHLAFEN/ hat KEINER\ von uns.
slept has no-one of us

The rising accent in pre-nuclear position can only refer to contextually given material as shown by the question-answer pair in (208).

(208) Wer hat geschlafen?
'Who slept?'

GESCHLAFEN/ hat KEINER\ von uns.
slept has no-one of us

Thus, *geschlafen* is part of the background of the sentence. However, as observed by Büring (1997), it is not some arbitrary part of the background, but this topicalized constituent is understood as "what the rest of the sentence is about"(Büring, 1997). Following Büring, we will call this constituent the *topic* of the sentence. The topic may or may not be present, i.e., sentences are either bipartite or tripartite from the point of view of topic-focus-background structure. Background is the part of a sentence which neither topic nor focus. We thus have a tripartite information structure. This is quite similar to the approach of Vallduví (1992) who assumes that a sentence is partitioned into focus and ground, where ground is further partitioned into link and tail. Vallduví's notion of link corresponds to our notion of topic. There are of course other possibilities of how to partition the information structure of sentences. An overview of the different possibilities that have been proposed in the literature can be found in Kubon (1999, sec. 2.2).

The accent sequence in examples like (206) is called a *hat pattern* (cf., Féry 1993) and occurs in a number of different contexts. One of the cases where this hat pattern is often used in German is a kind of contrastive topicalization, the so-called *I-topicalization* (intonational topicalization). Because of its non-trivial informational structure, the construction has received particular attention in the literature, cf. Höhle (1991), Krifka (1994), Büring (1999) and Jacobs (1997). Example (209b), taken from Jacobs (1997), is a typical sentence with I-topicalization.

(209) a. Kann man denn alle Romane von Grass empfehlen?
can one then all novels by Grass recommend
'Can one recommend all novels by Grass?'

b. Na ja, /ALLE kann man sicher \NICHT empfehlen.
well all can one surely not recommend
'Well, one can surely not recommend all of them.'

One of the characteristics according to Jacobs (1997) is that one can give alternatives to the stressed parts of the sentence in a possible supplement as illustrated by the example in (210).

(210) ..., aber sein ERSTER ist zweifellos ein MEISTERwerk.
but his first one is doubtless a masterpiece
'..., but his first one is with no doubts a masterpiece.'

This short overview of intonation patterns that are used in German to mark the focus-background structure of a sentence is by no means complete. We introduced only those kinds of accents which will be of importance for our discussion of the focus-background structure of the NP-PP split construction in section 4.3.

In the following sections we will focus on the pragmatic effects of the NP-PP-split construction and investigate under which intonation contours and focus-background structures this construction can occur. We will integrate a component for information structure into the architecture of signs in HPSG and we will develop an HPSG theory which restricts sentences with a NP-PP split constructions to certain focus-background structures.

4. The role of topic and focus

4.1. Focus projection in NPs. In a sentence, only one word bears a nuclear pitch accent, but a broader constituent can be focussed, as we already mentioned in the previous section. In the following we will give a brief overview of the possibilities of focus projection in NPs in German.

In an NP without any postnominal adjuncts or arguments, the focus can only project from the head noun as shown in (211). An accent on a prenominal adjective or a determiner can only signal narrow focus as exemplified by (212) and (213).

(211) Was hast Du gekauft?

'What did you buy?'

a. Ich habe [einen roten HUT\]$_F$ gekauft.
I have a red hat bought

'I bought a red hat.'

b. # Ich habe [einen ROTEN Hut]$_F$ gekauft.

c. # Ich habe [EINEN roten Hut]$_F$ gekauft.

(212) Was für einen Hut hast Du gekauft?

'What kind of hat did you buy?'

a. Ich habe einen [ROTEN\]$_F$ Hut gekauft.
I have a red hat bought

(213) Wieviele Hüte hast Du gekauft?

'How many hats did you buy?'

a. Ich habe [EINEN\]$_F$ Hut gekauft.
I have one hat bought

'I bought one hat.'

If a noun is followed by an argument or an adjunct, focus projection over the entire NP is only possible if the nuclear accent is on the rightmost element that is part of the NP, as shown in (214).

(214) Was habt ihr verpasst?

'What did you miss?'

a. Wir haben [die Eröffnung der AUSTELLUNG\]$_F$ verpasst.
we have the opening of the exhibition missed

'We missed the opening of the exhibition.'

b. # Wir haben [die ERÖFFNUNG\ der Ausstellung]$_F$ verpasst.
we have the opening of the exhibition missed

(215) Habt ihr die Ausstellung verpasst?

'Did you miss the exhibition?'

a. Nein, wir haben [die ERÖFFNUNG\]$_F$ der Ausstellung
no we have the opening of the exhibition
verpasst.
missed

'No, we missed the opening of the exhibition.'

(216) Was hast Du ersteigert?

'What did you buy at the auction?'

a. Ich habe [einen Stuhl aus dem 17. JAHRHUNDERT\]$_F$
I have a chair from the 17th century
ersteigert.
bought at the auction

'I bought a chair from the 17th century at the auction.'

b. # Ich habe [ein STUHL\ aus dem 17. Jahrhundert]$_F$
I have a chair from the 17th century
ersteigert.
bought at the auction

(217) Was hast Du aus dem 17. Jahrhundert ersteigert?

'What did you buy from the 17th century at the auction?'

a. Ich habe [einen STUHL\]$_F$ aus dem 17. Jahrhundert
I have a chair from the 17th century
ersteigert.
bought at the auction

4.2. Focus projection in PPs. The situation is similar for focus projection in PPs. In PPs, the focus can never project from the preposition itself, but only from inside of the NP. For the NP itself, the regularities observed above hold. In a PP embedding an NP without a postnominal argument or adjunct, the focus can thus only project from the head noun, as shown in example 218.

(218) Wohin hast Du den Stuhl gebracht?

'Where did you bring the chair?'

a. Ich habe den Stuhl [in die WOHNUNG]$_F$ gebracht.
I have the chair in the flat brought
'I brought the chair into the flat.'

b. # Ich habe den Stuhl [IN die Wohnung]$_F$ gebracht.

As (219) shows, the preposition can have a nuclear accent serving as narrow focus.

(219) Hast Du den Stuhl vor die Wohnung gestellt?
'Did you put the chair in front of the flat?'

a. Nein, ich habe den Stuhl [IN]$_F$ die Wohnung gestellt.
no I have the chair into the flat put
'No, I put the chair into the flat.'

If a PP embeds a complex NP with postnominal arguments or adjuncts, focus can only project if the nuclear accent is on the last constituent of the embedded NP as shown in (220).

(220) Wohin hast Du den Stuhl gebracht?
'Where did you bring the chair?'

a. Ich habe den Stuhl [in die Wohnung im ersten STOCK]$_F$ gebracht.
I have the chair into the flat on the first floor brought
'I brought the chair into the flat on the first floor.'

b. # Ich habe den Stuhl [in die WOHNUNG im ersten Stock]$_F$ gebracht.

4.3. The focus-background structure of NP-PP split. In section 1 we observed that the sentence (189a), here repeated as (221a) is not a felicitous continuation of the context given in (221).

(221) Gestern war Klaus seit langem mal wieder in der Bibliothek.
'Yesterday, Klaus went to the library.'

a. # [Ein Buch] wollte er dort *über Syntax* ausleihen.
a book wanted he there on syntax borrow
'He wanted to borrow a book on syntax there.'

We will now try to determine why exactly (221a) is infelicitous in the given context. We therefore investigate the possible focus-background structures of the sentence and what a possible continuation of the context in (221) could be.

Example (222) shows the possible accent placements for (221a) and the resulting possible focus-background structure indicated by the question-answer pairs.

(222) a. Was für ein Buch hat er dort ausgeliehen?

'What kind of book did her borrow there?'

[Über SYNTAX\]$_F$ hat er dort ein Buch ausgeliehen.
on syntax has he there a book borrowed

'He borrowed a book on syntax.'

b. Was hat er dort zum Thema "Syntax" ausgeliehen?

'What did he borrow about "syntax"?'

Über Syntax hat er dort [ein BUCH\]$_F$ ausgeliehen.
on syntax has he there a book borrowed

c. Was hat er zu welchem Thema ausgeliehen?

'What did he borrow on which topic?'

[Über SYNTAX\]$_F$ hat er dort [ein BUCH\]$_F$ ausgeliehen.
on syntax has he there a book borrowed

d. Was hat er dort über Linguistik ausgeliehen?

'What did he borrow on linguistics there?'

[Über SYNTAX/]$_T$ hat er dort [ein BUCH\]$_F$ ausgeliehen.
on syntax has he there a book borrowed

(Aber über Phonologie gab es leider nichts.)
but on phonologie was there unfortunately nothing

e. Hat er sich Bücher über Linguistik besorgt?

'Did he get hold of linguistic books?'

[Über SYNTAX/]$_T$ hat er ein Buch [AUSGELIEHEN\]$_F$.
on syntax has he a book borrowed

In (222a), the topicalized PP bears a falling nuclear accent and is thus the focus of the sentence. In (222b), the nuclear accent is on *ein Buch* which is thus the focus of the sentence. (222c) shows a NP-PP split construction with multiple foci, where both the PP and the NP have a falling accent. In (222d) and (222e), the NP-PP split construction occurs with a hat contour where the fronted PP bears the topic accent and either the NP *ein Buch* or the verb *ausgeliehen* bear the focus accent. None of the question-answer pairs in (222) is a felicitous continuation of the discourse in (221).

(223) shows two questions which can be possible continuations of the discourse in (221).

(223) a. Was hat er dort gemacht?

'What did he do there?'

Er hat [ein Buch über SYNTAX\ ausgeliehen.]$_F$
he has a book on syntax borrowed

'He borrowed a book on syntax.'

b. Was hat er dort ausgeliehen?

'What did he borrow there?'

Er hat [ein Buch über SYNTAX\]$_F$ ausgeliehen.

The answers show the focus-background structure that a possible continuation of the given discourse is required to have. The most natural continuation is the one in (223a) where, except for the pronoun referring to *Klaus*, everything is in the focus of the sentence. None of the sentences we saw in (222) had the required focus-background structure, because neither the fronted PP in (222a) nor the NP in the *Mittelfeld* in (222b) nor the verb in verb-last position (222e) could be the focus exponent for a necessary focus projection in which these three constituents are in the focus.

In the answer to the question in (223b), which is only felicitous in the given discourse if one assumes as common ground that Klaus always borrows books when he goes to the library, only the entire NP including the PP is in the focus. Again none of the sentences in (222) could have the required focus-background structure.

One first hypothesis explaining these facts is that the focus in a split NP cannot project over the entire NP. We will come back to this idea in the following sections when we investigate the possible focus-background structures of NP-PP split constructions in more detail. First, we consider those sentences where an NP modified by a PP occurs in the *Mittelfeld* and then we turn to various NP-PP split constructions.

4.3.1. *Focus-background structures of NPs modified by a PP.* We consider two kinds of examples in the following discussion, one with the NP *ein Buch über Mozart* (*a book about Mozart*) in object position and one with the NP *eine Porzellanfigur aus der Rothschildsammlung* (*a figurine from the Rothschild collection*) in subject position as shown in (224).

(224) a. Detmar hat ein Buch über Mozart ausgeliehen.
Detmar has a book about Mozart borrowed
'Detmar borrowed a book about Mozart.'

b. Eine Porzellanfigur aus der Rothschild-Sammlung steht in der Vitrine.
a figurine from the Rothschild collection stand in the display
'There is a figurine from the Rothschild collection in the display.'

To get a clearer picture how the NP-PP split construction and its focus-background structure might differ from other word orders, we start with the investigation of the possible focus-background structures of the two examples in (224).

As shown in (225), we get several possible focus-background structures for (224a) if the nuclear accent is on the NP as part of the PP *über Mozart*.

(225) a. Worüber hat Detmar ein Buch ausgeliehen?
'What did Detmar borrow a book about?'

Detmar hat ein Buch [über MOZART]$_F$ ausgeliehen.
Detmar has a book about Mozart borrowed
'Detmar borrowed a book about Mozart.'

b. Was hat Detmar ausgeliehen?
'What did Detmar borrow?'

Detmar hat [ein Buch über MOZART]$_F$ ausgeliehen.
Detmar has a book about Mozart borrowed

c. Was hat Detmar gemacht?
'What did Detmar do?'

Detmar hat [ein Buch über MOZART ausgeliehen.]$_F$
Detmar has a book about Mozart borrowed

d. Gibt es irgendetwas Neues?
'Are there any news?'

[Detmar hat ein Buch über MOZART ausgeliehen.]$_F$
Detmar has a book about Mozart borrowed

The sentence can have a narrow focus reading as in (225a), or a broad focus reading with the focus including only the NP (225b), or the NP plus the participle *ausgeliehen* (225c), or the entire sentence as in (225d).

If the nuclear accent is on the head noun *Buch* of the NP, only the NP *ein Buch* can be in the focus of the sentence as the question-answer pairs in (226) show.

(226) a. Was hat Detmar über Mozart ausgeliehen?

'What did Detmar borrow about Mozart?'

Detmar hat [ein BUCH]$_F$ über Mozart ausgeliehen.
Detmar has a book about Mozart borrowed

b. Was hat Detmar ausgeliehen?

'What did Detmar borrow?'

\# Detmar hat [ein BUCH über Mozart]$_F$ ausgeliehen.
Detmar has a book about Mozart borrowed

In a context where the entire NP including the PP is required to be in the focus, the sentence with the accent on *Buch* is infelicitous as (226b) shows.

Another possible intonation is the one where the nuclear accent is on the subject *Detmar*. In this case, only the accented constituent can be in the focus and no focus projection is possible as the question-answer pairs in (227) show.

(227) a. Wer hat ein Buch über Mozart ausgeliehen?

'Who borrowed a book about Mozart?'

[DETMAR\]$_F$ hat ein Buch über Mozart ausgeliehen.
Detmar has a book about Mozart borrowed

b. Was ist passiert?

'What happened'

\# [DETMAR hat ein Buch über Mozart ausgeliehen.]$_F$
Detmar has a book about Mozart borrowed

The entire NP *ein Buch über Mozart* thus has to be in the background of the sentence.

A hat contour, where the subject *Detmar* receives a rising accent and either *Buch* or *Mozart* receives the falling accent, is also a possible intonation contour as in (228).

(228) a. DETMAR/ hat ein Buch über MOZART\ausgeliehen.
b. DETMAR/ hat ein BUCH\ über Mozart ausgeliehen.
Detmar has a book about Mozart borrowed
'Detmar borrowed a book about Mozart.'

In both cases, the raising accent in pre-nuclear position can either indicate that the constituent is in the focus, in which case we have a multiple-focus construction, or that the constituent is the topic. The nuclear accent on *Mozart* as in (228a) can either stand for narrow focus on the PP, for broad focus on the entire NP, or for broad focus on the NP plus the verb *ausgeliehen*. The questions in (229) indicate all possible focus-background structures for a multiple-focus sentence with the intonation as in (228a).

(229) a. Wer hat ein Buch worüber ausgeliehen?
'Who borrowed a book on what?'
[DETMAR/]$_F$ hat ein Buch [über MOZART\]$_F$ ausgeliehen.
Detmar has a book about Mozart borrowed
b. Wer hat was ausgeliehen?
'Who borrowed what?'
[DETMAR/]$_F$ hat [ein Buch über MOZART\]$_F$ ausgeliehen.
Detmar has a book about Mozart borrowed
c. Wer hat was gemacht?
'Who did what?'
[DETMAR/]$_F$ [hat ein Buch über MOZART\ ausgeliehen]$_F$.
Detmar has a book about Mozart borrowed

The question-answer pairs in (230) indicate all possible topic-focus-background structures for the intonation as illustrated in (228a).

(230) a. Worüber habt Ihr, Detmar und Du, Bücher ausgeliehen?
'What did you two, Detmar and you, borrow books on?'
[DETMAR/]$_T$ hat ein Buch [über MOZART\]$_F$ ausgeliehen.
Detmar has a book about Mozart borrowed
b. Was habt Ihr ausgeliehen?
'What did you borrow?'

[DETMAR/]$_T$ hat [ein Buch über MOZART\]$_F$ ausgeliehen.
Detmar has a book about Mozart borrowed

c. Was habt Ihr in der Bibliothek gemacht?

'What did you do in the library?'

[DETMAR/]$_T$ [hat ein Buch über MOZART\ ausgeliehen]$_F$.
Detmar has a book about Mozart borrowed

If the nuclear accent in the hat-contour is on *Buch*, we get fewer focus-background structures, as shown in (231) and (232). This is so since as discussed in section 4.1, a focus accent which does not occur on the rightmost element in the NP cannot serve as a focus exponent.

(231) a. Wer hat was über Mozart ausgeliehen?

'Who borrowed what about Mozart?'

[DETMAR/]$_F$ hat ein [BUCH\]$_F$ über Mozart ausgeliehen.
Detmar has a book about Mozart borrowed

b. Wer hat was ausgeliehen?

'Who borrowed what?'

\# [DETMAR/]$_F$ hat [ein BUCH\ über Mozart]$_F$ ausgeliehen.
Detmar has a book about Mozart borrowed

(232) a. Was habt Ihr über Mozart ausgeliehen?

[DETMAR/]$_T$ hat ein [BUCH\]$_F$ über Mozart ausgeliehen.
Detmar has a book about Mozart borrowed

b. Was habt Ihr ausgeliehen?

'What did you borrow?'

\# [DETMAR/]$_T$ hat [ein BUCH\ über Mozart]$_F$ ausgeliehen.
Detmar has a book about Mozart borrowed

A similar set of different focus-background structures exists for the example in (224b). If the nuclear accent is on *Rothschild-Sammlung* we get several possible foci, as indicated by the question-answer pairs in (233).

(233) a. Was für eine Prozellanfigur steht in der Vitrine?

'What kind of figurine is in the display?'

Eine Porzellanfigur aus der [ROTHSCHILD-Sammlung]$_F$ steht in der Vitrine.
a figurine from the Rothschild collection is in the display

b. Was steht in der Vitrine?

'What is on display?'

[Eine Porzellanfigur aus der ROTHSCHILD-Sammlung]$_F$ steht in
a figurine from the Rothschild collection is in
der Vitrine.
the display

c. Was gibt es Neues zu sehen?

'What's new to see?'

[Eine Porzellanfigur aus der ROTHSCHILD-Sammlung steht in
a figurine from the Rothschild collection is in
der Vitrine.]$_F$
the display

That focus projection over the entire NP is possible as in (233b) is to be expected after what we said about focus projection in NPs and PPs in section 4.1 and 4.2. The focus projection from the subject over the entire sentence in (233c) is also possible although it was not for the parallel case with the object in (227). As Féry (1993, p. 32ff.) shows, focus projection from a focus exponent in the subject of a sentence is only possible with intransitive verbs.

With the nuclear accent on *Porzellanfigur* we only get one possible focus-background structure, namely narrow focus on *eine Porzellanfigur* as shown in (234).

(234) a. Was aus der Rothschild-Sammlung steht in der Vitrine?

'What from the Rothschild collection is in the display?'

[Eine PORZELLANFIGUR]$_F$ aus der Rothschild-Sammlung steht
a figurine from the Rothschild collection is
in der Vitrine.
in the display

b. Was steht in der Vitrine?

'What is on display?'

[Eine PORZELLANFIGUR aus der Rothschild-Sammlung]$_F$
a figurine from the Rothschild collection
steht in der Vitrine.
is in the display

Intonational hat-contours are again also possible, this time with two different placements of the rising pre-nuclear accent, as (235) shows.

(235) a. Eine PORZELLANFIGUR/ aus der Rothschild-Sammlung steht in der VITRINE\.

b. Eine Porzellanfigur aus der ROTHSCHILD-Sammlung/ steht in
a figurine from the Rothschild collection is in
der VITRINE\.
the display

With a rising accent on *Porzellanfigur* we get two possible focus-background structures. The sentence can either serve as a multiple-focus construction as the question-answer pair in (236a) shows or as an i-topicalization as shown in (236b).

(236) a. Was aus der Rothschild-Sammlung steht wo?

'What from the Rothschild collection is where?'

[Eine PORZELLANFIGUR/]$_F$ aus der Rothschild-Sammlung
a figurine from the Rothschild collection
steht [in der VITRINE\.]$_F$
is in the display

b. Wo stehen die Figuren aus der Rothschild-Sammlung?

'Where are the figurines from the Rothschild collection?'

[Eine PORZELLANFIGUR/]$_T$ aus der Rothschild-Sammlung
a figurine from the Rothschild collection
steht [in der VITRINE\.]$_F$
is in the display

If the rising accent is on *Rothschild-Sammlung*, there are more possible focus-background structures because then the focus (or topic) can project over the entire NP in the Vorfeld as shown in (237).

(237) a. Was für ein Porzellanfigur steht wo?

'What kind of figurine is where?'

Eine Porzellanfigur [aus der ROTHSCHILD-Sammlung/]$_F$ steht
a figurine from the Rothschild collection is
[in der VITRINE\]$_F$.
in the display

b. Was steht wo?

'What is where?'

[Eine Porzellanfigur aus der ROTHSCHILD-Sammlung/]$_F$ steht
a figurine from the Rothschild collection is
[in der VITRINE\]$_F$.
in the display

c. Wo stehen die Porzellanfiguren aus den verschiedenen Sammlungen?

'Where are the figurines from the different collections?'

Eine Porzellanfigur [aus der ROTHSCHILD-Sammlung/]$_T$ steht
a figurine from the Rothschild collection is
[in der VITRINE\]$_F$.
in the display

d. Wo stehen die Figuren aus den Sammlungen?

'Where are the figurines from the collections?'

[Eine Porzellanfigur aus der ROTHSCHILD-Sammlung/]$_T$ steht
a figurine from the Rothschild collection is
[in der VITRINE\]$_F$.
in the display

In (237a) and (237b) the two possible multiple-focus constructions are shown and in (237c) and (237d) the two possible topic-focus constructions. Interesting about the question-answer pair in (237d) is that it shows that not only focus can project from a focus exponent but apparently topic can project from an accented word up to a bigger constituent, here from an accented word within a PP up to the NP embedding that PP.

4.3.2. *NP-PP split with topicalization into the Vorfeld.*

Fronted PPs. The first NP-PP split constructions we want to examine with respect to their information structures are the ones in (238), where the PPs of our examples in (224) have been fronted.

(238) a. Über Mozart hat Detmar ein Buch ausgeliehen.
about Mozart has Detmar a book borrowed

'Detmar borrowed a book about Mozart.'

b. Aus der Rothschild-Sammlung steht eine Porzellanfigur in der
from the Rothschild collection stands a figurine in the
Vitrine.
display

'There is a figurine from the Rothschild collection in the display.'

Let us first consider those cases where the NP remaining in the *Mittelfeld* bears the nuclear accent and no other word in the examples has a pitch accent.

(239) shows the focus-background structures that are possible if the nuclear accent is in (238a) on *Buch* .

(239) a. Was hat Detmar über Mozart ausgeliehen?
'What did Detmar borrow on syntax?'

Über Mozart hat Detmar [ein BUCH\]$_F$ ausgeliehen.
about Mozart has Detmar a book borrowed

b. Was hat Detmar ausgeliehen?
'What did Detmar borrow?'

[Über Mozart]$_F$ hat Detmar [ein BUCH\]$_F$ ausgeliehen.
about Mozart has Detmar a book borrowed

c. Was hat Detmar getan?
'What did Detmar do?'

[Über Mozart]$_F$ hat Detmar [ein BUCH\ ausgeliehen.]$_F$
about Mozart has Detmar a book borrowed

d. Was ist geschehen?
'What happened'

[Über Mozart hat Detmar ein BUCH\ ausgeliehen.]$_F$
about Mozart has Detmar a book borrowed

Apparently, the only possibility is narrow focus on *ein Buch* as in (239a). Broad focus on the entire NP including the PP in the *Vorfeld* (239b), over the NP and the main verb (239c), or over the entire sentence (239d) is not possible.

What is possible, though, is a multiple-focus structure as shown in (240).

(240) a. Über welchen Komponisten hat Detmar was ausgeliehen?
'About which composer did Detmar borrow what?'

[Über MOZART/]$_F$ hat Detmar [ein BUCH\]$_F$ ausgeliehen.
about Mozart has Detmar a book borrowed

b. Wer hat was über Mozart ausgeliehen?
'Who borrowed what about Mozart?'

Über Mozart hat [DETMAR/]$_F$ [ein BUCH\]$_F$ ausgeliehen.
about Mozart has Detmar a book borrowed

The rising accent marking the first part of the focus can either be on the PP in the Vorfeld (240a) or in the *Mittelfeld* on the subject which precedes the NP with the nuclear accent, as in (240b).

Similarly, the two hat-contours can be used as indicating an i-topicalization, as illustrated by the question-answer pairs in (241).

(241) a. Was hat Detmar zum Thema Komponisten ausgeliehen?

'What did Detmar borrow about the topic composers?'

[Über MOZART/]$_T$ hat Detmar [ein BUCH\]$_F$ ausgeliehen.
about Mozart has Detmar a book borrowed

b. Was habt ihr über Mozart ausgeliehen?

'What did you borrow about Mozart?'

Über Mozart hat [DETMAR/]$_T$ [ein BUCH\]$_F$ ausgeliehen.
about Mozart has Detmar a book borrowed

In (241a), the fronted PP *über Mozart* with the rising accent serves as the topic, while the NP *ein Buch* is focused and in (241b) the subject NP *Detmar* serves as the topic.

In (242), the effect of a single pitch accent on the constituent in the *Vorfeld*, the PP *über Mozart*, is illustrated.

(242) a. Worüber hat Detmar ein Buch ausgeliehen?

'about what did Detmar borrow a book?'

[Über MOZART\]$_F$ hat Detmar ein Buch ausgeliehen.
about Mozart has Detmar a book borrowed

b. Was hat Detmar ausgeliehen?

'What did Detmar borrow?'

[Über MOZART\]$_F$ hat Detmar [ein Buch]$_F$ ausgeliehen.
about Mozart has Detmar a book borrowed

c. Was hat Detmar getan?

'What did Detmar do?'

[Über MOZART\]$_F$ hat Detmar [ein Buch ausgeliehen.]$_F$
about Mozart has Detmar a book borrowed

As the question-answer pairs show the only possibility is narrow focus on the fronted PP, as in (242a). Neither projection of the focus over the NP remaining in the *Mittelfeld* is possible as in (242b) nor projection over the entire VP embedding the NP and the fronted PP as in (242c).

Next, it is interesting to see what happens if the nuclear accent is neither on the PP nor on the NP, but for example on the subject NP *Detmar* as in (243).

(243) Wer hat ein Buch über Mozart ausgeliehen?

'Who borrowed a book on syntax?'

\# Über Mozart hat [DETMAR\\]$_F$ ein Buch ausgeliehen.
about Mozart has Detmar a book borrowed

The narrow focus on the subject together with the NP-PP split construction does not result in a felicitous utterance. But if the PP in the *Vorfeld* also receives an accent, the sentence becomes well-formed again as shown in (244).

(244) a. Über welchen Komponisten hat wer ein Buch ausgeliehen?

'Who borrowed a book on which composer?'

[Über MOZART/]$_F$ hat [DETMAR\\]$_F$ ein Buch ausgeliehen.
about Mozart has Detmar a book borrowed

b. Wer hat all die Bücher über berühmte Komponisten ausgeliehen?

'Who borrowed all the books on famous composers?'

[Über MOZART/]$_T$ hat [DETMAR\\]$_F$ ein Buch ausgeliehen.
about Mozart has Detmar a book borrowed

The same happens if the nuclear accent is on the main verb *ausgeliehen*.

(245) Hat Detmar ein Buch über Mozart gekauft?

'Did Detmar buy a book about Mozart?'

\# Über Mozart hat Detmar ein Buch [AUSGELIEHEN.\\]$_F$
about Mozart has Detmar a book borrowed

(246) Hat Detmar ein Buch über Mozart gekauft?

'Did Detmar buy a book about Mozart?'

[Über MOZART/]$_T$ hat Detmar ein Buch [AUSGELIEHEN.\\]$_F$
about Mozart has Detmar a book borrowed

(und über Bach hat er eins gekauft.)
and about Bach has he one bought

If there is only one pitch accent on the verb, as in (245) the NP-PP split construction is unacceptable, but if there is another pitch accent in the sentence, as in (246), the sentence is again acceptable.

Looking for a pattern that all the above examples have in common, one can observe the following: The split NP and PP cannot both be part of the focus, with the exception of multiple focus structures. The two separate constituents cannot both be part of the background. One of them has to be either the topic or part of the background. And even though this is more of a conjecture that is hard to prove we can also conclude that not both constituents can be part of the topic.

It will be interesting to see, whether we can observe the same pattern for the example (238b) where the PP is part of the subject NP. We again start with the investigation of the possible focus-background structures of sentences where the nuclear accent is on the NP remaining in the *Mittelfeld* as in (247).

(247) a. Was steht aus der Rothschild-Sammlung in der Vitrine?

'What from the Rothschild collection is in the display?'

Aus der Rothschild-Sammlung steht [eine PORZELLAN-
from the Rothschild collection is a figurine
FIGUR\]$_F$ in der Vitrine.
in the display

b. Was steht in der Vitrine?

'What is on display in the showcase?'

\# [Aus der Rothschild-Sammlung]$_F$ steht [eine PORZELLAN-
from the Rothschild collection is a figurine
FIGUR\]$_F$ in der Vitrine.
in the display

c. Was gibt es zu sehen?

'What is there on display?'

\# [Aus der Rothschild-Sammlung steht eine PORZELLAN-
from the Rothschild collection is a figurine
FIGUR\ in der Vitrine.]$_F$
in the display

Similar to the example in (239) only the narrow focus reading is possible with the nuclear accent on the NP *eine Porzellanfigur*. The sentence is not felicitous in a context where the entire NP, including the fronted PP, has to be in the focus, as in (247b) or where the entire sentence is in the focus as in (247c).

With an additional rising accent on the fronted PP, i.e., a hat-contour, there are again two focus-background structures possible, as illustrated by the question-answer pairs in (248).

(248) a. Aus welcher Sammlung steht was in der Vitrine?

'What from which collection is in the display?'

[Aus der ROTHSCHILD-Sammlung/]$_F$ steht [eine PORZELLAN-
from the Rothschild collection is a figurine
FIGUR\]$_F$ in der Vitrine.
in the display

b. Welche Stücke von berühmten Leuten gesammelt stehen in der Vitrine?

'Which pieces from famous collections are in the display?'

[Aus der ROTHSCHILD-Sammlung/]$_T$ steht [eine PORZELLAN-
from the Rothschild collection is a figurine
FIGUR\]$_F$ in der Vitrine.
in the display

(248a) shows the possibility of a multiple-focus construction and (248b) an i-topicalization.

The effect of a single pitch accent on the fronted PP is again the same as for the example (242) we saw on page 132 as shown in (249).

(249) a. Aus welcher Sammlung steht ein Porzellanfigur in der Vitrine?

'From which collection is a figurine in the display?'

[Aus der ROTHSCHILD-Sammlung\]$_F$ steht eine Porzellanfigur
from the Rothschild collection is a figurine
in der Vitrine.
in the display

b. Was steht in der Vitrine?

'What is on display in the showcase?'

\# [Aus der ROTHSCHILD-Sammlung\]$_F$ steht [eine Porzellan-
from the Rothschild collection is a figurine
figur]$_F$ in der Vitrine.
in the display

c. Was gibt es zu sehen?

'What is there on display?'

\# [Aus der ROTHSCHILD-Sammlung\ steht eine Porzellanfigur
from the Rothschild collection is a figurine
in der Vitrine.]$_F$
in the display

Only narrow focus on the fronted PP *aus der Rothschild-Sammlung* is possible as in (249a), but the sentences are infelicitous utterances in contexts where focus would have to project over the NP *eine Porzellanfigur* remaining in the *Mittelfeld* as in (249b) or over the entire sentence as in (249c).

If the focus accent is neither on the fronted PP nor on the NP remaining in the *Mittelfeld* as in (250) the NP-PP split construction cannot be used in a felicitous utterance.

(250) Wo steht eine Porzellanfigur aus der Rothschild-Sammlung?

'Where is a figurine from the Rothschild collection on display?'

\# Aus der Rothschild-Sammlung steht eine Porzellanfigur [in der VITRINE.]$_F$
from the Rothschild collection is a figurine in the display

The NP-PP split construction can again be used if there is an additional rising accent on the fronted PP as shown in (251).

(251) a. Aus welcher Sammlung stehen die Porzellanfiguren wo?

'From which collection are the figurines where?'

[Aus der ROTHSCHILD-Sammlung/]$_F$ steht eine Porzellanfigur [in der VITRINE.]$_F$
from the Rothschild collection is a figurine in the display

b. Wo stehen die Porzellanfiguren aus den berühmten Sammlungen?

'Where are the figurines from the famous collections?'

[Aus der ROTHSCHILD-Sammlung/]$_T$ steht eine Porzellanfigur [in der VITRINE.]$_F$
from the Rothschild collection is a figurine in the display

The resulting hat-contour can either be used as a multiple-focus construction as in (251a) or as an i-topicalization as in (251b).

Summing up, the observed focus-background structures for an NP-PP split construction with a fronted PP resulting from a subject NP show the same pattern as the focus-background structures for the NP-PP split constructions resulting from an object NP we investigated at the beginning of this paragraph. Again, not both the fronted PP and the NP remaining in the *Mittelfeld* can be part of the same focus projection or of the background. What is possible are multiple-focus structures where both constituents belong to different foci or i-topicalizations where the fronted PP is in the topic.

Let us now investigate the focus-background structures of those NP-PP split constructions where the partial NP is fronted.

Fronted partial NPs. In (252), the two NP-PP split constructions for our investigation are shown.

(252) a. [Ein Buch] hat Detmar *über Mozart* ausgeliehen.
a book has Detmar about Mozart borrowed
'Detmar borrowed a book about Mozart.'

b. [Eine Porzellanfigur] steht seit heute *aus der*
a figurine stands since today from the
Rothschild-Sammlung in der Vitrine.
Rothschild collection in the display
'There is a figurine from the Rothschild collection in the display since today.'

The two examples exemplify a fronted partial object NP (252a) and a fronted partial subject NP (252b).

The example (253) illustrated the possible focus-background structures of the sentence in (252a) with a focus accent on the split PP *über Mozart* remaining in the *Mittelfeld*.

(253) a. Worüber hat Detmar ein Buch ausgeliehen?
'about what did Detmar borrow a book?'

Ein Buch hat Detmar [über MOZART\]$_F$ ausgeliehen.
a book has Detmar on Mozart borrowed

b. Was hat Detmar ausgeliehen?
'What did Detmar borrow?'

\# [Ein Buch]$_F$ hat Detmar [über MOZART\]$_F$ ausgeliehen.
a book has Detmar on Mozart borrowed

c. Was hat Detmar getan?
'What did Detmar do?'

\# [Ein Buch]$_F$ hat Detmar [über MOZART\ ausgeliehen.]$_F$
a book has Detmar on Mozart borrowed

The pattern is the same as for a focused partial NP remaining in the *Mittelfeld* we saw in (239) on page 131. Only the accented PP can be in the focus as shown by the question-answer pair in (253a), while including the fronted NP into the focus projection or the entire VP with the verb *ausgeliehen* results in infelicitous utterances as shown in (255b) and (255c).

What is again possible is a rising accent on the fronted NP *ein Buch* as exemplified by the question-answer pairs in (254).

(254) a. Was hat Detmar über welchen Komponisten ausgeliehen?

'About which composer did Detmar borrow what?'

[Ein BUCH/]$_F$ hat Detmar [über MOZART\]$_F$ ausgeliehen.
a book has Detmar about Mozart borrowed

b. Über welchen Komponisten hat Detmar Material ausgeliehen?

'Material about which composer did Detmar borrow?'

[Ein BUCH/]$_T$ hat Detmar [über MOZART\]$_F$ ausgeliehen.
a book has Detmar about Mozart borrowed

The resulting utterances can either occur with a multiple focus structure as in (254a) or as an i-topicalization as in (254b).

If the fronted NP is focussed the focus can again not project as illustrated in (255).

(255) a. Was hat Detmar über Mozart ausgeliehen?

'What did Detmar borrow about Mozart?'

[Ein BUCH\]$_F$ hat Detmar über Mozart ausgeliehen.
a book has Detmar about Mozart borrowed

b. Was hat Detmar ausgeliehen?

'What did Detmar borrow?'

[Ein BUCH\]$_F$ hat Detmar [über Mozart]$_F$ ausgeliehen.
a book has Detmar about Mozart borrowed

c. Was hat Detmar getan?

'What did Detmar do?'

[Ein BUCH\]$_F$ hat Detmar [über Mozart ausgeliehen.]$_F$
a book has Detmar about Mozart borrowed

Narrow focus on an element other than the fronted NP or the PP in the *Mittelfeld*, which requires both of them to be in the background is again not possible, as exemplified in (256) with a focus accent on the subject NP *Detmar*.

(256) Wer hat ein Buch über Mozart ausgeliehen?

'Who borrowed a book on syntax?'

\# Ein Buch hat [DETMAR\]$_F$ über Mozart ausgeliehen.
a book has Detmar about Mozart borrowed

With an additional rising accent on the fronted NP, the example can again serve as a felicitous utterance in an appropriate context as shown in (257).

(257) a. Was hat wer über Mozart ausgeliehen?

'Who borrowed what about Mozart composer?'

[Ein BUCH/]$_F$ hat [DETMAR\]$_F$ über Mozart ausgeliehen.
a book has Detmar about Mozart borrowed

b. Wer hat all die Bücher über Mozart ausgeliehen?

'Who borrowed all the books on famous composers?'

[Ein BUCH/]$_T$ hat [DETMAR\]$_F$ über Mozart ausgeliehen.
a book has Detmar about Mozart borrowed

The accent on *Buch* causes the fronted NP to either be in the focus of a multiple-focus structure or to be in the topic, so that not both the NP and the PP in the *Mittelfeld* can be in the background.

The same happens if the nuclear accent is on the main verb *ausgeliehen*. With a narrow focus on *ausgeliehen*, both the fronted NP and the PP are in the background and this NP-PP split construction cannot serve as a felicitous utterance as illustrated by the example (258).

(258) Hat Detmar ein Buch über Mozart gekauft?

'Did Detmar buy a book about Mozart?'

\# Ein Buch hat Detmar über Mozart [AUSGELIEHEN.\]$_F$
a book has Detmar about Mozart borrowed

With an additional rising accent on the fronted NP, the example can occur in a context, where the NP is in the topic, while the PP *über Mozart* is part of the background, as shown in (259).

(259) Hat Detmar ein Buch über Mozart gekauft?

'Did Detmar buy a book about Mozart?'

[Ein BUCH/]$_T$ hat Detmar über Mozart [AUSGELIEHEN.\]$_F$
a book has Detmar about Mozart borrowed

(und eine CD hat er gekauft.)
and a CD has he bought

Exactly the same pattern of possible focus-background structures can be found with our second NP-PP split example. With a falling accent on the PP *aus der Rothschild-Sammlung* in the *Mittelfeld*, the example can only occur as a felicitous utterance in a context which requires narrow focus on the PP, as illustrated in (260).

(260) a. Aus welcher Sammlung steht ein Porzellanfigur in der Vitrine?
'From which collection is a figurine in the display?'

Eine Porzellanfigur steht [aus der ROTHSCHILD-Sammlung\]$_F$
a figurine stands from the Rothschild collection
in der Vitrine.
in the display

b. Was steht in der Vitrine?
'What is on display in the showcase?'

\# [Eine Porzellanfigur]$_F$ steht [aus der ROTHSCHILD-
a figurine stands from the Rothschild
Sammlung\]$_F$ in der Vitrine.
collection in the display

c. Was gibt es zu sehen?
'What is there on display?'

\# [Eine Porzellanfigur steht aus der ROTHSCHILD- Sammlung\
a figurine stands from the Rothschild collection
in der Vitrine.]$_F$
in the display

With an additional rising accent on the fronted NP *eine Porzellanfigur* the sentence can serve as a multiple-focus construction or an i-topicalization, as shown in (261).

(261) a. Aus welcher Sammlung steht was in der Vitrine?
'What from which collection is in the display?'

[Eine PORZELLANFIGUR/]$_F$ steht [aus der ROTHSCHILD-
a figurine stands from the Rothschild
Sammlung\]$_F$ in der Vitrine.
collection in the display

b. Aus welcher Sammlung stehen Figuren in der Vitrine?
'Which pieces from famous collections are in the display?'

[Eine PORZELLANFIGUR/]$_T$ steht [aus der ROTHSCHILD-
a figurine stands from the Rothschild
Sammlung\]$_F$ in der Vitrine.
collection in the display

As shown in (262) with a single falling accent on the fronted NP again only narrow focus on this NP is possible.

(262) a. Was steht aus der Rothschild-Sammlung in der Vitrine?

'What from the Rothschild collection is in the display?'

[Eine PORZELLANFIGUR\]$_F$ steht aus der Rothschild-
a figurine stands from the Rothschild
Sammlung in der Vitrine.
collection in the display

b. Was steht in der Vitrine?

'What is on display in the showcase?'

[Eine PORZELLANFIGUR\]$_F$ steht [aus der Rothschild-
a figurine stands from the Rothschild
Sammlung]$_F$ in der Vitrine.
collection in the display

c. Was gibt es zu sehen?

'What is there on display?'

[Eine PORZELLANFIGUR\ steht aus der Rothschild-
a figurine stands from the Rothschild
Sammlung in der Vitrine.]$_F$
collection in the display

With narrow focus on the PP *in der Vitrine*, which requires the fronted NP and the split PP *aus der Rothschild-Sammlung* both to be in the background the example cannot serve as a felicitous utterance, as shown in (263).

(263) Wo steht eine Porzellanfigur aus der Rothschild-Sammlung?

'Where is a figurine from the Rothschild collection on display?'

Eine Porzellanfigur steht aus der Rothschild-Sammlung [in der
a figurine is from the Rothschild collection in the
VITRINE.]$_F$
display

And, as before, an additional rising accent on the fronted NP enables the NP-PP-split construction to occur as a felicitous utterance in the appropriate question-answer pairs in (264).

(264) a. Welche Figuren aus der Rothschild-Sammlung stehen wo?

'Which figurines from the Rothschild collection are where?'

[Eine PORZELLANFIGUR/]$_F$ steht aus der Rothschild-
a figurine stands from the Rothschild
Sammlung [in der VITRINE.]$_F$
collection in the display

b. Wo stehen die Figuren aus der Rothschild-Sammlung?

'Where are the figurines from the Rothschild collection?'

[Eine PORZELLANFIGUR/]$_T$ steht aus der Rothschild-
a figurine stands from the Rothschild
Sammlung [in der VITRINE.]$_F$
collection in the display

All NP-PP-split constructions we investigated in this and the previous paragraph behaved correspondingly with respect to their possible focus-background structures: Only if not both the NP and the PP were part of the same focus projection or fo the background the sentences could serve as felicitous utterances. Let us now turn to examples with an NP-PP split construction in the *Mittelfeld* and see whether their focus-background structures show a similar pattern.

4.3.3. *NP-PP split in the Mittelfeld.* When dealing with NP-PP split in the *Mittelfeld* one has to be careful to take into account all the various factors that can influence the word order in the *Mittelfeld*. Among the factors that play a role are for example the order of grammatical relations (the subject precedes the indirect object which precedes the direct object), pronouns precede non-pronouns, definite NPs precede indefinite NPs and, what will be of importance in the following, non-focus material precedes focus material. All these factors interact and many word orders may be unacceptable because they violate one of these restrictions. In Uszkoreit (1987, p. 18ff.) one can find a discussion of the principles restricting possible word orders in the *Mittelfeld*. The only restriction we will take into account in the following discussion is of course the one that is related to the focus-background structure: old information precedes new information.

Split PP preceding the NP. Let us start with the word order shown in (265) where the PP precedes the NP in the *Mittelfeld*.

(265) a. Detmar hat über Mozart heute ein Buch ausgeliehen.
Detmar has about Mozart today a book borrowed
'Detmar borrowed a book about Mozart.'

b. Es hat aus der Rothschild-Sammlung bis gestern eine
there has from the Rothschild collection until yesterday a
Porzellanfigur in der Vitrine gestanden.
figurine in the display been
'There was a figurine from the Rothschild collection on display until yesterday.'

In (266) the accent is on the NP and the question-answer pairs show that only narrow focus on the NP is possible. Similar to the examples in 239 on page 131 the focus cannot project over the PP occurring separate from the nominal head.

(266) a. Was hat Detmar über Mozart ausgeliehen?
'What did Detmar borrow about Mozart?'

Detmar hat über Mozart heute [ein BUCH\\]$_F$ ausgeliehen.
Detmar has about Mozart today a book borrowed

b. Was hat Detmar ausgeliehen?
'What did Detmar borrow?'

\# Detmar hat [über Mozart]$_F$ heute [ein BUCH\\]$_F$ ausgeliehen.
Detmar has on Mozart today a book borrowed

c. Was hat Detmar getan?
'What did he do?'

\# Detmar hat [über Mozart heute ein BUCH\\ ausgeliehen.]$_F$
Detmar has on Mozart today a book borrowed

Also the reverse case, where the fronted PP receives a focus accent is possible under a narrow focus reading as shown in (267).

(267) Worüber hat Detmar heute ein Buch ausgeliehen?
'What did Detmar borrow a book about?'

Detmar hat [über MOZART\\] heute ein Buch ausgeliehen.
Detmar has about Mozart today a book borrowed

With a hat contours where the fronted PP receives a rising accent and the NP a falling accent as shown in (268), the NP-PP split construction under discussion is also possible as illustrated by the examples in (268).

(268) a. Über welchen Komponisten hat Detmar heute wieviele Bücher ausgeliehen?

'About which composer did Detmar borrow how many books?'

Detmar hat [über MOZART/]$_F$ heute ZWEI\$_F$ Bücher ausgeliehen.
Detmar has on Mozart today two books borrowed

b. Wieviele Bücher über Komponisten hat Detmar heute ausgeliehen?

'How many books on composers did Detmar borrow today?'

Detmar hat [über MOZART/]$_T$ heute ZWEI\$_F$ Bücher ausgeliehen.
Detmar has on Mozart today two books borrowed

Similar to NP-PP split into the *Vorfeld* the NP and the PP in the *Mittelfeld* cannot both be in the background of an utterance. As the question-answer pairs in (269) show the NP-PP split construction is an infelicitous utterance if either only the subject *Detmar* is in the focus or only the adverb *heute*.

(269) a. Wer hat heute ein Buch über Mozart ausgeliehen?

'Who borrowed a book about Mozart?'

\# [DETMAR\]$_F$ hat über Mozart heute ein Buch ausgeliehen.
Detmar has on Mozart today a book borrowed

b. Wann hat Detmar ein Buch über Mozart ausgeliehen?

'When did Detmar borrow a book about Mozart?'

\# Detmar hat über Mozart [HEUTE\]$_F$ ein Buch ausgeliehen.
Detmar has on Mozart today a book borrowed

We can conclude that also in the *Mittelfeld* the NP-PP split construction is only possible if with respect to the focus-background structure the NP and the PP are not part of the same informational partition. An additional restriction on the occurrence of the two separate constituents is the general requirement in the *Mittelfeld* that non-focussed material has to come before focussed material.

Let us briefly investigate whether these generalizations also make the correct predictions for the example (265b).

With a falling accent on the noun *Porzellanfigur* in the *Mittelfeld*, the example can only occur as a felicitous utterance in a context which requires narrow focus on the NP, as illustrated in (270).

(270) a. Was aus der Rothschild-Sammlung hat bis gestern in der Vitrine gestanden?

'What from the Rothschild collection was on display since yesterday?'

Es hat aus der Rothschild-Sammlung bis gestern [eine
there has from the Rothschild collection until yesterday a
PORZELLANFIGUR\]$_F$ in der Vitrine gestanden.
figurine in the display been

b. Was hat bis gestern in der Vitrine gestanden?

'What was on display since yesterday?'

\# Es hat [aus der Rothschild-Sammlung]$_F$ bis gestern [eine
there has from the Rothschild collection until yesterday a
PORZELLANFIGUR\]$_F$ in der Vitrine gestanden.
figurine in the display been

c. Was gab es bis gestern zu sehen?

' What was there since yesterday?'

\# Es hat [aus der Rothschild-Sammlung bis gestern eine
there has from the Rothschild collection until yesterday a
PORZELLANFIGUR\ in der Vitrine gestanden.]$_F$
figurine in the display been

A single focus accent on the PP *aus der Rothschildsammlung* occurring at the beginning of the *Mittelfeld* is also possible under a narrow focus reading as illustrated by the question-answer pair in (271).

(271) Aus welcher Sammlung hat bis gestern eine Porzellanfigur in der Vitrine gestanden?

'From which collection was a figurine on display?'

Es hat [aus der ROTHSCHILD-Sammlung]$_F$ bis gestern eine
there has from the Rothschild collection until yesterday a
Porzellanfigur in der Vitrine gestanden.
figurine in the display been

A hat contour with a rising accent on the PP and a falling accent on the NP left behind is also possible with a subject in the *Mittelfeld* as illustrated in (272).

(272) a. Aus welcher Sammlung hat was bis gestern in der Vitrine gestanden?

'What from which collection was on display until yesterday?'

Es hat [aus der ROTHSCHILD-Sammlung/]$_F$ bis gestern
there has from the Rothschild collection until yesterday
[eine PORZELLANFIGUR\]$_F$ in der Vitrine gestanden.
a figurine in the display been

b. Welche Figuren aus berühmten Sammlungen haben bis gestern in der Vitrine gestanden?

'Which figurines from famous collections were on display until yesterday?'

Es hat [aus der ROTHSCHILD-Sammlung/]$_T$ bis gestern
there has from the Rothschild collection until yesterday
[eine PORZELLANFIGUR\]$_F$ in der Vitrine gestanden.
a figurine in the display been

Again if other material in the *Mittelfeld* than the PP or the NP is accented the NP-PP split construction is not acceptable as shown in (273).

(273) a. Bis wann hat eine Porzellanfigur aus der Rothschild-Sammlung in der Vitrine gestanden?

'Until when was a figurine from the Rothschild collection on display?'

\# Es hat aus der Rothschild-Sammlung [bis GESTERN\]$_F$
there has from the Rothschild collection until yesterday
eine Porzellanfigur in der Vitrine gestanden.
a figurine in the display been

b. Wo hat eine Porzellanfigur aus der Rothschild-Sammlung bis gestern gestanden?

'Where was a figurine from the Rothschild collection on display until yesterday?'

\# Es hat aus der Rothschild-Sammlung bis gestern eine
there has from the Rothschild collection until yesterday a
Porzellanfigur [in der VITRINE\]$_F$ gestanden.
figurine in the display been

NP preceding the split PP. We now turn to those NP-PP split constructions where the partial NP precedes the split PP in the *mittelfeld.* The two examples, whose focus-background structures we want to investigate, are shown in (274).

(274) a. Detmar hat [ein Buch] in der UB *über Mozart* ausgeliehen.
Detmar has a book in the library about Mozart borrowed
'Detmar borrowed a book about Mozart today.'

b. Es hat [eine Porzellanfigur] bis gestern *aus der*
there has a figurine until yesterday from the
Rothschild-Sammlung in der Vitrine gestanden.
Rothschild collection in the display been
'There was a figurine from the Rothschild collection on display until yesterday.'

Let us again with start with the focus-background structures of the example (274a). In (275) the example is shown with a narrow focus on the PP *über Mozart*.

(275) Worüber hat Detmar heute ein Buch ausgeliehen?
'What did Detmar borrow a book about?'

?? Detmar hat ein Buch in der UB [über MOZART\] ausgeliehen.
Detmar has a book in the library about Mozart borrowed

The answer in (275) is quite infelicitous in the given context although all known restrictions on NP-PP split in the *Mittelfeld* are met: Only the PP is in the focus and focussed material follows non-focussed material. The reason might be that the order without NP-PP split could as well be used in this case, the focussed material would still follow the unfocused material. There is thus no real need for linearizing the NP before the PP *in der UB* and the order where the NP and the PP are next to each might thus be preferred.

With a focus accent on the fronted NP, the example is more acceptable as shown in (276).

(276) Was hat Detmar heute über Mozart ausgeliehen?
'What did Detmar borrow about Mozart?'

? Detmar hat [ein BUCH]$_F$ in der UB über Mozart ausgeliehen.
Detmar has a book in the library about Mozart borrowed

With a hat contour, i.e., a rising accent on the NP and a falling accent on the PP left behind, the NP-PP split construction is again possible and can serve as a multiple-focus structure as in (277a) or as an i-topicalization as in (277b).

(277) a. Wieviele Bücher hat Detmar in der UB über welchen Komponisten ausgeliehen?

'About which composer did Detmar borrow how many books in the library?'

Detmar hat ZWEI/$_F$ Bücher in der UB [über MOZART\]$_F$
Detmar has two books in the library on Mozart
ausgeliehen.
borrowed

b. Über welche Komponisten hat Detmar in der UB Bücher ausgeliehen?

'How many books on composers did Detmar borrow in the library?'

Detmar hat ZWEI/$_T$ Bücher in der UB [über MOZART\]$_F$
Detmar has two books in the library on Mozart
ausgeliehen
borrowed

(und vier Bücher über Bach).
and four books about Bach

Similar to the examples in the previous paragraph, the current NP-PP split construction is not possible if other material than the two separated constituents receives a focus accent, as shown in (278a) with an accent on the subject of the sentence, *Detmar*, and in (278b) with an accent on the adverbial PP *in der UB*.

(278) a. Wer hat in der UB ein Buch über Mozart ausgeliehen?

'Who borrowed a book about Mozart?'

\# [DETMAR\]$_F$ hat ein Buch in der UB über Mozart
Detmar has a book in the library on Mozart
ausgeliehen.
borrowed

b. Wo hat Detmar ein Buch über Mozart ausgeliehen?

'Where did Detmar borrow a book about Mozart?'

\# Detmar hat ein Buch [in der UB\]$_F$ über Mozart ausgeliehen.
Detmar has a book in the library on Mozart borrowed

Regarding the NP-PP split example in (274b), we find very similar possible focus-background structure.

(279) illustrated the example with a focus accent on the PP *aus der Rothschild-Sammlung*.

(279) Aus welcher Sammlung hat bis gestern eine Porzellanfigur in der Vitrine gestanden?

'From which collection was a figurine on display?'

? Es hat eine Porzellanfigur bis gestern [aus der ROTHSCHILD-
there has a figurine until yesterday from the Rothschild
Sammlung]$_F$ in der Vitrine gestanden.
collection in the display been

Here again the NP-PP split construction is infelicitous although all restrictions on focus-background structure seem to be met.

The example with narrow focus on the NP in fronted position is on the other side much more acceptable as shown in (280).

(280) Was aus der Rothschild-Sammlung hat bis gestern in der Vitrine gestanden?

'What from the Rothschild collection was on display since yesterday?'

Es hat [eine PORZELLANFIGUR\]$_F$ bis gestern aus der
there has a figurine until yesterday from the
Rothschild-Sammlung in der Vitrine gestanden.
Rothschild collection in the display been

With a hat contour in the *Mittelfeld*, the NP split construction is again possible as a multiple focus construction (281a) and as an i-topicalization (281b).

(281) a. Aus welcher Sammlung hat was bis gestern in der Vitrine gestanden?

'What from which collection was on display until yesterday?'

Es hat [eine PORZELLANFIGUR/]$_F$ bis gestern [aus der
there has a figurine until yesterday from the
ROTHSCHILD-Sammlung\]$_F$ in der Vitrine gestanden.
Rothschild collection in the display been

b. Figuren aus welcher berühmten Sammlung haben bis gestern in der Vitrine gestanden?

'Figurines from which famous collection were on display until yesterday?'

Es hat [eine PORZELLANFIGUR/]$_T$ bis gestern [aus der
there has a figurine until yesterday from the
ROTHSCHILD-Sammlung\]$_F$ in der Vitrine gestanden.
Rothschild collection in the display been

Last but not least, focusing other material than the NP or the split PP results in infelicitous utterances as the examples in (282) illustrate.

(282) a. Bis wann hat eine Porzellanfigur aus der Rothschild-Sammlung in der Vitrine gestanden?

'Until when was a figurine from the Rothschild collection on display?'

\# Es hat eine Porzellanfigur [bis GESTERN\]$_F$ aus der
there has a figurine until yesterday from the
Rothschild-Sammlung in der Vitrine gestanden.
Rothschild collection in the display been

b. Wo hat eine Porzellanfigur aus der Rothschild-Sammlung bis gestern gestanden?

'Where was a figurine from the Rothschild collection on display until yesterday?'

\# Es hat eine Porzellanfigur bis gestern aus der Rothschild-
there has a figurine until yesterday from the Rothschild
Sammlung [in der VITRINE\]$_F$ gestanden.
collection in the display been

Summing up, the occurrence of possible NP-PP split constructions in the *Mittelfeld* is not as predictable as it was with those NP-PP split constructions, where one of the two constituents appears in the *Vorfeld.* This might have to do with the fact that possible word orders in the *Mittelfeld* are usually influenced be many different factors which we could not all take into account in our investigation. But nevertheless, the observed behavior of NP-PP split constructions in the *Mittelfeld* with respect to their focus-background structures fits into our general picture of the context dependence of the construction. We showed, that also in the *Mittelfeld* the NP-PP split construction is only possible if the NP and the split PP belong to different informational partitions of a sentence. The construction is, for example, always possible with a hat contour where the two different accents explicitly mark to which informational partitions the respective constituents belong. Furthermore, the NP-PP split construction in the *Mittelfeld* is never possible if other material in the sentence is accented and both the NP and the split PP are in the background of the sentence.

5. Explaining the Specificity Effect

We will now turn to a set of examples which we already discussed in chapter 4 in the the paragraph "Specificity effect". We contrasted the example (144) on p. 65, here repeated as (283), with the examples in (145), here repeated as (284), to show that the ungrammaticality of the examples in (144) cannot simply be reduced to the so-called Specificity effect, a general restriction on movement.

(283) a. * *Über Syntax* hat Karl [**das** Buch] gelesen.
on syntax has Karl the book read
'Karl read the book on syntax.'

b. ?? [**Das** Buch] hat Karl *über Syntax* gelesen.
the book has Karl on syntax read

(284) a. *Über Syntax* hat Karl nur **dieses**, aber nicht **jenes** Buch gelesen.
on syntax has Karl only this but not that book read
'Karl only read this book on syntax and not that one.'

b. [Nur dieses Buch] hat Karl *über Syntax* gelesen.
Only this book has Karl on syntax read
'Karl only read this book on syntax.'

The specificity condition formulated by Fiengo and Higginbotham (1981) says that "a free variable x_i is not permitted inside a specific NP A, where A ranges over all NP's dominating x_i". Under this condition it is thus predicted that a sentence where a trace of *wh*-movement occurs inside a specific NP should be ungrammatical. According to Fiengo and Higginbotham (1981, p. 402) the specificity of NPs is determined by "the definiteness of the determiner and the singular number of N". Under a movement approach to NP-PP split the ungrammaticality of the two sentences in (283) can thus be explained with the help of the Specificity Condition: they both contain a specific NP with a trace inside, i.e., the NP *das Buch*.

But what about the examples in (284)? They also should be ungrammatical according to the Specificity Condition: the NPs *dieses Buch*, *jenes Buch* with the definite determiners *dieses* and *jenes* are specific NPs containing a trace, if one assumes that the PPs have been extracted. Because of their undoubted acceptability we concluded on p. 65 that the ungrammaticality of the examples in (283) cannot simply be reduced to a general restriction on movement. But until now we have not been able to explain what causes the contrast between the above examples. Our reanalysis approach to NP-PP split we presented in section (2) simply predicts that all the examples (283) and (284) should be grammatical.

In light of our discussion of the focus-background structures of NP-PP split constructions in the previous sections we now take a closer look at the above examples under a this perspective and see that the contrasts can be explained quite straightforwardly.

As a starting point let us take a closer look at the notion of definiteness which seems to play role in the examples under discussion because the NPs involved all have a definite determiner. The interesting question in our case thus is: What are the pragmatic conditions which determine the use of a definite noun phrase? One of the well-established answers in the literature can be found in Heim (1982): Starting from the traditional "familiarity theory of definiteness" of Christophersen (1939), according to which "the essential function of definiteness is to signal that the intended referent of an NP is a referent with which the audience is already familiar at the current stage of the conversation", Heim develops a theory in which every use of a definite NP requires that there already be an appropriate referent in the current discourse. A definite can never introduce a new discourse referent. In our terms this means that a definite NP can only be the topic of a sentence or it can be in the background, but it can never be in the focus.

Under this theory, the ungrammaticality of the examples in (283) can be easily explained: the NP *das Buch über Syntax* refers to an object already introduced in the discourse, it does not provide new information and thus the entire NP can only be in the background of the sentence (or in the topic). It is important to note that also the PP cannot provide new information if the entire NP already has a referent in the discourse. This conflicts with the restriction on the NP-PP split construction observed in the previous section, that the NP and the PP have to belong to different parts of the informational partition of a sentence und sentences like in (283) are thus ungrammatical.

The discourse in (285) shows such a typical case where an indefinite NP is used to introduce a new referent into the discourse. The definite NP in (285a) refers to this NP and only the verb of the sentence is in the focus.

(285) Gestern habe ich ein interessantes Buch über Syntax bei Osiander gesehen.

'Yesterday, I saw an interesting book on syntax at Osiander.'

a. Ich habe mir [das Buch über Syntax] heute gekauft.
I have me the book on syntax today bought

'Today, I bought this book on syntax.'

b. * *Über Syntax* habe ich mir [das Buch] heute gekauft.
on syntax have I me the book today bought

It is clear that the NP-PP split construction in (285b) is ungrammatical because both, the NP and the PP, are in the background of the sentence, which contradicts the restriction on NP-PP split we formulated in the previous section.

But how come that the NP-PP split constructions with definite NPs in (284) are grammatical? To find an answer to this question we have to take a closer look at the other possible uses of definites because by no means definite NPs are only used to refer to objects already introduced in a current discourse.

In criticizing the approach by Heim (1982), in which the anaphoric use of definites is regarded as the paradigm case, Löbner (1985) discusses a number of other uses of definites. According to his classification of definite NPs, the above described anaphoric uses of definites belong to the "pragmatically definite" NPs, i.e., those NPs that are "essentially dependent on special situations and contexts for non-ambiguity of a referent". Another kind of pragmatically definite NPs are "endophoric" definites. They carry with them an attribute that links their referent explicitly to the situation referred to. The attribute may be a relative clause or a prepositional or adverbial phrase.

In the question-answer pair in (286) a definite NP is used in this endophoric way together with a restrictive relative clause. The definite NP *das Buch* does not refer to an already introduced object but it is used to single out a specific NP which is part of the common ground of speaker and hearer.

(286) Was hast Du bei Osiander gekauft?

'What did you buy at Osiander?'

Ich habe mir das Buch über Syntax gekauft, das Du mir letztlich
I have me the book on syntax bought which you me recently
empfohlen hast.
recommended have

'I bought the book on syntax that you recommended to me very recently.'

Such definite NPs, like *das Buch über Syntax* in the answer in (286), can of course be part of the focus of a sentence. Should it therefore not be possible to find examples where NP-PP split with such NPs is acceptable? And in fact, (287) shows a question-answer pair, where NP-PP split with such a definite NP is possible.

(287) Was hast Du Dir über Syntax ausgeliehen?

'What did you borrow on syntax?'

Über Syntax habe ich mir [das Buch, das Du mir letztlich
on syntax have I me the book which you to me recently
empfohlen hast,] ausgeliehen.
recommended has borrowed

'On Syntax I borrowed the book that you recommended to me very recently.'

The definite determiner of *das Buch* in (287) has the same function as described for the use of the definite determiner in (286),i.e., it is used endophorically, and can thus be in the focus of the sentence while the fronted PP is in the background.

Also the use of the NP with a specified subject *Galls Buch* as in (148) we saw on p. 66, here repeated as (288), is such an endophoric use of a definite NP.

(288) a. Über Bismarck habe ich Galls Buch gelesen.
on Bismarck have I Gall's book read

'I read Gall's book on Bismarck.'

b. Nur Galls Buch habe ich über Bismarck gelesen.
only Gall's book have I on Bismarck read

'I read only Gall's book on Bismarck.'

The speaker and the hearer of a discourse, where the sentence in (288) can be uttered, have to know (i.e., it should be part of their common ground) that there is a book which was written by Gall. By the prenominal genitive *Galls* the referent of the noun *Buch* can be linked unambiguously to this book on Bismarck. Still, the use of the definite NP provides new information, and is thus part of the focus of the sentence and the NP-PP split construction is possible.

It should be noted though, that a PP which is used to link the referent of an endophoric definite to another object, can never occur separate from the head noun, as for example shown in (289).

(289) Was hast Du für ein Buch gekauft?

'What kind of book did you buy?'

a. Ich habe [das Buch von Marga] gekauft.
I have the book of Marga bought
'I bought Marga's book.'

b. * *Von Marga* habe ich [das Buch] gekauft.
of Marga have I the book bought

This might be due to the fact, that the PP and the NP always have to be part of the same informational partition of sentence, because it is the PP which establishes the link for a referent for the head noun.

Another use of the pragmatically definite NPs are the deictic definites, often realized as demonstratives. According to Löbner (1985), they "differ from anaphoric definites in that they refer immediately to components of the situation of utterances." In (290) the use of such a deictic NP as the focus of the sentence is shown.

(290) Was hast du in der Bibliothek ausgeliehen?

'What did you borrow in the library?'

Ich habe dieses Buch ausgeliehen.
I have this book borrowed
'I borrowed this book here.'

The person answering the question in (290) probably has the respective book in her hand or points to it. Nothing should prevent these deictic definites from occurring as parts of an NP-PP split construction. And in fact, we already saw examples for such NP-PP split constructions in (284) on p. 151, where the demonstratives *dieses* and *jenes* occur as part of a definite NP and the PP *über Syntax* can occur separate from the definite NP.

Although the NP-PP split construction with definite NPs is possible, there is a restriction on the constructions with the above described pragmatically definite NPs: In all the examples we showed the NP can only be in the focus of the sentence while the PP is in the background. The question-answer pairs in (291),(292), and (293) show that the NP cannot be in the background while the PP is in the focus.

(291) Worüber hast Du dir ein Buch ausgeliehen?

'What did you borrow a book about?'

\# [Über SYNTAX]$_F$ habe ich das Buch, das du mir letztlich
on syntax have I the book that you me recently
empfohlen hast, ausgeliehen.
recommended has borrowed

'I borrowed the book on syntax that you recommended me recently.'

(292) Worüber hat Karl ein Buch gelesen?

'What did Karl read a book about?'

\# [Über SYNTAX]$_F$ hat er Margas Buch gelesen.
on syntax has he Marga's book read

(293) Worüber hat Karl ein Buch gelesen?

'What did Karl read a book about?'

\# [Über SYNTAX]$_F$ hat er dieses Buch gelesen.
on syntax has he this book read

But there is an apparent explanation for this contrast: the definite NPs in the background of a sentence refer to some specific object already introduced in the discourse. But then no part of the NP can provide new information, i.e., the above PPs in the *Vorfeld* cannot be in the focus of the sentence, that is why these sentences are so weird. But if the PPs also were in the background then again the NP-PP split construction would not be possible.

Interestingly, one can find examples where a definite NP is in the background and a dependent PP in the focus.

(294) Die Kunststudenten sollten bis zum Ende des Semesters ein Aquarell und eine Zeichunung abliefern.

'The art students were supposed to hand in an aquarell and a drawing until the end of the semester.'

a. Das Aquarell hat Otto von der Neckarfront gemalt, die Zeichnung
the aquarell has Otto of the Neckar river painted the drawing
hat er von seiner Katze angefertigt.
has he of his cat made

'Otto painted the aquarell of the Neckar and he made the drawing of his cat.'

The PPs *von der Neckarfront* and *von seiner Katze* are clearly in the focus of the sentence in (294a) given the context before the example, whereas the NPs *das Aquarell* and *die Zeichnung* refer to the concepts mentioned before and are thus in the background (or here even the topic) of the sentence.

The example in (295) on the other hand shows that these kinds of examples seem to be restricted by some other factors.

(295) Jeder Student aus dem Einführungsseminar sollte ein Buch und eine Fachzeitschrift aus der Bibliothek ausleihen.

'Every student from the introductory course was supposed to borrow a book and a journal from the library.'

a. # Das Buch hat Sarah über Syntax ausgeliehen und die
the book has Sarah on syntax borrowed and the
Fachzeitschrift hat sie über Phonologie ausgeliehen.
journal has she on phonology borrowed

Although the structure of the discourse in (295) is quite similar to the one in (294), the NP-PP split construction with a definite NP in the Vorfeld (*das Buch, die Fachzeitschrift*) and a PP in the *Mittelfeld* which is in the focus (*über Syntax, über Phonologie*) is ungrammatical.

At closer inspection the impression arises that the example in (294a) is not an instance of a NP-PP split construction, but a case of secondary predication. The PPs *von der Neckarfront* and *von seiner Katze* are not adjuncts modifying only the nouns *Aquarell* and *Zeichnung*, but they can be interpreted as modifying the entire event of *ein Aquarell malen* and *eine Zeichnung anfertigen.* (296) shows a fairly similar little discourse.

(296) Sonntags gibt es bei vielen Familien zum Mittagessen immer Braten und einen Pudding zum Nachtisch.

'On Sundays, many families have meat for lunch a pudding for desert.'

a. Den Pudding essen wir immer mit Schokoladensoße.
the pudding eat we always with chocolate sauce
'We always have our pudding with chocolate sauce.'

We already discussed an example similar to (296a) as a typical instance of secondary predication in section 1.1. The parallel character of (294a) and (296a) is another indication that the latter is also an instance of secondary predication and not an NP-PP split construction.

We can thus maintain the restriction we observed that in an NP-PP split construction with a definite NP this definite can only be in the focus of the sentence while the PP is in the background. It is thus not surprising that (295a) is ungrammatical.

This is still not the entire story about definite NPs. In the classification of definites of Löbner (1985) there is a another class of definites which differ from the above described pragmatically definite NPs in that the referent of the definite is established independently of the immediate situation or context of utterance. Loebner calls these definites "semantic definites". In the case of such semantic definites the definite article is combined with a noun that represents a concept which necessarily applies to only one object. Among the examples for semantic definites are nouns which are common to all situations, cf., *the weather, the time, the moon.* Then there are nouns which are restricted to some domain, like *the president, the post office, the station* or even more limited *the kitchen, the living room.* Then there are body parts like *the tail, the heart* etc. And relational concepts like *the father, the mother* also belong to these semantic definites.

As their name indicates, the definite article occurring with these nouns is used for semantic reasons and not because the noun has a referent in discourse or situation where it is uttered. These semantic definites can therefore either occur in the focus or in the background of a sentence, as shown in (297).

(297) Wer hat angerufen?

'Who called?'

[Die Mutter von SARAH]$_F$ hat angerufen.
the mother of Sarah has called

(298) Wo wohnt der Präsident?

'Where does the president live?'

Der Präsident wohnt [in einer großen VILLA]$_F$.
the president lives in a big villa

And, not surprisingly, also the NP-PP split construction is possible with these semantic definites, as the question-answer pair in (299) shows.

(299) Wer von Sarahs Familie hat angerufen?

'Who called from Sarahs family?'

[Die MUTTER]$_F$ hat von Sarah angerufen.
the mother has of Sarah called

(300) Von wem hat die Mutter angerufen?

'Whose mother has called?'

[Von SARAH]$_F$ hat die Mutter angerufen.
of Sarah has the mother called

It should be noted that in the case of semantic definites the NP of the NP-PP split construction can equally well be in the focus or in the background as the above examples show. This again shows that these determiners are really semantic definites whereas in the case of the pragmatic definites it did make a difference whether the definite NP was in the focus or in the background.

Summing up, we have just shown that the possibility or impossibility of the NP-PP split construction with a definite NP has nothing to do with the specificity of the NP. What plays a role is the way in which the definite NP is used and how this influences the focus-background structure of the sentence. If the definite NP is used anaphorically and refers to something in the discourse then the entire definite NP with the embedded PP is very likely to be in the background and thus the NP-PP split construction is ungrammatical. But if the definite NP is used deicticly, endophorically or as a semantic definite, then the NP or parts of it can be in the focus of the sentence, whereas other parts are in the background, and thus the NP-PP split construction is possible. It is beyond the scope of this dissertation to develop a precise theory of the possible interpretations of definites. But such a theory in combination with our restrictions on the focus-background structures of NP-PP split constructions would make exactly the right predictions with respect to the behaviour of definites in the NP-PP split construction without any further stipulations.

6. An HPSG proposal

6.1. Introduction. In this section we want to integrate the insights of the empirical discussion of the focus-background structures of sentences into our HPSG account of the NP-PP split construction. The central insight of this discussion was that the grammaticality of the NP-PP split construction depends to a great extend on the focus-background structure of a sentence. To extend our HPSG approach we thus have to represent information structure within the architecture of HPSG signs. We then define a lexical principle that restricts the raising of PP dependents in certain information structure configurations.

6.2. The architecture of information structure.

6.2.1. *Representation of information structure.* The first question to answer if one wants to integrate an account of information structure into an HPSG grammar is: How do we represent information structure in a grammar? Several answers to this question can be found in the literature. One approach is to say that one does not want to have a representation of the information structure of a sentence in the grammar. Instead focussed (or topicalized) constituents are marked by a syntactic feature and an independent interpretation mechanism constructs the information structure of a sentence on the basis of its syntactic structure. Within generative grammar, this syntactic approach is widely used. Jackendoff (1972) Selkirk (1984) and many others developed such approaches for English, Uhmann (1991) for German. Within HPSG, an information structure approach along these lines was proposed by Manandhar (1994). He assumes that all signs have an additional appropriate feature INFO-STRUC which takes as its value objects of the sort *info-type.* A sign can then have the subtypes of *info-type* shown in figure 28 as its informational marking. The

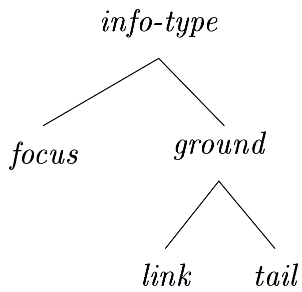

FIGURE 28. Info-type hierarchy of Manandhar (1994)

types *focus* and *ground* (which corresponds to our notion of background) are the direct subtypes of *info-type* and *ground* is further divided into *link* (corresponding to our notion of topic) and *tail.*

The distribution of the info-struc values in a sign is determined by the *Focus Inheritance Principle*, which enforces that in every phrase the INFO-STRUC value of the mother subsumes the values of the INFO-STRUC of all of its daughters. The consequence of this principle is that if one daughter in a phrase is in the focus and the other one in the ground, then the mother's info-struc value is the smallest common super-type of both, namely *info-struc.* A problem of the approach by Manandhar is connected to multiple-focus constructions. In a multiple-focus structure, the two daughters of a phrase are both in the focus, since both include a focus exponent. The mother's INFO-STRUC value will be *focus* which makes it impossible to distinguish such a multiple-focus phrase from a phrase with only one focus projection domain. Such an approach is not sufficient for our purposes because, as we discussed in the previous sections, we need to distinguish between those cases where an NP and its PP dependent are part of the same focus projection and those cases where they belong to different focus projections. One solution to this problem pursued in the literature is to number the focus features belonging to different focus exponents. The focus belonging to the first focus exponent in a sentence is thus, for example, marked by the feature F_1, a second focus exponent in the same sentence by the feature F_2. We will, however, in the following pursue an approach to information structure in which the focus-background structure of a sentence and its subconstituents is encoded more fine-grained.

We want to develop an approach to information structure in which our grammar licenses, apart from the syntactic and the semantic structure, a focus-background structure for every sentence which is build up compositionally from the focus-background structures of its subparts. An approach along these lines was proposed for HPSG in Engdahl and Vallduvì (1994), and building on their work, in Kuhn (1995a,b). Engdahl and Vallduvì (1994) encode the information structure as part of the CONTEXT of signs with the help of an additional feature INFO-STRUC. As their approach is mainly built on the information packaging theory of Vallduví (1992), in which he assumes that the information structure consists of the focus and the ground, which is further divided into link and tail, Engdahl and Vallduvì (1994) assume a similar structure of info-struc in the HPSG architecture which is shown in figure 29. The info-struc objects are ap-

$$\begin{bmatrix} \textit{sign} & \\ \text{SYNSEM}|\text{LOCAL}|\text{CONTEXT}|\text{INFO-STRUC} & \begin{bmatrix} \text{FOCUS} & \textit{sign} \\ \text{GROUND} & \begin{bmatrix} \text{LINK} & \textit{sign} \\ \text{TAIL} & \textit{sign} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

FIGURE 29. The representation of information structure in Engdahl and Vallduvì (1994)

propriate for the features FOCUS and GROUND, and GROUND is further divided into LINK and TAIL. The features FOCUS, LINK, and TAIL take as their values entire signs. If, for example, an entire phrase is in the focus, then the FOCUS value of that phrase is the the phrase itself. Kuhn (1995b) in his approach deviates from these assumptions in assuming that *info-struc* is a *local* feature and that the values of FOCUS and GROUND are lists of semantic relations. In the following we will briefly motivate where in a sign the information structure should be encoded in our theory of information packaging and what kinds of objects should be the values of the information structure.

The location of information structure. Assuming that information structure is part of local objects (which it also is, if it is part of the CONTEXT in HPSG as in Engdahl and Vallduvì (1994), is problematic in connection with a trace-based account of unbounded dependencies, which we assumed in our reanalysis approach of NP-PP split so far. One problem, for example, arises with respect to focus projection if a trace and its filler share the same information structure value. To illustrate this problem, let us take a closer look at the two question answer pairs in (301).

(301) a. Was gibt es Neues?

'What's new?'

[Hans hat ein AUTO gewonnen.]$_F$
Hans has a car won

'Hans won a car.'

b. Was gibt es Neues?

'What's new?'

[Ein AUTO$_i$ hat Hans t_i gewonnen.]$_F$
a car has Hans won

The question-answer pair in (301a) shows that with a focus accent on the object NP *ein Auto*, the focus can project over the entire sentence. If the accented object NP is fronted, i.e., extracted from the verb-initial clause leaving behind a trace, the focus cannot project over the entire sentence anymore. If one now assumes that the fronted NP and its trace in the *Mittelfeld* share the same information structure value, then the trace should be in the focus of the sentence because its filler is focussed. Focus projection principles which have to license focus projection from the object NP in the answer in (301a) could then also license focus projection in the case of the focused trace, which is of course not desired as the question-answer pairs in (301b) show.

So the information structure should not be shared between a gap and its filler, i.e., it cannot be a local feature, and traces should not contribute anything to the information structure of a sentence at all.

If information structure is not appropriate for *local* objects the choice boils down to *sign* or *synsem* objects. As part of *synsem* objects it would only make sense if it played a role in syntactic selection. One could, for example, reformulate our lexical argument raising principle in such a way, that raising of a PP is only possible if the PP and the NP are not part of the same focus projection or not both in the background. But then again these restrictions would make only sense if the information structure was part of the *local* objects. Because if a head imposes a restriction on a complement which is then realized as a trace, the restriction would get lost for the filler if it were not part of the local value which is structure shared between the trace and a filler in an unbounded dependency construction. Thus if one wants the information structure to interact with restrictions in syntax one would have to use a trace-less account of extraction like, for example, the one developed in Bouma et al. (to appear). But, as we discussed in section 3.5 of chapter 4 such a trace-less account of extraction in HPSG interacts in a non-trivial way with our lexical dependent-raising approach. It would be beyond the scope of this chapter to now develop a theory of traceless extraction which interacts in the desired way with our lexical argument-raising approach, just in order to formulate one principle in which a syntactic configuration is licensed depending on a particular information structure. We will therefore stick to a trace-based approach of UDCs and assume that the feature INFO-STRUC encoding our representation of information structure in HPSG is appropriate for all signs. The new appropriate conditions for signs are shown in figure 30. We will

$$\begin{bmatrix} \textit{sign} & \\ \text{PHON} & \textit{list} \\ \text{SYNSEM} & \textit{synsem} \\ \text{INFO-STRUC} & \textit{info-struc} \end{bmatrix}$$

FIGURE 30. Signs including the representation of information structure

later formulate our constraint on the information structure of the NP-PP split construction as a separate constraint on the information structure of utterances containing such a construction and not as part of the lexical argument-raising principle.

The values of topic, focus and background. As we already discussed in section 3.2, we will assume a tripartite partition of information structure into topic, focus and background. The next question that has to be addressed is what kinds of objects should be defined as the values of the three features? We already mentioned that Engdahl and Vallduvì (1994) assume that the info-struc features take signs as their values. As Kuhn (1995a) remarks, it is questionable to assume that the representation of information structure contains syntactic objects. We agree with him and instead propose the values of the INFO-STRUC features to be chunks of semantic information.

So, what kind of semantic objects should occur as the values of TOPIC, FOCUS and GROUND? In chapter 5, we made use of the semantic representation proposed in Pollard and Sag (1994). Using this kind of semantic representation is problematic for our present purposes. It is problematic because the semantics of a phrase is already assembled in the lexical specification of the semantic head. In a verb phrase, for example, where the head daughter is the semantic head, the semantic value of the mother and the head daughter are identical. This contrasts with approaches like Montague Semantics (cf., Dowty et al. 1981), in which the semantic composition is done in parallel with the syntactic building of a phrase.

The consequence of using the standard HPSG semantic representation for the representation of focus would be that the focus value of a verb phrase where only the head daughter is in the focus would be identical to the focus value of the same verb phrase with the entire VP in the focus. This is illustrated by the example pair in (302).

(302) a. Er hat ein Buch [GELESEN]$_F$.
he has a book read

b. Er hat [ein BUCH gelesen]$_F$.
he has a book read

'He read a book'

In (302a) only *gelesen* is in the focus while in (302b) the VP *ein Buch gelesen* is in the focus. If the representation of the information structure of the two sentence contained the semantics of the two expressions in the focus, then the two sentences would have identical focus values, i.e., the semantics of *ein Buch gelesen.* But of course we would like to distinguish between the focus values of the two sentences, such that in the first case the focus value is only the semantics of *gelesen* and in the other case it is the semantics of *ein Buch gelesen.*

To avoid this problem, we will adopt the semantic representation in HPSG in Sailer (2000) in which CONTENT values are regarded as representations of a symbolic language with a model-theoretic interpretation. As the semantic object language under CONTENT, the language Ty2 of two-sorted type theory is chosen. The logical form of a sentence is an HPSG representation of an expression of Ty2. Ty2 expressions are defined as objects in the denotation of a sort *meaningful-expression (me)*. The reader interested in the formal properties of this semantic representation is referred to Richter (2000, chapter 5.4). The question we are concerned with is what the representation look like so that we can use them for our representation of information structure. As an example, figure 31 shows the logical form of a simple declarative sentence as the value of LOGICAL-FORM (LF) which is appropriate to *content*. The logical forms at phrase nodes are

$$\begin{bmatrix} \text{PHON} & \langle \textit{Peter,liest,ein,Buch} \rangle \\ \text{S}|\text{LOC}|\text{CONT}|\text{LF} & \exists x[buch'(x) \wedge liest'(p,x)] \end{bmatrix}$$

FIGURE 31. The semantic representation of *Peter liest ein Buch*

derived via functional composition and β-reduction from the logical forms at the daughter nodes.

In our information structure approach in HPSG, we assume that the focus of a word or a phrase is represented by a *meaningful-expression*. Similarly, the topic is represented as a *meaningful-expression*. If an entire word or phrase is in the focus then the FOCUS value corresponds to the LF value of that entire sign. If only parts of a phrase are in the focus, then the FOCUS value of that phrase correspond to the LF value of that part of the phrase which is in the focus. A more precise definition of principles determining the focus and topic values of signs is provided below.

Returning to the example (302), under the Ty2 approach, the focus of (302a) is thus the logical form of *gelesen*, i.e., $read'(x,y)$. The focus of (302b), on the other hand, is the logical form of *ein Buch gelesen*, i.e., $\exists x[buch'(x) \wedge read'(y,x)]$.

We assume that the focus and the topic of a sentence which belong to one focus exponent (or topic exponent) are always represented by one *meaningful-expression*. Höhle (1982, p. 92) shows that the focus resulting from one focus accent does not always correspond to one constituent in a sentence as shown in (303), which one could assume to be a problem to our approach.

(303) a. Was hat das Kind erlebt?
'What did the child experience?'

b. [Karl]$_F$ hat dem Kind [das BUCH geschenkt]$_F$.
Karl has the child the book given
'Karl gave the child the book as a present.'

With the semantic representation we chose, however, one can give a semantic representation for those parts of a sentence which do not necessarily form a syntactic constituent. The focus value of the example (303) could, for example, be represented as the logical form $\forall x[buch'(x) \rightarrow schenken'(Karl, y, x)]$.

As we already discussed above, however, we need to distinguish the cases, where there is only one focus accent in a sentence from those where is more than one focus accent and, possibly, more than one domain of focus projection. We will assume that each of these focus domains is represented by a *meaningful-expression* and the value of the FOCUS attribute in our theory is therefore a list of *me*s. In the standard case, where there is only one focus exponent, the list will contain only one element. But in multiple-focus constructions the FOCUS list will have as many elements as there are focus exponents. The TOPIC list will have the same value - a list of *meaningful-expressions*. So far, we only discussed example with one constituent in the topic, but there are, also constructions with more than one topic, as for example shown in (304).

(304) a. Was hast Du von Deinem Urlaub auf den Kykladen mitgebracht?
'What did you bring back from your holidays on the Cyclades?'

b. [Von NAXOS]$_T$ habe ich [eine Flasche WEIN] mitgebracht und
from Naxos have I a bottle of wine brought and
[von SANTORINI]$_T$ [ein Stück Bimsstein]$_F$.
from Santorini a piece of pumice-stone
'I brought a bottle of wine from Naxos and a piece of pumice-stone from Santorini.'

Both, the PP *von Naxos* and the PP *von Santorini* have a rising accent and are thus in the topic of the sentence in (304b). The TOPIC value for this sentence would thus contain the two logical forms, each corresponding to the semantic representation of the respective PP.

Now that we have determined what the values of topic and focus are in our approach to information structure in HPSG, we should also say something about the background. That part of a sentence which is not in the focus is in the background.[4] Within our representation of information structure this means that the background of a sentence is that part of the logical form of the sentence which is not in the focus value. At closer inspection this characterization of background closely resembles the definition of background employed by the so-called *structured meaning* approaches to focus of von Stechow (1981), Jacobs (1983) and Krifka (1992). von Stechow (1981, p. 101), for example, gives the following definition for background (which in his terminology is called *topic*): "The focus-structure of a sentence determines *the topic* of the sentence in this way: Replace the focus-constituents of the sentence by a 'corresponding' variable and form a property by λ-abstraction from the open sentence which is obtained by the replacement." We mentioned at the beginning of this section that the focus of our investigation is the representation and not the interpretation of information structure. Following Stechow, the background of a sentence can be derived from our representation of focus by independent means. We thus do not need to represent background in our representation of information structure in order to guarantee that our representation could be used as input for an interpretation mechanism. The INFO-STRUC of signs in our approach is thus structured as shown in figure 32.

$$\begin{bmatrix} \textit{info-struc} & \\ \text{FOCUS} & \textit{list-of-mes} \\ \text{TOPIC} & \textit{list-of-mes} \end{bmatrix}$$

FIGURE 32. The structure of INFO-STRUC

6.2.2. *Information structure principles.*

Representation of Prominence. As we mentioned at the beginning of section 3.2, German is an intonation language, i.e., the information structure

[4]Whether the topic of a sentence is part of the background or whether only those parts of the sentence which are neither in the focus nor in the topic are in the background has been answered controversly in the literature. Büring (1999) for example assumes that the topic is not part of the background while Vallduví (1992) assumes that the link (corresponding to our notion of topic) is part of the (back)ground of a sentence. In our approach we do not need to determine the exact status of the topic because we do not want to give an interpretation of what it means for a constituent to be in the focus or in the topic.

of an utterance is determined by its prosody. Different parts of the focus-background structure are signaled by different accents. We therefore need a possibility to represent whether a word bears an accent or not. As a simple way of achieving this, we enrich the phonology of sign with the feature ACCENT as shown in figure 33.

$$\begin{bmatrix} \textit{sign} & \\ \text{PHON} & \begin{bmatrix} \text{PHON-STRING} & \textit{list} \\ \text{ACCENT} & \textit{accent} \end{bmatrix} \end{bmatrix}$$

FIGURE 33. The phonology of signs

With the help of the feature ACCENT we can represent whether a word is accented or not and which kind of contour the accent has, i.e.,whether it is a falling accent or a rising accent. Figure 34 thus shows the necessary hierarchy of types under *accent*.

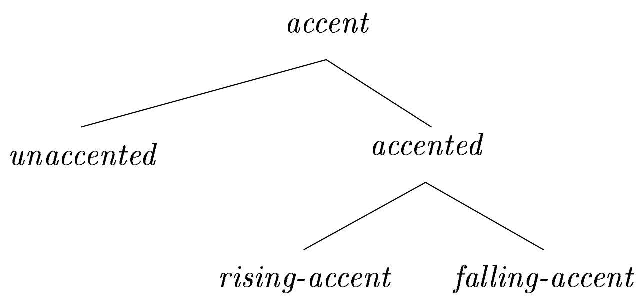

FIGURE 34. Type hierarchy under *accent*

We will not be further concerned with the ACCENT value of phrases. One could for example assume that a phrase is marked as ACCENTED if one of its daughters is accented. Or one could assume that phrases have a different kind of phonology representation containing information about the prosody of the entire phrase.

Projection of topic and focus. We can now formulate a principle which captures the fact that in German a pitch accent on a word with a falling contour signals focus and an accent with a rising contour can either signal focus or a topic constituent.

That a word is focussed is thus realized in our theory by the fact that it contributes its logical form to its FOCUS value. And if it is in the topic, it

$$
\begin{aligned}
\textit{word} \rightarrow\ & \begin{bmatrix} \text{PHON}|\text{ACCENT} & \textit{falling-accent} \\ \text{SS}|\text{LOC}|\text{CONT}|\text{LF} & \boxed{1} \\ \text{INFO-STRUC} & \begin{bmatrix} \text{FOCUS} & \langle \boxed{1} \rangle \\ \text{TOPIC} & \langle\rangle \end{bmatrix} \end{bmatrix} \\
\vee\ & \begin{bmatrix} \text{PHON}|\text{ACCENT} & \textit{rising-accent} \\ \text{SS}|\text{LOC}|\text{CONT}|\text{LF} & \boxed{1} \\ \text{INFO-STRUC} & \begin{bmatrix} \text{FOCUS} & \langle\rangle \\ \text{TOPIC} & \langle \boxed{1} \rangle \end{bmatrix} \end{bmatrix} \\
\vee\ & \begin{bmatrix} \text{PHON}|\text{ACCENT} & \textit{rising-accent} \\ \text{SS}|\text{LOC}|\text{CONT}|\text{LF} & \boxed{1} \\ \text{INFO-STRUC} & \begin{bmatrix} \text{FOCUS} & \langle \boxed{1} \rangle \\ \text{TOPIC} & \langle\rangle \end{bmatrix} \end{bmatrix} \\
\vee\ & \begin{bmatrix} \text{PHON}|\text{ACCENT} & \textit{unaccented} \\ \text{INFO-STRUC} & \begin{bmatrix} \text{FOCUS} & \langle\rangle \\ \text{TOPIC} & \langle\rangle \end{bmatrix} \end{bmatrix}
\end{aligned}
$$

FIGURE 35. The INFO-STRUC values of words

contributes its logical form to its TOPIC value. An unaccented word has empty FOCUS and TOPIC lists. This does not mean that it cannot occur as part of a focussed or topicalized constituent. If it is part of a focus domain, it contributes its semantics to the focus of the entire phrase indirectly. A phrase which is in the focus, contributes its entire semantic to the FOCUS value. Because this semantic value is compositionally derived from the logical forms of the daughters, also the semantics of the daughters is part of the FOCUS value of the entire phrase.

The principle in figure 35 is clearly not sufficient to capture all relevant aspects of the intonation contour of a sentence and its focus-background structure. As, for example, Féry (1992, p. 37) observes a pre-nuclear accent with a rising contour does not necessarily signal that the word is focussed, it could also be rhythmically conditioned. Furthermore one also has to restrict the occurrence of the rising accent signaling topic to the so-called hat patterns, i.e., this accent has to occur before the nuclear pitch accent with a falling contour. a more refined principle integrating these insights will have to be left to future work.

Next, we need to determine the information-structure values of phrases. The simplest case are those sentences where the focus does not project, i.e., only the words bearing an accent are in the topic or in the focus of an utterance. In this case, the mother of a phrase just collects the focus

$$\textit{phrase} \rightarrow \begin{bmatrix} \text{INFO-STRUC}|\text{FOCUS } \boxed{1} \oplus \boxed{2} \\ \text{DTRS} \begin{bmatrix} \text{HEAD-DTR}|\text{INFO-STRUC}|\text{FOCUS } \boxed{1} \\ \text{NHEAD-DTRS } \textit{collect-focus}\left(\boxed{2}\right) \end{bmatrix} \end{bmatrix}$$

FIGURE 36. The base case of focus projection

values of all her daughters as ensured by the principle in figure 36[5]. This principle also covers those cases where one of the daughters is part of a focus domain but the focus is not projected further up.

The principle in figure 37 ensures that the TOPIC values of the daughters are collected[6] in a parallel fashion.

$$\textit{phrase} \rightarrow \begin{bmatrix} \text{INFO-STRUC}|\text{TOPIC } \boxed{1} \oplus \boxed{2} \\ \text{DTRS} \begin{bmatrix} \text{HEAD-DTR}|\text{INFO-STRUC}|\text{TOPIC } \boxed{1} \\ \text{NHEAD-DTRS } \textit{collect-topic}\left(\boxed{2}\right) \end{bmatrix} \end{bmatrix}$$

FIGURE 37. The base case of topic projection

As we already discussed in section 3.2, only one word bears a focus accent but due to focus projection a larger constituent containing the accented word can be focused. There have been many attempts to formulate rules for focus projection, for German cf., e.g., Jacobs (1988, 1991), von Stechow and Uhmann (1986), Uhmann (1991). The factors that influence focus projection, especially in the VP, are diverse. The possibility of focus projection depends on whether an argument or an adjunct is focused, which of the arguments of a verb is focused, in which order the focused and non-focused arguments occur and a variety of other factors, such as lexical sematic properties. We will therefore not try to give any precise formulations of focus projection rules within VPs for our HPSG theory.

Fortunately, the focus projection within NPs and PPs we are primarily interested in is significantly simpler: if the rightmost constituent in a PP or NP is focused than the entire NP or PP can be focused, as we already

[5] Definition of the relation *collect-focus*

$$\textit{collect-focus}(\langle\rangle) := \langle\rangle.$$
$$\textit{collect-focus}\left(\left\langle \boxed{1} | \boxed{2} \right\rangle\right) := \left\langle \left[\text{INFO-STRUC}|\text{FOCUS } \left\langle \boxed{1} \right\rangle\right] \middle| \ \textit{collect-focus}\left(\boxed{2}\right)\right\rangle.$$

[6] Definition of the relation *collect-topic*

$$\textit{collect-topic}(\langle\rangle) := \langle\rangle.$$
$$\textit{collect-topic}\left(\left\langle \boxed{1} | \boxed{2} \right\rangle\right) := \left\langle \left[\text{INFO-STRUC}|\text{TOPIC } \left\langle \boxed{1} \right\rangle\right] \middle| \ \textit{collect-topic}\left(\boxed{2}\right)\right\rangle.$$

observed in section 4.1. The principle in figure 38 shows a formulation of this constraint as part of our theory.

phrase $\rightarrow$

$$\left[\begin{array}{ll} \text{INFO-STR}|\text{FOCUS} & \boxed{1} \oplus \boxed{2} \\ \text{DTRS} & \left[\begin{array}{ll}\text{HEAD-DTR}|\text{INFO-STR}|\text{FOCUS} & \boxed{1} \\ \text{NHEAD-DTRS} & \textit{collect-focus}\left(\boxed{2}\right)\end{array}\right]\end{array}\right]$$

$$\vee \left[\begin{array}{ll} \text{PHON} & \boxed{1}\oplus\boxed{2} \\ \text{SS}|\text{LOC} & \left[\begin{array}{ll}\text{CAT}|\text{HEAD} & \textit{noun} \vee \textit{prep}\\ \text{CONT}|\text{LF} & \boxed{3}\end{array}\right] \\ \text{INFO-STR}|\text{FOCUS} & \langle\boxed{3}\rangle \\ \text{DTRS} & \left(\left[\text{H-DTR}\ \left[\begin{array}{ll}\text{PHON} & \boxed{2}\\ \text{SS}|\text{L}|\text{CONT} & \boxed{4}\\ \text{INFO-STR}|\text{FOCUS} & \langle\boxed{4}\rangle\end{array}\right]\right] \vee \left[\text{N-DTRS}\ \langle ..,\left[\begin{array}{ll}\text{PHON} & \boxed{2}\\ \text{SS}|\text{L}|\text{CONT} & \boxed{4}\\ \text{INFO-STR}|\text{FOCUS} & \langle\boxed{4}\rangle\end{array}\right],..\rangle\right]\right)\end{array}\right]$$

FIGURE 38. Focus projection in NPs and PPs

If focus projection is possible in a certain configuration then this is always optional, therefore the focus projection principle for nouns and prepositions is formulated as a disjunct of our general principle for narrow focus in phrases in figure 36 on the facing page. The second disjunct of the principle in figure 38 ensures that a phrase headed by a noun or by a preposition can only be in the focus, i.e., its entire logical form is token identical to its focus value, if that daughter that contributes the rightmost part of the phonology of the phrase is entirely focused itself. This is the case if the daughter is itself the mother of a focus projection or if it is a word with a focus accent. The principle thus licenses all the possible focus structures of the NP in (305) indicated by the brackets.

(305) [ein [Buch [mit [rotem [EINBAND]$_F$]$_F$]$_F$]$_F$]$_F$

‘ a book with a red cover’

So far, we only talked about focus projection and did not address the question whether topic can also project. Topic is also signaled by an accent on a word and it would not be surprising if larger parts of an utterance could be in the topic. In fact, we already tacitly assumed in section 4.3.2 that an entire phrase containing one word with a topic accent is in the topic. Example (248b), here repeated as (306) shows such a case.

(306) Welche Stücke von berühmten Leuten gesammelt stehen in der Vitrine?
'Which pieces from famous collections are in the display?'

[Aus der ROTHSCHILD-Sammlung/]$_T$ steht [eine PORZELLAN-
from the Rothschild collection *is* *a* *figurine*
FIGUR\]$_F$ in der Vitrine.
in the display

As the preceding question suggests, the entire PP *aus der Rothschild-Sammlung* in the Vorfeld is the topic of the sentence. The placement of the accent is the same as if the PP was in the focus. We will thus assume that similar to focus projection also the projection of topic is possible, at least within NPs and PPs. That the conditions for the projection of topic cannot be exactly the same as the ones for focus projection becomes immediately clear from the fact that there always has to be a focus in a sentence (i.e., something that is informative) and thus an utterance can never completely be in the topic whereas there are all-focus utterance which means that focus can project up to the entire sentence.

The principle for the projection of TOPIC values in figure 37 can thus be extended in the same manner as the one for focus projection. Figure 39 shows the new principle allowing projection of topic in NPs and PPs.

$$\textit{phrase} \rightarrow$$

$$\begin{bmatrix} \text{INFO-STR}|\text{TOPIC} & \boxed{1} \oplus \boxed{2} \\ \text{DTRS} & \begin{bmatrix} \text{HEAD-DTR}|\text{INFO-STR}|\text{TOPIC} & \boxed{1} \\ \text{NHEAD-DTRS} & \textit{collect-topic}\left(\boxed{2}\right) \end{bmatrix} \end{bmatrix}$$

$$\vee \begin{bmatrix} \text{PHON} & \boxed{1} \oplus \boxed{2} \\ \text{SS}|\text{LOC} & \begin{bmatrix} \text{CAT}|\text{HEAD} & \textit{noun} \vee \textit{prep} \\ \text{CONT}|\text{LF} & \boxed{3} \end{bmatrix} \\ \text{INFO-STR}|\text{TOPIC} & \langle \boxed{3} \rangle \\ \text{DTRS} & \left(\begin{bmatrix} \text{H-DTR} & \begin{bmatrix} \text{PHON} & \boxed{2} \\ \text{SS}|\text{L}|\text{CONT} & \boxed{4} \\ \text{INFO-STR}|\text{TOPIC} & \langle \boxed{4} \rangle \end{bmatrix} \end{bmatrix} \vee \begin{bmatrix} \text{N-DTRS} & \left\langle .., \begin{bmatrix} \text{PHON} & \boxed{2} \\ \text{SS}|\text{L}|\text{CONT} & \boxed{4} \\ \text{INFO-STR}|\text{TOPIC} & \langle \boxed{4} \rangle \end{bmatrix}, .. \right\rangle \end{bmatrix} \right) \end{bmatrix}$$

FIGURE 39. Topic projection in NPs and PPs

6.3. The information structure of NP-PP split constructions. Now that we have introduced some basic principles for a theory of information structure in HPSG let us take a look at the focus-background structures of some NP-PP split constructions.

We will first investigate how our theory licenses an NP-PP split construction with a hat contour. One of the examples we discussed in section 4.3.2, (254), is here repeated as (307).

(307) a. Was hat Detmar über welchen Komponisten ausgeliehen?

'About which composer did Detmar borrow what?'

[Ein BUCH/]$_F$ hat Detmar [über MOZART\]$_F$ ausgeliehen.
a book has Detmar about Mozart borrowed

b. Über welchen Komponisten hat Detmar Material ausgeliehen?

'Material about which composer did Detmar borrow?'

[Ein BUCH/]$_T$ hat Detmar [über MOZART\]$_F$ ausgeliehen.
a book has Detmar about Mozart borrowed

The tree in figure 6.3 on the following page shows the structure of example (307a) as licensed by our theory. The syntactic structure of the tree is licensed by our argument raising theory developed in section 2 similar to the structure of the tree we saw in figure 15 on page 86. The sentence has two focused constituents, *ein Buch* and *über Syntax*, as the question in (307a) indicates, and respectively two focus accents, one on *Buch* in the *Vorfeld* and one on *Syntax* in the *Mittelfeld*. According to our information-structure principle for words in figure 35, both words contribute their LOGICAL-FORM value to their FOCUS. The principle in figure 38 licenses the focus values both of the NP and the PP, such that they contribute their own LF values to their FOCUS values. In the flat head-complement phrase dominating the PP *über Syntax* no other constituent is focused and it thus only the FOCUS value of the PP that occurs on the FOCUS list of the governing verb phrase. In the head-filler phrase, the focus values of both daughters are collected and the entire sentences thus has an information structure with two elements on its FOCUS list, the FOCUS values of the focused NP and the focused PP.

The structure of example (307b) is shown in the tree in figure 41 on page 175. The only difference to the previous example is that the fronted NP *ein Buch* is not focused. This time, according to the context given by the question, the NP is the topic of the sentence. Accordingly, the accented head noun contributes its LF value to its TOPIC value. As licensed by the principle in figure 39, the entire NP can then contribute its LF value to its TOPIC value. The entire sentence is thus a phrase with one element on its FOCUS list, the FOCUS value of the PP *über Syntax* and with one element on its TOPIC list, the TOPIC value of the NP *ein Buch*.

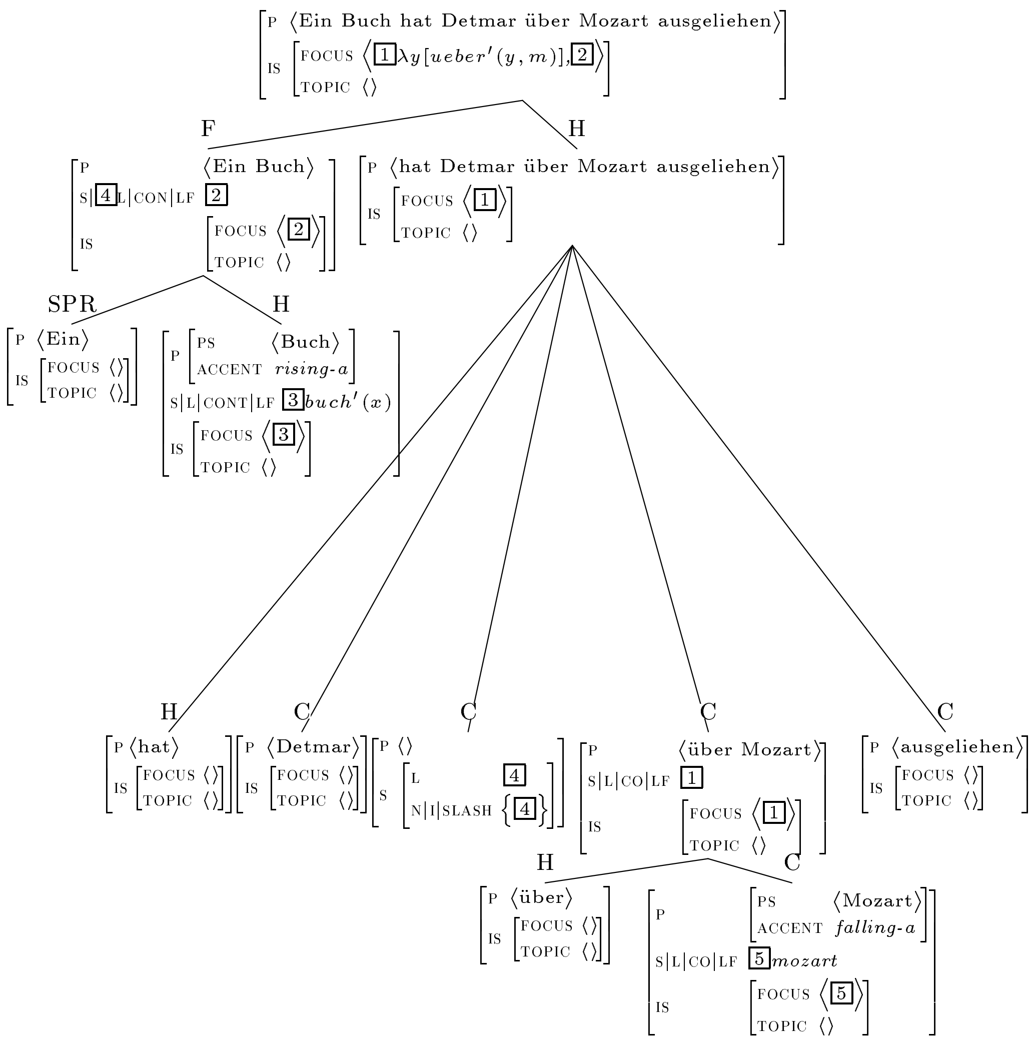

FIGURE 40. An example for a multiple-foci structure in an NP-PP split construction

In section 4.3.2 we established that a sentence containing an NP-PP split construction is only a felicitous utterance if the NP and the PP are not part of the same informational partition. This was the case in the previous two examples and they were correctly licensed by our information structure principles. But what about those examples which should not be licensed by our theory because both the NP and the PP are part of the same informational partition? To discuss such examples in more detail let us return to the example (239) we saw on p. 131. Two of the sentences are here repeated as (308).

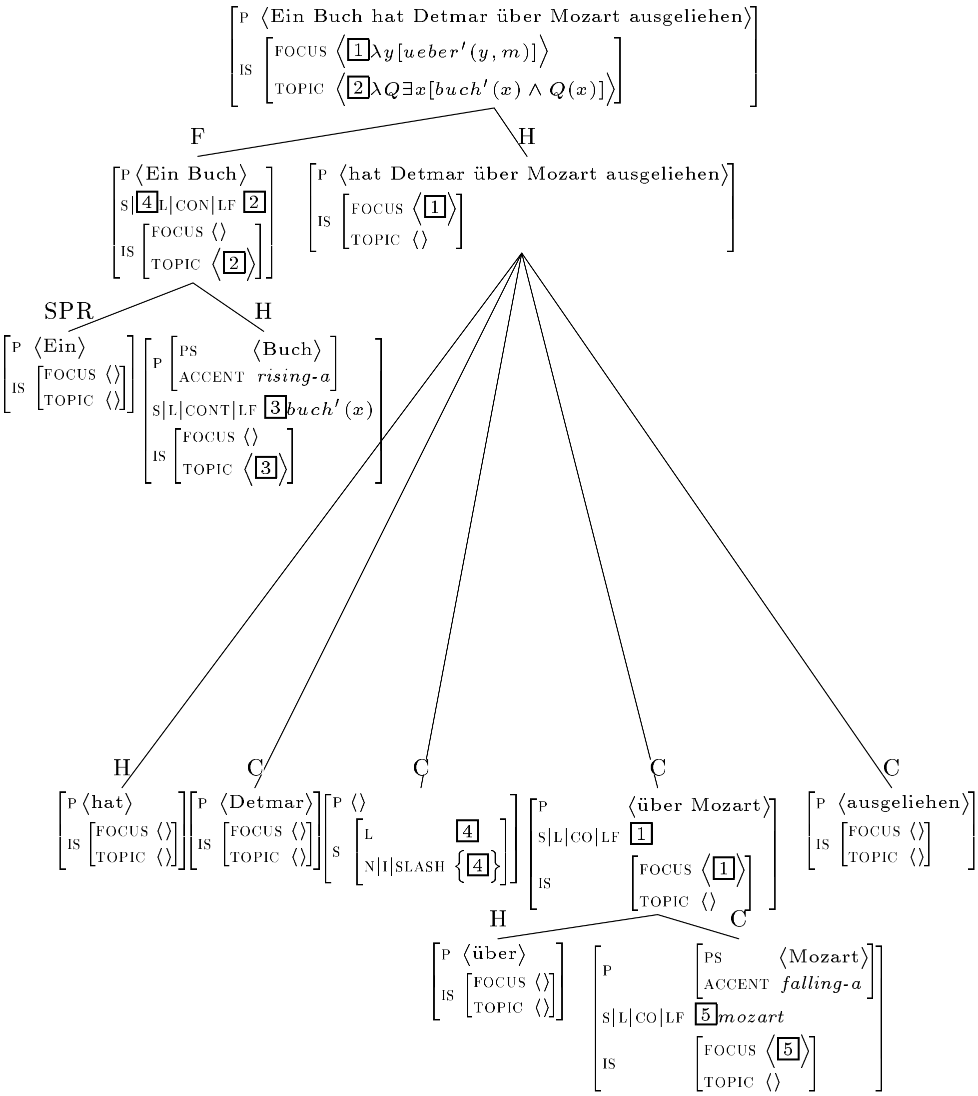

FIGURE 41. An example for a topic-focus structure of an NP-PP split construction

(308) a. Was hat Detmar ausgeliehen?

'What did Detmar borrow?'

\# [Über Mozart]$_F$ hat Detmar [ein BUCH\]$_F$ ausgeliehen.
about Mozart has Detmar a book borrowed

b. Was ist geschehen?

'What happened'

\# [Über Mozart hat Detmar ein BUCH\ ausgeliehen.]$_F$
about Mozart has Detmar as book borrowed

(308a) is an infelicitous utterance because the fronted PP and the NP are both in the focus. (308b) is an all-focus sentence and the PP and the NP are again both in the focus.

The tree in figure 42 shows the structure of example (308a) with the information structure as indicated in the example. Syntactically, the structure

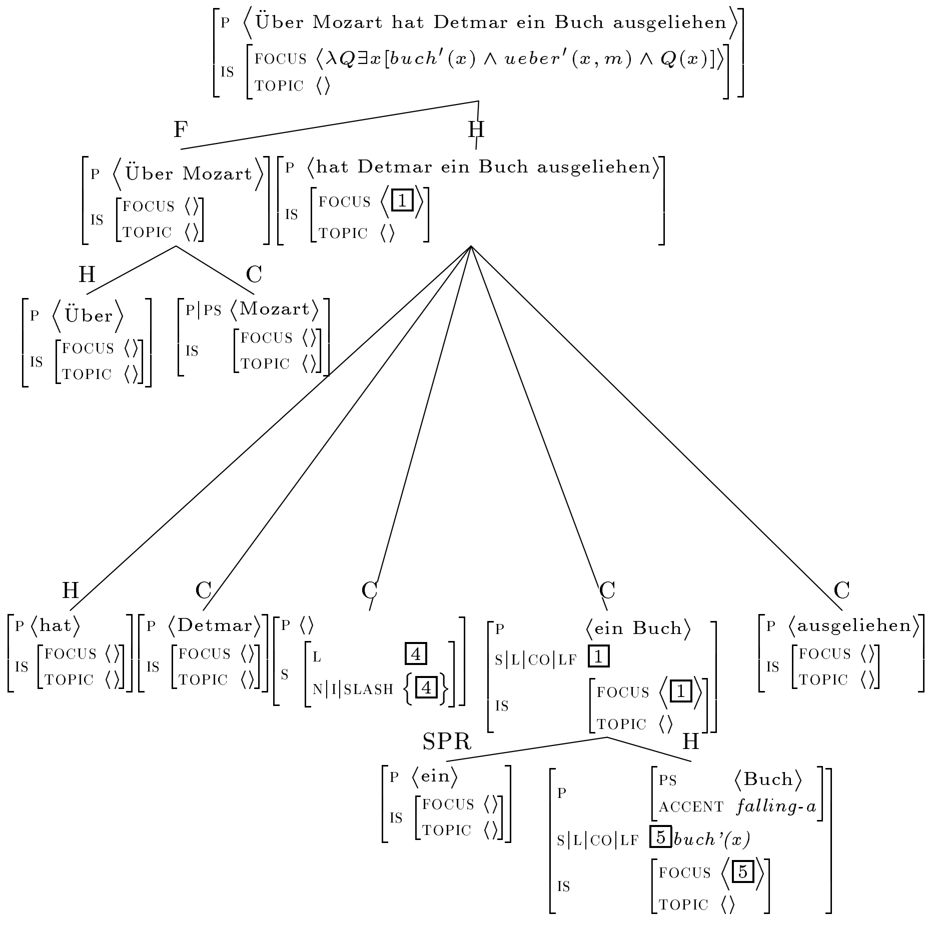

FIGURE 42. Focus projection in an NP-PP split construction

is again licensed by our argument raising theory of section 2. The information structure values of the mother, especially the FOCUS value ($\boxed{1}$), on the other side are not licensed by any of our information structure principles. The FOCUS value of the mother is the logical form of the entire

NP *ein Buch über Mozart*. But the principle in figure 36 only allows the mother's FOCUS value to be the concatenation of the daughters FOCUS values, which in this case could only be a list containing the FOCUS value of the NP *ein Buch*.

We have not provided any rules for focus projection in verb phrases. The rules would have to be written in such a way that they do not license focus projection in case such as in (308). In a complete theory of focus projection in German, however, there might very well exist a principle which allows focus projection over two daughters that do not form one constituent. This might be necessary for examples like (303) we discussed on page 166. If such a principle exists it might then license the FOCUS value of the structure in figure 42 on the facing page. One would then need another principle which does not license such kind of focus projection in case of NP-PP split construction.

A similar situation arises with the example (308b). The structure of this example with the indicated information structure in (308b) is shown in figure 43 on the next page. Right now, none of our information structure principles licenses the focus projection ($\boxed{2}$) in the VP *hat Detmar ein Buch gelesen* and the focus projection ($\boxed{3}$) over the entire sentence. But it is clear that such principles are necessary. In (309), an example which is very similar to (308b) except for the fact that the constituent in the *Vorfeld* modifies the main verb of the sentence, focus projection over the entire sentence is possible.

(309) Was ist geschehen?

'What happened?'

[Heute morgen hat Detmar ein BUCH\ ausgeliehen.]$_F$
today morning has Detmar a book borrowed

'This morning, Detmar borrowed a book.'

A principle licensing the focus projection in cases like (309) might very well also license the focus projection in an example like (308b) with an NP-PP split construction shown in figure 43 on the following page. A principle would again be needed which prevents such focus projection in case of an NP-PP split construction.

Formulating such a principle for our information structure approach as it stands right now is very problematic because of the lacking focus (and topic) projection principles. It might very well be that such principles already have the desired effect and information structures like the ones

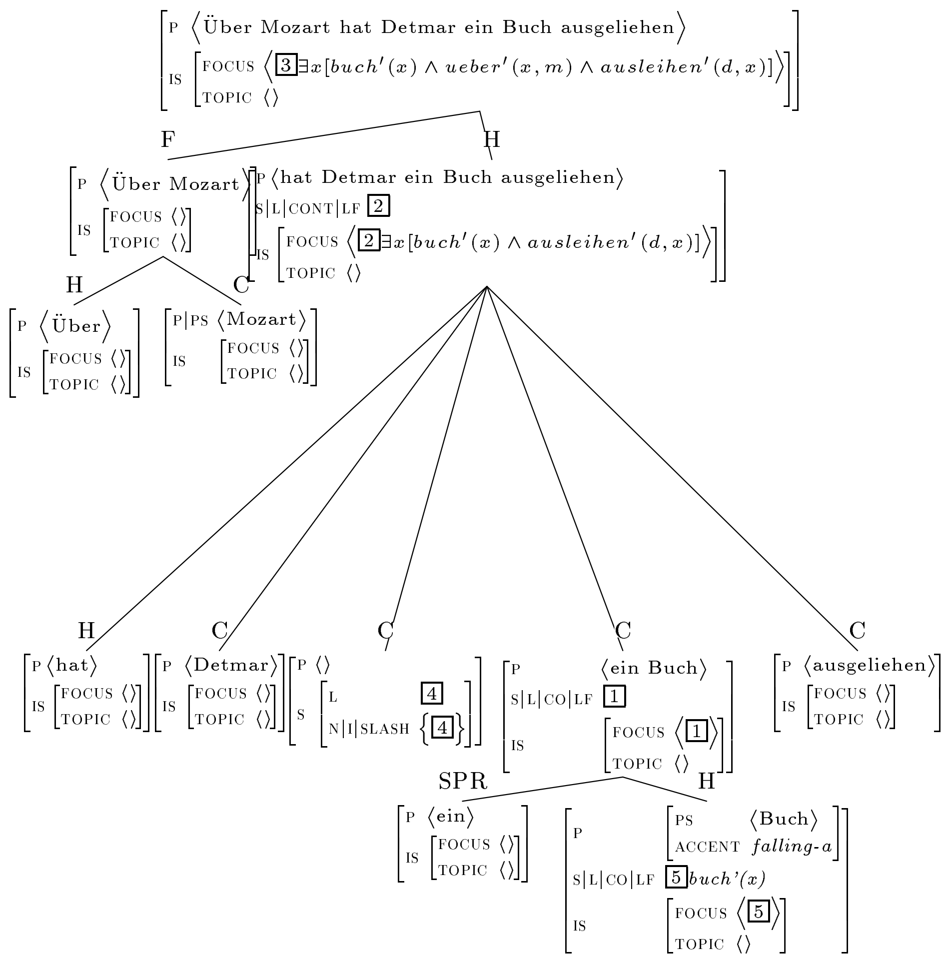

FIGURE 43. Focus projection in an NP-PP split construction

in the trees in figure 42 on page 176 and 43 are not licensed. If not, a principle like the following would be needed:

> In an utterance, in which a PP is raised from an NP, either the PP or the NP must be in the focus or in the topic of the utterance, and the LF value of the NP and the LF value of the PP may not be part of the same *meaningful-expression* on the FOCUS list or the TOPIC list of the info-struc value of the utterance.

Such a principle is very idiosyncratic in that it restricts the occurrence of a specific construction and it does not seem to have any explanatory power. It would therefore be desirable if the above restriction on the NP-PP split construction would follow from independent principles regulating the occurrence of partial constituent phenomena in general.

6.4. The role of lexical semantics revisited. At the end of chapter 5, we observed that the lexical semantics approach to the NP-PP split constructions developed in that chapter was not adequate to capture the context dependence of the phenomenon. Under the approach pursued in this chapter, the two sentences in (310) are both well-formed utterances if they occur in the appropriate context, i.e., their information structure values obey certain restrictions.

(310) a. *Über Syntax* hat er ein Buch ausgeliehen.
on syntax has he a book borrowed
'He borrowed a book on syntax.'

b. *Über Syntax* hat er ein Buch geklaut.
on syntax has he a book stolen
'He stole a book on syntax.'

Under the lexical semantics approach of the previous chapter, only (310a) is a well-formed utterance. (310b) is not well-formed because it does not meet the lexical semantic restrictions that trigger raising of the fronted PP. If one abandons the lexical semantics approach because sentences like (310b) can be well-formed utterances in the appropriate context. The question arises how one can then capture the difference in acceptability between the two sentences in (310) which nevertheless exists. What we would like to suggest is that the difference lies in how easy it is to imagine an appropriate context.

It is clear that this difference has something to do with the lexical semantic properties of the words in the sentences because the only difference between the two sentences in (310) is the lexical meaning of the two transitive verbs *ausleihen* and *klauen*. For verb-noun combinations like *ein Buch über Mozart ausleihen* an appropriate context is easily imaginable where one of the constituents is in the focus and the others in the topic or background. In the case of *ein Buch über Mozart klauen*, constructing an appropriate context requires imagining the uncommon situation that stealing books is part of the background of an utterance.

More research is needed to find out what the exact nature of the difference in acceptability between NP-PP split constructions as in (310) is. The general setup we would like to argue for should have become clear, though: it is not the lexical semantic properties of the verb and noun involved in the constructions which triggers raising of the PP so that it can occur separate from the governing noun. In syntax, raising of a PP dependent of a noun is always licensed, but an utterance containing an NP-PP split construction is only well-formed if it meets particular restrictions on its information structure.

CHAPTER 7

Summary

In this thesis, we investigated a particular word order phenomenon in German, the NP-PP split construction. This research on the one hand highlighted the syntactic properties of the construction, on the other hand it provided a better understanding of the lexical and contextual factors that influence the grammaticality of the construction.

In part one of the thesis, we explored the empirical characteristics of the NP-PP split construction as a basis for its theoretical interpretation. On the syntactic side, we showed that the two parts of the construction, the partial NP and the split PP, can freely occur independent of each other in the *Vorfeld* and in the *Mittelfeld*, while their occurrence in the *Nachfeld* is more restricted. Regarding their syntactic and semantic function, we provided evidence that only PP adjuncts modifying the noun can occur separate from the NP whereas PP arguments as they occur with deverbal nouns can never be separated from their nominal head. Turning to the lexical semantic and pragmatic aspects of the construction, we showed that splitting a PP from an NP seems to possible only with certain verb-noun combinations. We observed, however, that the ungrammatical cases become acceptable if embedded in an appropriate context. Finally, to situate the NP-PP split construction in the general landscape of phenomena involving discontinuous NPs, we showed how the construction can be distinguished from apparently similar phenomena such as secondary predication, support verb constructions, NP split or partitive split.

The theoretical investigations of the NP-PP split construction in the second part of the thesis were started with an extensive discussion of the two syntactic approaches that have been proposed for the construction in the literature, extraction and reanalysis. We showed that the empirical arguments that have been forwarded for preferring extraction are not convincing and that certain word order phenomena support a reanalysis approach to the NP-PP split construction. We formalized a reanalysis-like theory in the HPSG paradigm with the help of the dependent-raising mechanism which provides a formally precise rendering to a notion of reanalysis.

Turning to a theoretical interpretation of the lexical restrictions on the NP-PP split construction, we showed that it is the semantic relationship between the embedding verb and the NP that seems to influence the possibility of separating a PP dependent from its nominal head. To include this observation into our HPSG account, we adopted Pustejovsky's (1995) generative lexicon approach in order to capture the relational force of lexical items in the 'qualia structure'. We extended our dependent raising theory so that raising of a PP from an NP is only possible if the content of the embedding verb and the qualia structure of the respective NP interact in a particular way.

Turning to the context effects influencing the grammaticality of the NP-PP split construction we showed that the lexical semantics based approach is insufficient to capture the interaction between lexical and contextual factors. To find an explanation for the context effects, we took a closer look at the possible focus-background structures of the construction. We observed that separating a PP from an NP is only acceptable if not both the NP and the PP are part of the same focus projection or the background of a sentence. An important consequence of this observation is that some of the supposed syntactic restrictions on the construction, such as the Specificity Effect and the Specified Subject Condition, can straightforwardly be explained as falling out of the discourse restrictions for this construction. To integrate these observations into our HPSG account, we developed an information structure component in which the focus-background structure of signs can be represented. This enabled us to formulate a principle which restricts the syntactic occurrence of NP-PP split constructions to adequate focus-background structures.

With this discourse component in place, we returned to the lexical restrictions and their interaction with discourse factors. As the lexical effects mainly show up with out-of-the-blue utterances, which are much improved by providing an appropriate context, we argued that depending on the lexical material of a sentence the appropriate focus-background structure of an acceptable NP-PP split construction is more or less easy to imagine. More research is needed to investigate the status of such extra-grammatical factors as an explanation for such lexical effects.

In sum, this thesis can on the one hand be seen as a comprehensive investigation of a particular word order phenomenon in German. On the other hand it is intended as a contribution to the general question at which levels, syntactic, semantic or pragmatic, the factors which influence word order phenomena have to be localized and how they interact. Future studies of other phenomena will show whether this contribution can be generalized to a setup in which a wide variety of word order phenomena find a satisfactory linguistic analysis.

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