An Analysis of Pseudoclefts and Specificational Clauses in Head-driven Phrase Structure Grammar

Dissertation zur Erlangung des philosophischen Doktorgrades an der Philosophischen Fakultät der Georg-August-Universität Göttingen

vorgelegt von

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Göttingen 2009

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Tag der mündlichen Prüfung .....28.08.2008........

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Contents

Abstract

This dissertation is concerned with a class of copular clauses known as pseudocleft clauses, with related constructions, and with specificational copular structures in general. The aim is a unified account of these grammatical constructions. Following Mikkelsen (2004b), I argue that specificational clauses involve the same core predication structure as predicational clauses. They both combine a functor argument and an argument for that functor, but they differ in how the predicational core is realized syntactically. Predicational copular clauses represent the canonical realization, where the functor's argument is aligned with the subject position. Specificational clauses align the functor with the subject position. For specificational pseudoclefts this means that we find a clause in subject position which acts as a functor for the post-copular constituent. Surveying properties of pseudoclefts and specificational clauses from the literature, I develop a unified analysis for these constructions. The analysis is formulated in Head-Driven Phrase Structure Grammar (Pollard and Sag (1994)). It is implemented into the fragment of Ginzburg and Sag (2000), which makes extended use of grammatical constructions (in the sense of Construction Grammar, Kay (1998)) to account for cross-constructional properties efficiently. The analysis' main features are the following: a predicational free relative clause in subject position of specificational pseudoclefts in which the relative pronoun shares the semantics with the post-copular constituent, a copula that is indifferent to the functor-argument order on its argument structure, and a matrix clause construction that shares the meaning of the cleft clause. With this analysis we can explain why the post-copular constituent in specificational pseudoclefts shows various properties that make it appear a constituent of the cleft clause (so called connectivity effects, Akmajian (1970)). In specificational pseudoclefts as well as in specificational clauses in general, the post-copular constituent is reconstructed in the predicate.

Acknowledgment

After I had spent several years at the university and had gotten my first degree (Staatsexamen I.), I felt very discontent with what I had learned. My thirst for knowledge had not been quenched. I could not imagine spending the rest of my life teaching other people before my own inquisitiveness was further satisfied. Luckily I had been introduced to modern linguistics and I had the opportunity to nurture my interest in this field.

I would like to thank the following people (in alphabetical order), who were all part of the development of this work or part of my time at the English Department: Martin Ballmaier for the best coffee breaks. Dirk Buschbom for showing me that we need a new definition of meaning and for being the the best PhD student one could share an office with. Professor Eckardt for her advice and her razor sharp mind (which cut out innumerable pages of my thesis). Hildegard Farke for being the first of my teachers to actually show interest in what I wanted to do. Professor Gardner for stirring up my interest in linguistics. Howard Gregory for the quickest corpus-based feedback ever. Kleanthes K. Grohmann for bringing together two things that I had never expected to see brought together (PIS). Susanne Heyn for the thing with the brackets. Garrett Hubing for all his judgments. Professor Klenk for reviewing this thesis. Peter Nordhoff for showing me that one can do all kinds of things with a PhD, which have nothing to do with what you studied. Carl Pollard for his advice and the best offer anyone ever made me, which I did not accept. Manfred Sailer for more support than a human being could possibly be expected to offer. Roland Schäfer for all the help with LaTeX and linux. Joachim Tuschinsky for teaching me linguistics and sharing his teaching experience. Heike Walker for our self-organized semantics class. Susanne Wendland for helping organize all kinds of things.

Most of all I would like to thank Gert Webelhuth for his willingness to accept half a historian as his PhD student, for all his advice, for all the cake and coffee, for supporting me whenever I asked him to, and for all the things I learned from him, especially those which had nothing to do with linguistics, which I value the most.

Finally, I have to thank my parents for financing my studies without ever comprehending what I was doing and in spite of my unwillingness to explain it to them.

Chapter 1

Introduction

In this thesis, I examine the pseudocleft[1] construction in English and propose an analysis within the framework of Head-driven Phrase Structure Grammar (HPSG). A typical pseudocleft is given in (1a), a related construction (a reverse pseudocleft) is given in (1b), and a specificational clause is given in (1c).

(1) a. What Sue was looking for was this cat.
    b. This is what Sue was looking for.
    c. The tallest girl on the team is Sue.

I argue that the pseudocleft construction as well as its related constructions and specificational clauses in general can only be understood through examining the interaction of syntax, semantics, and information structure. This introductory chapter starts with a summary of the main proposals of the thesis. The subsequent section offers an overview of cleft constructions and shows how pseudoclefts have been related to *it*-clefts in the literature. The last section summarizes the structure of the thesis and its line of argumentation.

[1] I chose this variant of spelling to indicate that this construction is not a (pseudo) variant of the (*it*-)cleft.

1.1 Main proposals of the thesis

I argue in this thesis that the specificational pseudocleft must be understood as a syntactic means to order semantic types. I show that there are other constructions that superficially resemble the specificational pseudocleft, but are of a different semantic structure. I argue that the cleft clause of the specificational pseudocleft is a special kind of free relative clause that is semantically a predicate. This analysis of specificational pseudoclefts is congruous with recent studies on copular structures. I show that the argument of this predicate is syntactically realized in the post-copular position of the matrix clause, but interpreted within the subject clause.
The monostratal Head-driven Phrase Structure Grammar analysis which I present in this thesis has the advantage that it is able to account for the semantic, syntactic, and pragmatic properties of the pseudocleft without multiple layers of abstraction. Using a type hierarchy of grammatical constructions, I show how certain copular constructions and pseudoclefts can share certain properties, while they differ in other aspects.

1.2 On cleft constructions

This section provides the basic terminological background for the analysis of clefts. It also illustrates how the analysis of pseudoclefts is historically related to the analysis of *it*-clefts.

Cleft sentences are found in a great variety of constructions. The most notable fact about (almost) all cleft constructions is that they express a simple proposition via a bi-clausal syntax. An overview of cleft constructions and related constructions is given in figure 1.1.[2]

[2] Capital letters indicate A-accents (see footnote (97)). Note that some authors like e.g. Collins (1991) use the term th-cleft for constructions like *The thing Mike likes most is himself.*

Construction	Example
***It*-clefts**	
comment-clause *it*-cleft	It was Mike that LEFT.
topic-clause *it*-cleft	It was Mike that left.
truncated *it*-cleft	It was Mike.
question	Who was it that left.
Th-cleft	This/That was Jane who told me.
Pseudoclefts/wh-clefts	
specificational	What Mike$_i$ is is a nuisance to himself$_i$.
predicational	What Mike$_i$ is is a nuisance to him$_j$.
***There/Here*-clefts**	
type A	There/Here is a girl ruptured herself lifting heavy boxes.
type B	There/Here is the Smiths that could do you a favor.
***Have*-clefts**	We have Mike that could do this job.
Wh-amalgam clefts	What Mike is is Mike is a nuisance to himself.
Tagged wh-clefts	That's what I'm TOLD, that they got it from the SENATE side.
All-clefts	All that she wants is another baby.
if-because clefts	If he wants to explain clefts, it's because he is ambitious.

Figure 1.1: Clefts and related constructions

The *it*-cleft is the best known basic cleft construction. Often the expression 'cleft' is used synonymously with '*it*-cleft'. The *it*-cleft shows all the basic components of a cleft sentence.

$$\underbrace{\text{It}}_{\text{cleft pronoun}} + \underbrace{\text{was}}_{\text{copula}} + \underbrace{\text{muffins}}_{\text{clefted constituent}} + \underbrace{\text{that I bought for him}}_{\text{cleft clause}}.$$

Figure 1.2: The structure of the *it*-cleft

Apart from the cleft pronoun all the other parts are present in the other cleft constructions as well.[3] The clefted constituent often looks like it was extracted from the cleft clause. The pseudocleft (also called wh-cleft) is the next best known cleft construction after the *it*-cleft. Higgins, who wrote one of the milestones in the analysis of pseudoclefts, tried to define this construction along the following lines:

(2) "There are two features of the pseudo-cleft construction which are by many authors taken as defining features: (i) a semantic kinship to cleft sentences, and a consequent semi-formal requirement that pseudo-cleft sentences should have a bipartite form, looking like a broken-up form of a simple sentence,

[3] Only truncated clefts differ in this respect.

> with a 'focal' constituent which in some sense is being emphasized, and a remainder; (ii) a formal requirement that the sentence is a copular sentence having a subject that [consists] of a clause introduced by a wh-item, usually *what*, this subject clause constituting the remainder of the simple sentence, and a portion which follows the copula and constitutes the focal constituent, the constituent which is being emphasized."[4]

When Higgins published his work, the pseudocleft had already been related to several topics, like the deep structure of sentences containing embedded complement sentences, pronominalization, stative verbs, the analysis of phrase categories as features, and the constraints on sentential extraposition. In earlier studies the terms cleft and pseudocleft were sometimes interchanged, but today the terminology is fixed. Since nothing gets 'clefted' in the pseudocleft, the element following the copula is referred to as the *post-copula constituent/element* but not as *clefted constituent*. Some authors also refer to it as the *pivot*, *predicate complement*, *counterweight*[5] or *focal item*[6]. The prototypical form of the pseudocleft is shown below.

What I bought for my professor	+	was	+	this muffin.
cleft clause		copula		post-copula constituent

Figure 1.3: The structure of the pseudocleft

We see that the pseudocleft is characterized by a clause in subject position, which has an initial wh-constituent and resembles a free relative clause. Yet, there are some authors who have claimed that it is an interrogative clause. This is one of the issues that will be settled later on. This wh-clause is followed by a form of *be* and another constituent that corresponds to the wh-constituent in the subject-clause. It is called a cleft construction because on the surface it resembles an *it*-cleft whose cleft clause has been moved to subject position (with an adjustment of the initial wh-pronoun). Many studies have indeed tried to relate the two constructions to each other.
The studies of cleft constructions basically fall into two main categories according to the focus on one of the two predominant relationships within the construction. The first approach puts emphasis on the relationship between clefted sentences and their

[4] Higgins (1976, p. 1).
[5] Boskovic (1997).
[6] Higgins (1973).

non-clefted counterparts, i.e. on the relation between *it*-clefts and pseudoclefts. The second approach looks at cleft sentences as instances of copula constructions because of the structure of the matrix clause. Cleft sentences are primarily related to other copula constructions in such approaches. Since the study of *it*-clefts and pseudoclefts are closely interwoven, we will take a brief look at the historical development of cleft analyses.

The formal study of *it*-clefts began with Jespersen's (1927) analysis. At the time Jespersen still argued in favor of an approach to clefts that he labeled 'transposition analysis'. Under this perspective the cleft clause is assumed to be a relative clause which modifies the cleft-pronoun discontinuously, i.e. it is assumed that the relative clause has been extraposed from an NP in subject position of the matrix clause to the right periphery. The clefted constituent is considered to be a predicate complement. Since restricted relative clauses are usually not headed by pronouns or proper names ("a word which is in itself so definite that it cannot be further restricted"[7]), which can appear as clefted constituents, Jespersen argued against the assumption that the cleft clause is a relative clause which acts as a modifier to the clefted constituent.

The extrapositional analysis of *it*-clefts became especially popular in the transformational approaches to syntax in the 1970's. Figures 1.4, 1.5, and 1.6 give simplified and unified tree structures for the main analysis from that time. They all share the assumption that pronoun and cleft clause somehow belong together and that the clefted constituent is a predicate complement.

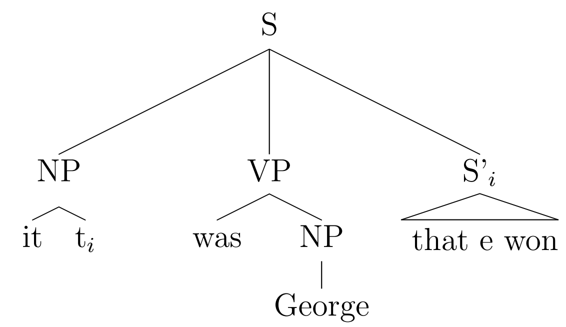


Figure 1.4: Akmajian (1970), Bolinger (1972), Wirth (1978)

[7] Jespersen (1927, p. 89).

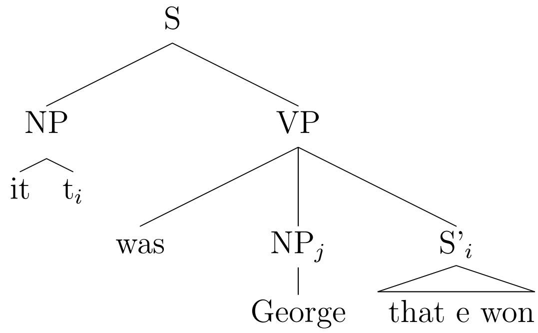


Figure 1.5: Emonds (1976)

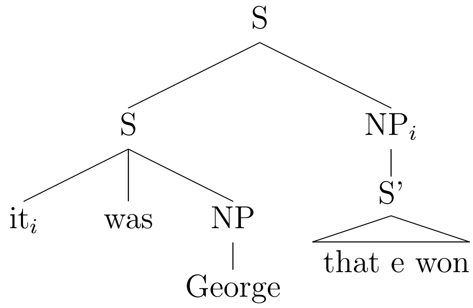


Figure 1.6: Gundel (1977)

As mentioned before, most authors agreed that *it*-clefts and pseudoclefts are derived from a mutual copular construction. However, the analyses also differed in certain points. First, there was the question of whether the cleft clause formed a constituent with the VP of the matrix clause or whether it was attached to the matrix clause's top node. Second, there was the issue of whether the rule that puts the cleft clause in its position is a general rule[8] or a peculiarity of cleft sentences. Third, different statuses for the cleft clause were discussed. Some proposed that it was a free relative clause. Others assumed it was a modifier of the pronoun. Fourth, the status of the pronoun was unclear. Was it just an expletive or did it refer? Fifth, the origin of the clefted constituent was questioned. Could it be base-generated in the post-copula position or is it an extracted constituent of the cleft clause? Akmajian (1970) is a telling example of an approach that relates pseudoclefts and *it*-clefts. He derives the *it*-cleft from a pseudocleft without going into detail about

[8] Some such rules: Extraposition-from-NP in Bolinger (1972), right-dislocation in Gundel (1977), sentential-subject extraposition in Emonds (1976).

the deep structure of the pseudocleft itself. This means the question of whether the clefted constituent is base-generated in the post-copula position or extracted from the embedded cleft clause in subject position is not his concern. The trees in figure 1.7 show how an *it*-cleft is derived in Akmajian (1970).[9]

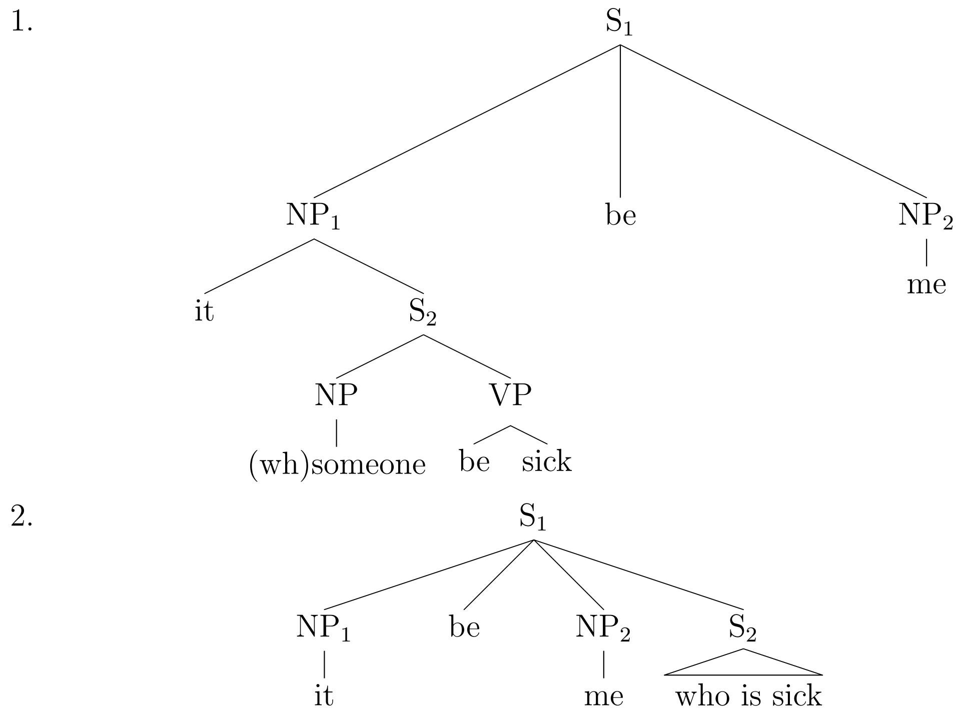


Figure 1.7: Pseudocleft derivation in Akmajian (1970)

The node S_2 of the first structure in figure 1.7 initially forms a constituent with the cleft pronoun. Then it gets extra-posed and becomes a daughter of S_1. There are actually four intermediate steps between the first and the second structure in figure 1.7. First, a verbal agreement rule results in *someone is sick* in S_2. Then a relativization rule produces *who is sick*. Akmajian calls the result a 'reduced initial clause'[10]. The next step is the application of a cleft specific rule, the *Cleft-Extraposition Rule*. It moves S_2 to the end of the sentence and finally a verbal agreement rule results in the cleft sentence shown in 1.7. As is the case with most approaches to clefts that

[9] See Akmajian (1970, p. 165f).

[10] It is reduced because it is *Who is sick is me* instead of *The one who is sick is me*.

derive *it*-clefts from pseudoclefts, Akmajian substantiates the relation between the two structures with the fact that they share the same presuppositions, which makes them, as he suggests, synonymous and interchangeable.[11] How his account could deal with cleft clauses introduced by the complementizer *that* instead of a relative pronoun is unclear. The same goes for sentences like *It was to John that I spoke* which lack a legitimate source.[12]

The problems that Akmajian's account faced were tackled once again by Emonds (1976). Emonds modified Akmajian's theory by adding that the clefted constituent must be focus-moved out of the extraposed relative clause before extraposition. The structure he assumes is given in figure 1.5. The steps he proposes for getting from the source to the final cleft sentence like *It was to John that I spoke* are numerous, as shown in (3).[13]

(3) a. [that I spoke to John] was
  b. [that I spoke to him] was John
  c. [that I spoke to] was John
  d. [that I spoke] was to John
  e. [who I spoke to] was John
  f. [to whom I spoke] was John

First, a rule called *focus placement* removes an NP or PP from the clause (3a). NP-removal is assumed to allow for leaving behind an optional pronoun. Possible outcomes of the first step are (3a), (3b), and (3c). Afterward, a wh-feature is attached to the NP or PP dominating the pronoun, which results in (3e) or (3f). Eventually, the relative clause is extraposed. The problem with this approach is, as Kiss puts it, "that it is highly stipulative; the initial structure is unlikely, and the rightward movement rule focus placement is not independently motivated"[14].

Another influential extrapositional approach is provided by Gundel (1977). Gundel assumes that *it*-clefts are derived by right-dislocation of the cleft clause of a pseudocleft. The cleft clause leaves behind an *it* in subject position of the matrix clause

[11] Akmajian (1970, p. 149f). We will deal with the pseudocleft's presuppositions in Section 3.2.1.
[12] See Akmajian (1970, footnote 10).
[13] From Emonds (1976, p. 143).
[14] Kiss (1998, p. 258).

as a “pronominal reference to the topic which appears at the end of the sentence”[15]. The *what* then gets deleted by a special rule that only applies to right-dislocated identificational sentences. These steps are illustrated below.

	Pseudo Cleft:	What he sold was the record.
(4)	Right-dislocated Pseudo Cleft:	It was the record, what he sold.
	It-Cleft:	It was the record that he sold.

In contrast to Akmajian, Gundel considers the extra-posed cleft clause an S’-dominating NP, as can be seen in figure 1.6. The *it* is not part of the initial structure, as assumed by Akmajian. It is instead a ‘visible trace’ of the extra-posed clause. Apart from the ‘long way’ to get from a non-clefted sentence to an *it*-cleft via the pseudocleft, there are other shortcomings to Gundel’s (1977) approach. To account for *it*-clefts with clefted PP’s that have no clear pseudocleft counterparts like those in (5b), she suggest an additional rule. This rule applies to the pseudocleft version of (5a) with a stranded preposition, as given in (5d). It copies some prepositions into the clefted constituent and deletes the original, which results in an *it*-cleft like (5e).

(5) a. Mike sold the records to Steven.

b. It was to Steven that Mike sold the records.

c. *The one that Mike sold the records was to Steven.

d. The one that Mike sold the records to was Steven.

e. It was Steven that Mike sold the records to.

Here we already see that pseudoclefts also seem to be related to sentences like (5d), i.e. sentences with definite descriptions as subjects. We will come back to this issue in Chapter 3.

Over the years Akmajian’s transformational approach has continued to find advocates time and again. Percus (1997) proposed a theory that clearly stands in the Akmajian tradition. He argues that “the overt structure of [*it*-]clefts conceals a subject that is a definite description”[16]. He claims that a sentence like (6a) is

[15] Gundel (1977, p. 543).

[16] Percus (1997, p. 337).

"equivalent" to a sentence like (6b) and "that this equivalence follows from the fact that the sentences are structurally indistinguishable"[17].

(6) a. It is $[\text{John}]_F$ that Mary saw.

b. The one that Mary saw is $[\text{John}]_F$.

Percus' derivation starts with a subject that is a definite description which contains a definite determiner and a null head as shown in figure 1.8.

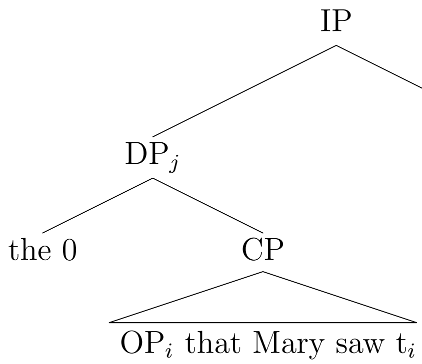


Figure 1.8: Deep structure of *it*-clefts in Percus (1997)

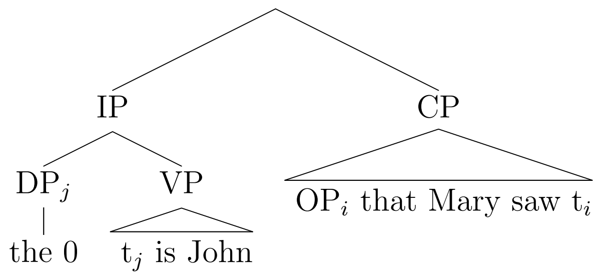


Figure 1.9: Derivation of *it*-clefts in Percus (1997)

(7) a. It is John that Mary likes

b. [def] 0 $t_{CP} \rightarrow$ it

As a first operation, the relative clause within the DP in figure 1.8 gets extraposed, which gives the structure in figure 1.9. Finally, the morphological spell-out

[17] Percus (1997, p. 338).

rule given in (7b), which says that a definite determiner and a null head followed by a trace of a CP must be turned into *it*, operates on this structure. This yields (7a) as the final outcome. If we compare this to Akmajian's original theory of cleft derivation in figure 1.7, we see that the only major difference between the two is (apart from the place to which the extraposed clause is attached) the definiteness of the cleft clause's subject. While Akmajian assumed an indefinite subject like *someone*, Percus assumes a definite like *the one*.

The main problems of the extrapositional approach can be summarized as follows. First, there is no clear correspondence of form and meaning for the cleft clauses in (4). While the cleft clause of the pseudocleft can refer to an entity, the one of the *it*-cleft cannot. This brings up the issue of predicational and specificational pseudoclefts, which will be dealt with in Chapter 3. For the time being, it is sufficient to say that the cleft clause in subject position of a pseudocleft can obviously be semantically different from its alleged derivation in post-copula position in *it*-clefts. Furthermore, several intermediate transformations are needed to get from the initial sentence to the cleft, and the rules applied at these intermediate levels seem to be idiosyncratic. Finally, since extrapositional accounts relate the cleft clause to the pronoun instead of to the clefted constituent, these accounts have to take a detour to explain the agreement between the pronoun and the verb of the cleft clause. The verb of the cleft clause agrees in number (but not in person) with the pronoun and not (necessarily) with the clefted constituent, as shown below.[18]

(8) a. It's you$_{sg}$ who does/*do this job.
    b. It's you$_{pl}$ who *does/do this job.

(9) a. The one who does the job is you.
    b. The ones who do the job are you.

Akmajian accounts for the agreement in sentence (8a) by deriving it from the pseudocleft (9a) and (8b) from (9b), respectively, where agreement between *one* or *ones* and the copula is needed. But as Pavey (2004) notes: "[...] he does not elaborate on the nature of the element *one* and the anaphoric relationship that must exist in pseudoclefts between the first and second noun phrase that determines the

[18] Akmajian (1970, p. 150f).

number of *one/ones* [...]."[19] Pavey points out another issue about extrapositional approaches that should be considered:

(10) "It is also worth noting that the label 'extrapositional' is somewhat misleading: *it*-cleft constructions are significantly different from constructions usually referred to as extraposed; that is, where a sentential subject appears at the end of a sentence, with dummy *it* filling the subject position [...]. One difference is that such extraposed sentences have 'non-extraposed' counterpart sentences where the *that*-clause appears in subject position [...]; there is no such direct equivalent for clefts."[20]

This thesis will follow Pavey in this respect. Pseudoclefts will not be considered the mere origin of *it*-clefts. Instead, pseudoclefts will be analyzed from the perspective of copular constructions.

1.3 Structure of the thesis

The thesis is structured in the following way. After this introductory chapter, the second chapter lays out a certain theoretical foundation upon which the later analysis is based. The first section presents a semantic foundation for the analysis of *be*-sentences. It is shown that *be*-sentences come in three forms: equative ones, predicational ones, and specificational ones. This ontology is necessary because pseudoclefts (like all clefts) are instances of *be*-sentences. The second section of chapter 2 gives an introduction to Head-driven Phrase Structure Grammar (HPSG) and the fragment of HPSG in which the analysis is implemented.
The third chapter shows diverse properties of pseudoclefts. The first section deals with possible definitions of what we call a pseudocleft. Furthermore, it shows possible forms that the cleft clause and the post-copular constituent can have. In the second section, I analyze the presuppostions and implicatures associated with pseudoclefts. Following this, pseudoclefts are divided into predicative and specificational pseudoclefts, several unique properties of specificational clauses are presented, and I show that some pseudoclefts should be considered equative structures. The third

[19] Pavey (2004, p. 60).
[20] Pavey (2004, p. 61).

section shows a certain phenomenon called connectivity effects, which are associated with specificational pseudoclefts or specificational clauses in general. These effects and diverse approaches to analyzing them are surveyed. The information structural aspects of pseudoclefts are presented in the fourth section. It is shown that specificational pseudoclefts and specificational clauses in general have a fixed information structural set-up. This information structural set-up has the advantage that it places old information before new information, or put differently: it aligns the theme/topic with the clause-initial position. The fifth section broadens the view and deals with reverse pseudoclefts. These come in two varieties: predicative and equative. It is shown that they can also have two different information structures. In the final section, insights from the previous sections will be summarized before they are implemented.

In the fourth chapter the results from the previous chapters are implemented in Head-driven Phrase Structure Grammar. The first sections criticizes Yoo's (2003) attempt to implement pseudoclefts into the fragment of Ginzburg and Sag (2000), which is based on the assumption that pseudoclefts are self-answering questions. A new way of implementing specificational pseudoclefts into the fragment is presented in the second section. Here it is assumed that the cleft clause is not a question, but a predicative free relative clause. In the following section, this analysis is expanded to constructions that are related to (specificational) pseudoclefts, i.e. to reverse pseudoclefts, equative and predicative pseudoclefts, wh-amalgam clefts, and pseudoclefts with definite description subjects. The fourth section deals with opacity effects, which cannot be accounted for yet, and compares three semantic systems with respect to these effects. The last section adds information structural aspects and presuppositions and implicatures to the analysis.

Finally, the presented results are recapitulated and prospects for future research are suggested in the last chapter.

Chapter 2

Theories to build upon

This chapter lays out the two main theoretical foundations of this work. First, this is a taxonomy of copular structures. Second, this is an introduction to Head-driven Phrase Structure Grammar and the fragment which is used for the implementation.

2.1 A taxonomy of copula structures

As was shown in the previous chapter, there are basically two directions from which we can approach pseudoclefts. On the one hand, pseudoclefts could be related to *it*-clefts, and one could analyse to what extend the two constructions are related to each other. On the other hand, pseudoclefts could be analyzed as a particular kind of copular sentence. The first approach is based on the concept of derivation. This means that pseudoclefts and *it*-clefts are derived from each other or from some mutual origin. Since this is fundamentally incompatible with the monostratal approach of HPSG, which does not make use of derivational structures, this work will follow the second approach and analyze pseudoclefts from the perspective of copular structures.

The verb *be* has always caused confusion and discussion among linguists and philosophers. Russell commented on it as follows:

(11) "It is a disgrace to the human race that it has chosen to employ the same word 'is' for these two entirely different ideas—a disgrace which a symbolic

logical language of course remedies."[1]

Since all cleft sentences are *be*-sentences, an analysis of the former cannot be done without relating it to the analysis of the latter. Hence, this chapter will give a brief account of some approaches to *be*-sentences and show which of these have proven to be useful for the study of clefts.

2.1.1 The distinction between specificational and predicational *be*

This section presents the basic aspects of the analysis of *be*-sentences.[2] A taxonomy of copular clauses (or rather *be*-sentences) that has been widely accepted, which even comes from a study of clefts, is offered in Higgins (1976)[3]. It is an extension of Akmajian (1970), who distinguished between predicational and specificational structures. Higgins proposes the following four copular sentence types:

(12) Predicational:

a. That thing is heavy.

b. That woman is Mayor of Cambridge.

(13) Specificational:

a. What I don't like about John is his tie.

b. The only girl who helps us on Friday is Mary Gray.

(14) Identificational:

a. That is Joe Smith.

b. That is the Mayor of Cambridge.

c. The girl who helped us on Friday is Mary Gray.

[1] Russell (1919, p. 172).

[2] Note that often sentences with *be* are summarized under expression like "copular structures/sentences/clauses". This is done although not necessarily all of the subsumed structures involve a copula but also a *be* of identity.

[3] Higgins work is often quoted with different years of publication. His dissertation was published in 1973 and reprinted in 1976 and 1979. I use the reprint from 1976.

(15) Identity:

a. The morning star is the evening star.

b. Cicero is Tully.

Higgins also offers a semantic characterization of the arguments of *be* for each sentence type. This characterization is shown in the table below.

Type	**Subject**	**Predicate**
Predicational	referential	predicational
Specificational	superscriptional	specificational
Identificational	referential	identificational
Identity	referential	referential

Figure 2.1: Copula structures after Higgins (1976)

In Higgins' terminology *subject* simply refers to the surface subject in *be*-sentences, i.e. the item before the *be*, and *predicate* refers to the post-copula item. If an argument is *referential*, this means it refers to an entity or—simply speaking—to something of type $\langle e \rangle$ in the classical theory of semantic types. Correspondingly, a predicational argument is something of type $\langle e, t \rangle$. This means Higgins' predicational clause has a type $\langle e \rangle$ subject followed by a type $\langle e, t \rangle$ predicate and the copula is semantically inert—the standard view of predicational structures. The definition of identity structures is straightforward, too, and needs no explanation, whereas the definition of identificational sentences is somewhat vague. What is obvious is that all copular sentences with a deictic pronoun as subject should fall into this class. However, as (14) shows, this cannot be the only criterion. The closest Higgins gets to a definition of identificational sentences is his citation of Geach (1968):

(16) "An assertoric sentence whose grammatical subject is a demonstrative pronoun often has the logical role not of an asserted proposition but of a simple act of naming. The grammatical subject does not here name something concerning which an assertion is made; it simply points at an object, directs attention to it; it works like a pointer, not like a label."[4]

Even Higgins seems to be uncertain about what to make of this and comments on Geach's observation, saying: "I find his attempt opaque, and the correct treatment

[4] Geach (1968, p. 27) after Higgins (1976, p. 180).

of these sentences eludes me."[5] Many later authors share this opinion and neglect identificational clauses as a type of their own.

The definition of the specificational structure is central to the part of Higgins' work on *be*-sentences. He describes this type as follows:

(17) "[...] the very function of a pseudo-cleft sentence [like (13a)] on the Specificational reading would appear to be that of saying what fulfills a certain condition, not that of introducing a topic and then saying something about it. The Specificational reading in a sense merely says what one is talking about: the Subject in some way delimits a domain and the Specificational Predicate identifies a particular member of that domain [...]. Again the list analogy is helpful. The heading of a list does not refer to any item at all, nor does the set of items in the list itself say anything about the heading of the list, or indeed about anything. The whole notion of being 'about' something is alien to a list. Moreover it is not obvious that the notion of having a truth value required for the application of Buridan's Law is pertinent to lists, for one tends to classify lists as correct and incorrect, complete or incomplete, useful or useless, but hardly as true or false. [...] I would maintain, a Specificational sentence is neither about the Subject nor about the Predicate, and therefore neither Subject nor predicate complement is Referential."[6]

Considering this passage, it seems like Higgins wants to deny specificational sentences a truth value. This is somewhat odd, since even if one uses his image of a list, it is clear that such a 'list-sentence' would be true if the mentioned item(s) is/are on the list in question, and false otherwise. Apart from this, his definition of a specificational predicate is rather weak, too. On the one hand, he emphasizes that neither the subject nor the predicate in specificational clauses is referential.[7] On the other hand, he says that all noun phrases that can be referential can also be used specificationally.[8] As for the definition of *superscriptional* (as used in (2.1)), Hedberg (1990) cites from a different version of Higgins' work: "[...] in using a noun phrase superscriptionally a speaker typically knows the identity of the referent, but to use a noun phrase attributively is precisely NOT to know the identity of the referent".[9] We

[5] Higgins (1976, p. 180).
[6] Higgins (1976, p. 132f).
[7] Higgins (1976, p. 133).
[8] Higgins (1976, p. 136).
[9] Higgins (1973, p. 268–269) after Hedberg (1990, p. 48).

see such a noun phrase in (13b). This shows that there is a second concept involved in the definition of *superscriptional*. Apart from the semantic type, familiarity seems to play a role. Unfortunately, Higgins explains neither of the aspects satisfactorily. Leaving Higgins' path of a four-way distinction, other authors prefer a dichotomy between predicational and non-predicational copula structures. Here, the last three of Higgins' types are subsumed under a more general class. This taxonomy has more in common with the traditional philosophical distinction between copular sentences of predication and copular sentences of identification.[10] In such a taxonomy there is one *be* which links two referential expressions and expresses that the two refer to the same entity: this is the *be* of identity. Then there is another *be* which takes two arguments of different semantic types and treats one as the argument of the other. This is in fact the 'real' copula since it connects two different things. Examples of such a dichotomy are e.g Bolinger's (1972) distinction between *equative* and *non-equative* structures or Gundel's (1977) *identifying* and *attributive* structures. A more recent account will be presented in the following pages.

2.1.2 Mikkelsen's analysis of copular structures

This section lays out the theory that will be the background for the implementation of pseudoclefts in HPSG. This theory is developed in Mikkelsen (2004b) and Mikkelsen (2004a). Mikkelsen is an advocate of a trichotomy of copular structures or rather *be*-sentences. She considers her work a contribution "to a better understanding of Higgins' taxonomy"[11] and proposes the following classification of copular sentences:

Mikkelsen claims that Higgins' identificational class actually consists of two dif-

[10] Actually there is another *be* of existence as in *I think therefore I am* and the *be's* that mark voice (*The thesis is being typed*), aspect (*He is crying*), and modality (*She was to leave at once*), depending on the chosen theory and framework.

[11] Mikkelsen (2004b, p. 1).

Specificational	The winner of the race	is	Mike.
Semantic type	$\langle e, t\rangle$		$\langle e\rangle$
Predicational	Mike	is	the winner of the race.
Semantic type	$\langle e\rangle$		$\langle e, t\rangle$
Equative	This	is	Mike.
Semantic type	$\langle e\rangle$		$\langle e\rangle$

Figure 2.2: *Be*-sentences according to Mikkelsen (2004b)

ferent things: truncated clefts, which she analyzes quite like Hedberg (1990, 2000)[12], and what she calls demonstrative equatives, which pattern with the other equative/identity clause.[13] She summarizes the claims that her analysis makes as follows:[14]

(18) "First, [...] specificational clauses are semantically distinct from both predicational and equative clauses. This means we cannot collapse any of the three categories with each other, and in particular that we cannot analyze specifica-

[12] Hedberg claims that sentences like (ib) are derived in certain contexts from sentences like (ia) via ellipses.

(i) a. It is the woman that decides what will be bought.
b. It is the woman.

Sentences like (ib) are then called truncated clefts because they look like one in which the cleft clause was cut off.

[13] Mikkelsen (2004b, p. 69).

[14] As (2.2) shows, Mikkelsen does not distinguish between a *be* of class-membership (for sentences like *Mike is a record collector*) and a *be* of class-inclusion (for sentences like *Ocelots are animals*). Regarding this matter, Declerck (1988, p. 1, footnote 2) quotes Lyons (1968): "'though logically important, this distinction between class-membership and class-inclusion does not appear to be of any syntactic significance in most languages.' The notions of class-membership and class-inclusion may therefore be collapsed into one linguistic category, viz. the one we will call *predicational*, while the notion of identification of one entity with another seems to correspond to our notion of *specificational*." Note that Declerck's notion of *identification* (the function of sentences like *The murderer is that man over there*) is not the same as *identity*. While the former is specificational, the latter corresponds to what is called *equative* here and to what Declerck (1988) calls *identity statements*. An advocate of the opposite is Halliday (1982), who claims that specificational sentences are identity statements (*equative* in Halliday's terminology).

> tional clauses as equative [...]. Second, [...] specificational clauses are unique in having a non-referential subject. Equatives and predicational clauses both have referential type $\langle e \rangle$ subjects, but differ in the type of their predicate complement. [...] Third, [...] predicational and specificational clauses, but not equatives, can be composed with a semantically inert copular. Predicational and specificational clauses both involve one referential and one predicative element, and the two can combine by functional application to form a propositional object. In equatives, however, the subject and the predicate complement are both referential and therefore cannot combine directly."[15]

In Mikkelsen's approach, the *be* in equative sentences is the traditional *be* of identity, which takes two referential expressions. In contrast to this, the *be* in specificational and predicational sentences is assumed to be the same and to be semantically empty. The two kinds of sentences just differ in the order in which the arguments of the copula are realized. This means specificational sentences are kind of like inverted predicational sentences; an idea that started with Williams (1983) and was later elaborated by e.g. Partee (1987), who calls it the 'uniform *be* theory'. The localization of the inversion varies from theory to theory. While most subsequent work after Partee and Williams has assumed that there is some syntactic movement involved (e.g. Heggie (1988)) or that it is the result of a lexical process, Williams himself suggested inversion might be the result of a late, stylistic rule, possibly located in the phonological component. Mikkelsen (2004b) follows Moro's (1997) predicate raising analysis. In this analysis predicational and specificational sentences share a core predicational structure, but they differ with respect to the question of which of the two DPs from that core should be realized in subject position. Similar to Heggie (1988), Moro (1997) considers predicational and specificational sentences[16] as being derived from a mutual underlying structure. This structure is a VP with the copula as head and a small clause as complement. This small clause consists of two DPs, but in contrast to Heggie's approach, which will be presented in the next section, only the second DP, which is predicational, gets moved, not both. Figure (2.3) shows the structure of a specificational clause.

This example shows that to derive a specificational sentence, the DP_{pred} must be raised from the small clause to Spec-IP. The first DP_{subj} remains where it is

[15] Mikkelsen (2004b, p. 68f).

[16] He calls them *canonical* and *inverse* copular sentences.

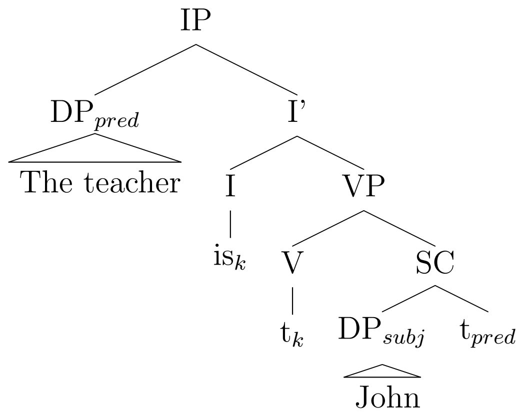


Figure 2.3: Moro (1997)

base-generated. To derive a predicational clause, one would raise the DP$_{subj}$ to Spec-IP. Thus, both—predicational and specificational clause—involve topicalization (or rather raising) of a constituent, but they differ with respect to which element is moved. This approach offers a simple and elegant explanation for the different word order in specificational and predicational clauses. Nonetheless, Moro (1997) has been critized by e.g. Heycock and Kroch (1999) because his theory does not explain why (19b) should be infelicitous.

(19) a. John is a doctor.
b. #A doctor is John.

When it comes to the semantic analysis of these DPs, Mikkelsen follows Partee's (1987) type-shifting analysis.[17] According to Partee, noun phrases can receive three different interpretations as shown in figure 2.4:

Terms	Semantic type	Denotation
Generalized quantifier	$\langle\langle e,t\rangle, t\rangle$	set of sets of individuals
Referetial	$\langle e\rangle$	individuals
Predicational	$\langle e,t\rangle$	sets of individuals

Figure 2.4: Possible semantic types of noun phrases in Partee (1987)

[17] As Mikkelsen (2004a) points out: it does not make a difference whether one uses Graff (2001))'s approach or Partee's. The former starts out with definite descriptions, denoting predicates by default. However, both allow for the same type flexibility.

The referential interpretation is the one ascribed to most DPs intuitively. It involves individuals and entities as denotations. Furthermore, DPs can be interpreted as predicates. This is the most natural interpretation in sentences like *Mike is a lawyer*, where *lawyer* describes a property not an individual. Finally, DPs allow for a generalized quantifier interpretation. This is the most complex type, but also the most general interpretation since all DPs allow for it. An example would be the subject in the sentence *All cops are NRA members*. As a generalized quantifier, *all cops* does not denote the set containing all policemen, but the set of properties that every policemen has (here *NRA members* gets the predicative interpretation). Since properties are construed as sets of individuals which have that property, *all cops* denotes a set of sets of individuals. Hence, the sentence is only true if the set of NRA members is a member of this set of sets.

Partee claims that every kind of DP has one of the three semantic types by default. However, by application of one or more of her type-shifting rules, they may shift into one of the other types (provided the outcome of the shift is well formed). But the application of these rules is of course not arbitrary. This means that the semantic type of an expression might be influenced by the syntactic position, the semantic interpretation of the rest of the sentence (in particular the presence of quantifiers and other scope bearing elements), and the context in which the sentence is used. The evidence that Mikkelsen offers for assuming certain semantic types for subject and predicate complements is based on the three tests shown in (20), (21), and (22).[18] These tests support the order of semantic types in copular sentences as given above under the following premises: a) the form of a pronoun reflects the semantic type of the pronoun itself and that of its antecedent, b) *it* and *that* cannot denote humans, c) in all three environments the pronoun is or corresponds to the subject of the sentence.[19]

[18] For problematic cases for the tag-question test and differences between *it* and *that*, see Mikkelsen (2004b, p. 130–137) and Higgins (1976, p. 179), who quotes Kuroda (1968) saying that *it* behaves like the “stress-reduced” anaphoric form of *that*.

[19] For the complete proofs of these premises, see Mikkelsen (2004b, chp. 5). The tests also work in Danish, as Mikkelsen shows, and to some degree in German, as I convinced myself.

(20) Tag-questions

a. The tallest girl in the class is Molly, isn't it/she? SPEC/EQUATIVE

b. SHE is Molly Jacobson, isn't she? EQUATIVE

c. The tallest girl in the class is Swedish, isn't she/*it? PREDICATIONAL

(21) Left-dislocation

a. The tallest girl in the class, that/it's Molly. SPECIFICATIONAL

b. The tallest girl in the class, she's Molly. EQUATIVE

c. The tallest girl in the class, she/*it/*that's Swedish. PREDICATIONAL

d. As for being the president of the company, that/it is a tough job. PRED

(22) Question-Answer pairs

a. Q: Who is the tallest girl in the class?
A_1: That/It's Molly. SPECIFICATIONAL
A_2: She's Molly. EQUATIVE

b. Q: What nationality is Molly?
A: She/*It/*That's Swedish. PREDICATIONAL

In particular, these examples show the following: Sentence (20a) is ambiguous between an equative and a specificational interpretation. If the subject is assumed to be of type $\langle e \rangle$, it is the former and the pronoun in the question-tag must be *she* just like in the unambiguous sentence (20b). In (20b) the subject pronoun and the name are of type $\langle e \rangle$ and they are equated. If the subject in (20a) is assumed to be of type $\langle e, t \rangle$, the sentence is specificational and the pronoun in the tag-question must be *it*. We can compare this to sentence (20c), which is unambiguously predicational due to the predicate *Swedish*. That only *she* is allowed as a pronoun in the tag-question in (20c) shows that the subject in this case must be of type $\langle e \rangle$.

We see the same pronoun behavior in the left-dislocation examples. From (21c) we can conclude that *she* must be of type $\langle e \rangle$ since *Swedish* is clearly of type $\langle e, t \rangle$. *That* and *it* do not work as subjects here, and we might ascribe this to type-incompatibility. Still, they can be subjects in (21a), where the proper name *Molly* is clearly of type $\langle e \rangle$. Thus, we know that *that/it* must be of type $\langle e, t \rangle$ here. However, sentence (21d) shows that *that/it* do not necessarily get a type $\langle e, t \rangle$ interpretation. Here, the DP *a tough job* is predicative, i.e. it is of type $\langle e, t \rangle$. Hence, *that/it* must be of type $\langle e \rangle$. Looking at (21c) again this means that *that* and *it* are not ruled out because they are of the wrong semantic type, but rather because they cannot refer to persons. By showing that *that/it* can be of type $\langle e, t \rangle$ or of type $\langle e \rangle$ and that they cannot denote humans, we have also ruled out a(n) (im)possible equative reading for (21). The equative reading for this sentence is ruled out because *that/it* cannot denote humans, which they would have to if we equated them with *Molly*.

In the question-answer pairs in (22), we get a specificational interpretation if the subject of the answer is *that/it*, which must be of type $\langle e, t \rangle$ since *Molly* is clearly of type $\langle e \rangle$. In this case Q asked for a property, or put differently: it is unsettled which of the girls in the class is the tallest one. Again, an equative reading is not possible since in that case *that/it* would have to denote a human, which goes against premise (b). We get the equative interpretation if the subject of the answer is *she*. In this case the tallest girl in the class has already been picked and the person is identified as *Molly*.

Having shown how predicational and specificational clauses differ in the order of the semantic types involved, we can now turn to further differences. Following Higgins (1979), Mikkelsen (2004b) shows that specificational and predicational structures also differ with respect to the kinds of expressions that can serve as the predicate complement[20]. Given standard assumptions about possible denotations of the involved expressions, these differences follow from the type distinction proposed above. Possible predicate complements in specificational clauses are definite and indefinite DPs, names, and personal pronouns according to Mikkelsen (2004b)/Higgins (1979).[21] Neither NPs, APs, nor PPs are allowed. This pattern is shown below.

[20] In the study of clefts the term "post-copular constituent" is usually used.

[21] Here I follow Mikkelsen's terminology in the naming of the categories.

(23) a. The winner is Susan, isn't it?
b. The winner is you, isn't it?
c. The winner is the Mayor of Santa Cruz, isn't it?
d. The winner is a blonde, isn't it?
e. *The winner is Mayor of Santa Cruz, isn't it?
f. *The winner is blond, isn't it?
g. *The winner is behind the screen, isn't it?

In contrast to this, predicational clauses allow for PPs, APs, and definite and indefinite DPs, but not for names and personal pronouns as shown below.

(24) a. *The winner is Susan (and pretty), isn't she?
b. *The winner is you (and right here), isn't she?
c. The winner is the Mayor of Santa Cruz, isn't she?
d. The winner is a blonde, isn't she?
e. The winner is Mayor of Santa Cruz, isn't she?
f. The winner is blond, isn't she?
g. The winner is behind the screen, isn't she?

The distributional patterns can be described in the following way. One class of expressions only occurs as predicate complements in predicational clauses. These expressions are NPs, APs, and PPs. Another class of expressions can only occur as predicate complements in specificational clauses. These are names and personal pronouns. Yet another class of expressions can appear as predicate complement in predicative as well as in specificational clauses. If these observations are related to the assumed structure of predicational and specificational clauses, we can also characterize these three classes in terms of semantic types. APs, NPs, and PPs can only be property-denoting. Names and personal pronouns can only be individual-denoting and the class of DPs can be either one or the other.[22] In this respect, it should be mentioned that strongly quantificational DPs cannot be subjects of specificational clauses, as shown below.[23]

[22] See also Schueler (2004), who comes to the same conclusion regarding definite DPs.
[23] From Mikkelsen (2004a, p. 12).

(25) a. *Both actresses in that movie are Ingrid Bergman and Liv Ullmann.
b. *Most actresses in that movie are Ingrid Bergman and Liv Ullmann.
c. *All actresses in that movie are Ingrid Bergman and Liv Ullmann.

This observation will be dealt with again in Section 4.3.4. Putting the above observations about the predicate complements together, we see that only expressions that can denote individuals occur as predicate complements in specificational clauses and only expressions that can denote properties occur as predicate complements (i.e. post-copular constituents) in predicational clauses.

Further evidence for the assumption that predicational and specificational clauses have semantically distinct structures comes from VP-ellipsis. It can be shown that the process usually labelled VP-ellipsis does not just affect VPs, but can be applied to other categories, too. In (26) we see that what works for VPs in (a) also works for DPs, PPs, and APs.[24]

(26) a. I can't help you, but Chris can ___.
b. You aren't [a fool], but he might be ___.
c. You aren't [crazy], but he might be ___.
d. You clearly aren't [in the mood], but he might be ___.
e. She makes a lot of things [her business] that shouldn't be ___.

These examples show that VP-ellipsis does not simply target phrases headed by a verb as in (26a), but all kinds of predicative phrases like NPs, APs, and PPs. The behavior of the predicate complement of these predicational clauses can now be compared to specificational clauses. This is exemplified in (27).[25]

[24] Examples from Mikkelsen (2004b, p. 146f).

[25] Examples from Mikkelsen (2004b, p. 147f). There are three objections to the interpretation of these examples. First, Higgins (1979) gives an alternative interpretation of the unacceptability of VP-ellipsis in specificational clauses. According to him the predicate complement of specificational clauses cannot be moved because they are focused (assuming that specificational clauses are derived by transformations). Second, even without VP-ellipsis there is something wrong about these sentences. Third, it seems like varying the context can improve the examples' acceptability. For a discussion of these objections, see Mikkelsen (2004b, p. 148–154).

(27) a. *Some people think that the smartest person in the department is Betty, but they are wrong; the luckiest person is ___.

b. *The fact that the tallest player is Harry doesn't mean that the best player is ___.

c. *I know that the lead actress in that movie is Ingrid Bergman, and I think the one in *Double Indemnity* is ___ too.

Again the examples in (27) support the assumption that specificational clauses have a type $\langle e \rangle$ predicate complement and have a semantic structure as shown in (2.2). Since predicate complements are of type $\langle e \rangle$, VP-ellipsis, which needs to be applied to something of type $\langle e, t \rangle$, cannot be used.

Another test used by Mikkelsen to determine the specificational status of a copular clause is embedding the clause under a verb that takes a small clause-complement.

(28) a. Joan is the best player on the team.

b. I consider Joan the best player on the team.

c. The best player on the team is Joan.

d. *I consider the best player on the team Joan.

While the predicational sentence (28a) allows for the small clause variant (28b), the specificational sentence (28c) cannot be turned into a small clause, as shown in (28d).

Since this section is meant to give an account of what Mikkelsen (2004b) did, I have only presented the evidence that she uses to support her main proposal, which is: in specificational clauses the subject is a predicate. The evidence she gives comes from three sources: the three pronoun tests, VP-ellipsis, and the behavior towards small clauses. Further properties that distinguish specificational sentences from predicational ones will be presented in Chapter 3.2, which specifically deals with pseudoclefts as instances of specificational sentences.

2.1.3 Alternative Analyses

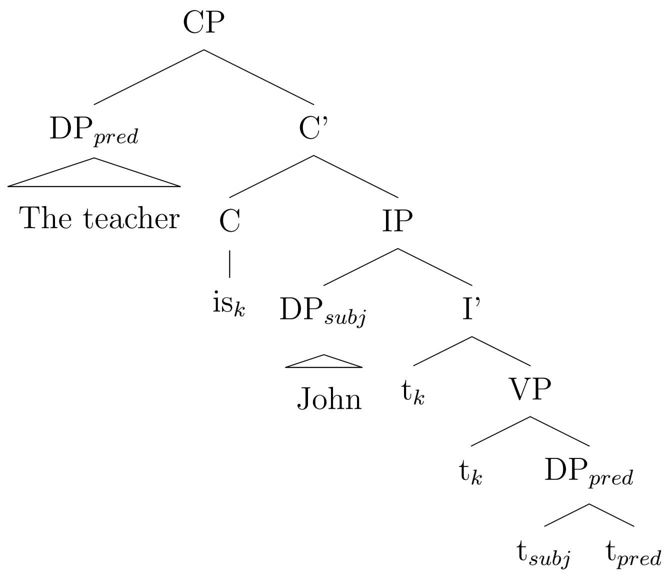
This section highlights the decisive characteristics of Mikkelsen's analysis by comparing it to alternative analyses. This is done to bring out what must be considered when Mikkelsen's analysis is implemented into a framework like HPSG, since there are certain mechanisms or assumptions that should be avoided when an implementation is supposed to be in the vein of Mikkelsen (2004b).

Alternative accounts are given in e.g. Heycock and Kroch (1999), Rothstein (2001), Heggie (1988), and Heller (2005). Since Heycock and Kroch (1999) will be discussed while dealing with connectivity effects, I will only present the others here. Let us first turn to Heggie (1988). Following Stowell (1978), Heggie (1988) assumes that the copula is a raising verb which takes a small clause-complement. The subject of the small clause is left-adjoined to the maximal projection of the small clause predicate. In a predicational copular clause like *Mike is the judge*, the subject of the small clause raises across the copula to the subject position of the main clause (Spec-IP), and the finite verb moves to I. The specificational clause *The judge is Mike* is derived from the same underlying structure, but in addition to the raising of the subject to Spec-IP, the predicate DP[26] moves further to Spec-CP because it is the focus. This is an instance of 'topicalization of focus' in the sense of Gundel (1988), i.e. movement to Spec-CP signals focus, rather than topic status.[27] Moving the predicate DP to Spec-CP triggers subject-auxiliary inversion, which is analyzed here as movement of the finite verb to C. An example sentence is shown in (29).

[26] I follow Mikkelsen (2004b) in renaming Heggie's NPs DPs.

[27] Gundel (1988) assumes that there are two discourse functions of topicalization: one to mark focus status and one to mark topic status. Mikkelsen compares the focus Heggie assumes here to the focus in Kiss (1998). See Mikkelsen (2004b, p. 20). The terms focus and topic will be further elaborated on in Section 2.2.5.

(29)



As can be seen in (29), in Heggie's analysis the difference between a predicational and a specificational clause depends on which of the two DPs moves the highest. If it is DP$_{pred}$, the result is a specificational clause as in (29). If it is DP$_{subj}$, the result is a predicational clause. We see that Heggie (1988) proposes a reduction of Higgins' typology different from Mikkelsen's. She considers specificational sentences to be inverted variants of basic predicational sentences and she considers 'identificational' and 'identity' sentences to be basic predicational sentences in which the predicate has raised into the VP-adjunct position[28]. With such an analysis Heggie provides a unified account of all English copula constructions. Predicational, identificational, equative, and pseudo-equative (her term for specificational) sentences are all derived from the same underlying structure.

A major problem in Heggie's theory is that it predicts sentences like *The teacher might John be* to be grammatical. The initial DP would be in Spec-CP and the modal would be under C. Although this is not possible in English, Mikkelsen (2004b) shows that such a structure is indeed compatible with a certain construction in Danish. She concludes that Danish utilizes two different structures for predicate topicalization and specificational sentences. For English, however, her structural tests show that what are called specificational sentences are not a case of predicate topicalization

[28] This is a 'constructional focus' position as in Rochemont (1986). An equative structure would look like this:
$[_{IP}\,[_{DP}$ the teacher$]\,[_{VP}\,[_{VP}$ might $[_{VP}$ be $[[_{DPsubj}\ \mathrm{t}_i]\,[_{DPpred}\ \mathrm{t}_j]]]]\,[_{DPj}$ John$]]]$

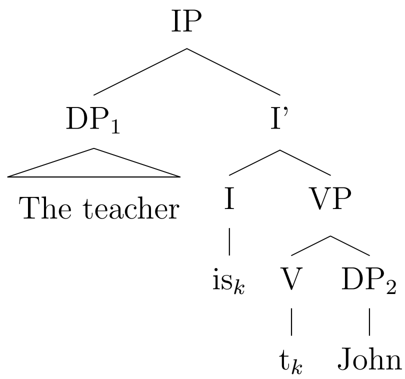
since, as was shown above, the syntactic subject position is filled with a predicate. Mikkelsen recaps the relevance of looking at such an approach as follows.

(30) “The engagement with the predicate topicalization analysis is important not only because it excludes one of the competing analyses, but also because it establishes some basic properties of specificational clauses, in particular that the initial DP is in subject position, and the post-copular DP inside the VP.”[29]

This means we can record the fact that an account of specificational sentences in any framework should not make use of the framework’s topicalization mechanisms, and so this will not be done here.

Another influential approach is that of Rothstein (2001). It belongs to those works that argue that specificational sentences are not (transformationally) related to predicational structures. The surface appearance of inversion between specificational and predicational sentence pairs is considered illusory. Rothstein considers specificational clauses to be a subtype of equative clauses. Her proposal is that specificational and equative clauses have a structure which looks just like the structure of an ordinary transitive clause. Thus, there are no small clauses involved in her analysis of specificational clauses. An example is given below.

(31)



Despite of the similar surface structures of predicational and specificational clauses, Rothstein (2001) claims that the specificational clauses do not show certain properties of the “transitive”[30] ones. For instance, the copula assigns neither theta roles nor case. The DP$_1$ in (31) is licensed as the subject of a predication, which

[29] Mikkelsen (2004b, p. 6).

[30] The term is used by Mikkelsen (2004b, p. 63) in this respect.

is consistent with the general theory of predication developed by Rothstein. In her theory it is not possible for a semantic predicate to occupy the subject position. To license DP_2 Rothstein uses a modified version of Partee's (1987) *IDENT* type-shifting rule. In a specificational sentence like *The judge is Mike*, both DPs start out as referential. Then *IDENT* is applied to *Mike*. The result is a predicate [λx[x = Mike]] (which means 'be identical to Mike').[31] This function can then be applied to the type $\langle e \rangle$ subject. In contrast to Heggie's analysis, Rothstein's is compatible with Mikkelsen's assumption that the initial DP is indeed the subject in specificational sentences and that the post-copular DP is inside the verb phrase. However, Rothstein's order of semantic types clearly contradicts Mikkelsen's findings that were presented in Section 2.1.1, since Rothstein assumes specificational subjects of type $\langle e \rangle$. Thus, we can say that Rothstein predicts the syntactic structure correctly, but fails to account for the semantic structure of specificational sentences.

Another theory that approaches specificational clauses from the 'equative perspective' is presented in Heller (2005). It also reduces Higgins' four-way typology to a three-way typology. However, while Mikkelsen assumes two possible structures that involve the copula and one with the equative *be*, Heller assumes two structures with the equative *be* and one with the copula. She looks at the expression 'specificational' rather literally and says that "these sentences are called specificational because the post-copular phrase is a more specific description of whatever is mentioned in the pre-copular phrase"[32]. She considers specificational sentences a variant of equative sentences. The difference between these and regular equative sentences supposedly lies in the 'discriminability' of the pre- and post-copular constituent. This means specificational sentences connect two entities with different degrees of 'informativeness', while equatives connect two entities with the same degree of 'informativeness'. Figure 2.5 summarizes the three structures that Heller assumes.[33]

[31] Mikkelsen (2004b, p. 87, footnote 12) makes an important comment on this: "[...] Partee herself appears to be sceptical about this approach. She writes [...] '...in the case of definite singulars ...the predicative reading [is] tantamount to applying IDENT to the corresponding entity, probably an unsatisfactory analysis.' "

[32] Heller (2005, p. 1).

[33] From Heller (2005, p. 162).

Semantic Type	**Semantic Relation**	**Discriminability (linear order)**
Predicational	1. predication 2. identity X=Y (as a special case)	n/a X>Y
Specificational	identity X=Y	X<Y

Figure 2.5: Proposed discriminability in copular structures in Heller (2005)

Note that for regular predicational sentences (type 1), discriminability is supposed to play no role. The second type of predicational structures is one where the post-copular constituent has to be shifted from an expression of type $\langle e \rangle$ to one of type $\langle e,t \rangle$ via Partee's IDENT rule. This is sometimes necessary because the predicational *be* is assumed to be of type $\langle \langle e,t \rangle \langle e,t \rangle \rangle$. In such a case a predicational sentence, i.e. one which uses the predicational *be*, would be an identity statement. This is exemplified in the structure in (32).

(32)

- a=b
  - a_x
  - $\lambda x.x = b$
    - $\lambda P_{\langle e,t \rangle}.P_{\langle e,t \rangle}$
    - $\lambda y.y = b$
      - $\uparrow$ IDENT
        - b_x

Note that such a case can occur in every approach that uses such type shifting rules, i.e. it is not a peculiarity of Heller's analysis. We find the same in Rothstein's theory. What is unique about Heller's analysis is that the subject is constrained to have a lesser discriminability in such sentences. This contrasts with predicational sentences that do not use this type shifting rule. In predicational sentences the discriminability of the constituents does not seem to play a role.[34] However, type 2 predicational sentences are not reversed specificational sentences (nor vice versa)

[34] See Heller (2005, p. 161): "discriminability is irrelevant because the sentence does not contain two expressions that denote the same entity".

according to Heller. Type 2 predicational sentences use the copula, whereas specificational sentences use the *be* of identity. Heller summarizes her analysis like this: "if certain kinds of information are available about an entity, 'more specific' information is added in a specificational sentence and 'less specific' information can be predicated." Her hierarchy of discriminability is given below.

proper names	>	headed descriptions with contentful nouns	>	headed descriptions with bleached nouns	>	free relatives

Figure 2.6: Heller's (2005) hierarchy of discriminability

Proper names are considered the expressions with the highest discriminability; free relatives as those with the least discriminability. For specificational sentences this means that the post-copular constituent must always be an expression which is further to the left on the hierachy than the subject. One would say that an expression like *Paris* is more discriminate than *the city*; which is more discriminate than *the place*; which is more discriminate than *where she lives*. Consider the example below.

(33) a. The person Mike doesn't like is a cop.

b. The person Mike doesn't like is himself.

Applied to a sentence like (33a) Heller's theory says that the person that Mike does not like has already been made salient, i.e. identifiable, in some way in the discourse. In this case the subject could get a type $\langle e \rangle$ interpretation. The sentence would be predicational because the predicate *a cop* is supposedly less informative/specific than the expression's subject *the person Mike doesn't like* and information that is less informative/specific than the subject is predicated (which here means that it has to follow the subject). For the specificational sentences like (33b) Heller would say that *the person Mike doesn't like* is a description which is less informative/specific to the addressee than the expression *himself*. Therefore, the less informative/specific expression has to precede the more informative/specific expression. In such a case an equative must be used as is shown in figure 2.5.

As far as I can see, there is a major flaw in Heller's theory. It has to do with the interpetation of pseudoclefts and specificational sentences with certain coordinated post-copular constituents. An example of such senteces is *What Mike bought was a Husky and a Pitbull*. As will be shown in detail in Chapter 3.2, such sentences allow

for two interpretations: one in which Mike bought one thing which is a mixed breed, i.e. half Husky and half Pitbull; and another one in which Mike bought two different dogs. The first one is the predicational reading and the second one is the specificational reading. The problem for Heller's theory is that she has only one entity at her disposal on the left-hand side of *be* which would have to be equated with two entities on the right-hand side that are not the same. This does not work.[35] Another drawback is that Heller does not define what the she means by 'discriminability'.[36] This leaves room for interpreting sentences in whatever way one wants. This is for instance the case when she tries to explain a specificational reading of the sentence *Nixon's plan is a bomb*: "While it is not straightforward how this can be formalized, there is an intuitive feeling that under the specificational reading [...] the entity in question is somehow 'more bomb than plan'."[37]
There is just one case for which Heller claims that her theory is superior to Mikkelsen's. Heller claims that only her theory can explain the impossiblity of inversion in the cases shown below.[38]

(34) a. John Smith is the one thing I have always wanted a man to be.
Namely, honest.
b. *The one thing I have always wanted a man to be is John Smith.
Namely, honest.

(35) a. John Smith is what Dan Blum was last year. Namely, the chair.
b. *What Dan Blum was last year was John Smith. Namely, the chair.

To put it briefly: Mikkelsen claims that a predicate may be inverted if it is discourse-old in the sense of Prince (1992) and definiteness is considered an indicator

[35] However, some might try to solve this via an analysis with a plural entity.
[36] All she says is: "While I have not provided a definition of discriminability, the idea is that this ranking [see (2.6)] is a result of the information encoded in the expression", Heller (2005, p. 155).
[37] Heller (2005, p. 176).
[38] From Heller (2005, p. 187f). Note that the tenses in (35) were already changed in the original (*is* $\mapsto$ *was*).

for ‘discourse-oldness’[39]. Since the predicate only needs to be older than its argument

[39] See Chapter 3.4 for the information structural aspects. The crucial assumptions in Prince (1992) are the following: Realizing that a simple two-way distinction between given and new information is inadequate, Prince comes up with a four-way distinction, which distinguishes between familiarity relative to the hearer and familiarity relative to the discourse. The resulting matrix is given below (from Birner and Ward (1998, p. 15)).

(i) Hearer-old, discourse-old:
Information which has previously been evoked in the current discourse, and which the speaker therefore believes is known to the hearer.

(ii) Hearer-old, discourse-new:
Information which has not been evoked in the current discourse, but which the speaker nonetheless believes to be known to the hearer.

(iii) Hearer-new, discourse-new:
Information which has not been evoked in the current discourse, and which the speaker does not believe to be known to the hearer.

(iv) Hearer-new, discourse-old:
Theoretically, information which has been evoked in the current discourse, but which the speaker nonetheless believes is not known to the hearer. (This type of information does not occur in natural discourse.)

With this four-way distinction, Prince tries to bring together what is sometimes called ‘Clark-given’ and ‘Chafe-given’. Chafe (1976) defines given information as “that knowledge which the speaker assumes to be in the consciousness of the addressee at the time of utterance”. He defines new information as “what the speaker assumes he is introducing into the addressee’s consciousness by what he says”, Chafe (1976, p. 30). Chafe-given thus means something like ‘at the center of attention’. If something is Clark-given on the other hand, this means it is in the general knowledge store. What the speaker can assume the hearer to know is Clark-given, but it need not be active and might even rely on inferences.
Not given in Prince’s taxonomy above are *inferrables* and containing *inferrables* from Prince (1981). Inferrable discourse entities are those entities about which the speaker assumes that the hearer can infer their existence on the basis of some trigger entity in combination with some belief the hearer is assumed to have (see Prince (1992, p. 307)). Prince assumes that the triggering entities must be discourse-old. Containing inferrables also need some inference from a trigger on the basis of background knowledge. This is what they share with the inferrables. The difference from the latter is that “the entity which triggers the inference is not, as in the case of Inferrables, necessarily in the prior discourse, but rather is within the NP itself”, Prince (1992, p. 206). This makes inferrables neither purely discourse-old nor purely discourse-new.

and since one might claim that this is not the case in (34) and (35), Heller comes up with the example shown in (36).[40] In this example it is ensured that the predicate is indeed 'discourse-older' than its argument.

(36) Men are loud and smelly and all kinds of nasty things. But I don't care about all that. There's only one thing I want in a man.

a. John Smith is the one thing I have always wanted a man to be.
Namely, honest.

b. *The one thing I have always wanted a man to be is John Smith.
(Namely, honest.)

c. The one thing I want a man to be is honest.

Heller says that (36b) is ungrammatical because here a property in pre-copular position is equated with an entity in post-copular position. In contrast to this, example (36c) is grammatical because here two properties are equated. From this Heller concludes that specificational sentences must be equatives, e.g. the pre- and post-copular constituents must be of the same type.[41] The different positions (as understood by Heller) are summarized in figure 2.7.

	Mikkelsen (2004b)			Heller (2005)		
36a	$\langle e\rangle$	$\emptyset$	$\langle e,t\rangle$	$\langle e\rangle$	$\emptyset$	$\langle e,t\rangle$
36b	$\langle e,t\rangle$	$\emptyset$	$\langle e\rangle$	$\langle e,t\rangle$	$=$	$\langle e\rangle$
36c	$\langle\langle e,t\rangle,t\rangle$	$\emptyset$	$\langle e,t\rangle$	$\langle e,t\rangle$	$=$	$\langle e,t\rangle$

Figure 2.7: Semantic structure of the sentences in (36)

At this point Heller misses an important point. Mikkelsen's theory still allows for an explanation of the ungrammaticality in (36b). If the pre-copular constituent in (36b) is a generalized quantifer, i.e. of type $\langle\langle e,t\rangle,t\rangle$, we also get a type mismatch. In this case the pre-copular constituent would be a meta-predicate, i.e. higher-order predicate, which needs to take a (simple) predicate as its argument. In (36b) however, the only argument present is of type $\langle e\rangle$. Using this line of argumentation as the explanation for the ungrammaticality of (36b), we have to come up with an ex-

[40] From Heller (2005, p. 188).

[41] See Heller (2005, p. 188). Note that Heller does not say anything about (36a).

planation of what triggers this constituent to change its semantic type. Furthermore, we have to state whether the type coersion occurs in (36a) or in (36b), i.e. whether the complex, definite NP starts out as $\langle\langle e, t\rangle, t\rangle$ or as $\langle e, t\rangle$. Before looking at (36a) and (36b) in more detail, let us contemplate once more what is going on in (36c). Heller claims this is an equative sentence. I definitely oppose this position. In equative sentences it is not sufficient merely to have equality of semantic types. The two constituents that are equated must also be of the same category. Consider the examples below.

(37) a. After the game is before the game.
b. Knowing him is hating him.
c. (There are many interesting books about Iraq. But remember:)
About Iraq is about war.

(38) a. *Exhaustive is after the game.
b. *After the game is celebrating the game.
c. *Very interesting is about Iraq.

While the examples in (37) could be grammatical under certain circumstances, all the examples in (38) are clearly ill-formed. No equative—let alone predicative—reading is possible for them. From this we can conclude that (36c) cannot be an equative sentence because the pre- and the post-copular constituents are of unequal categories. Since (36c) does not mean that some certain thing has the property of being honest, it cannot be a predicative sentence either. The specificational reading in Mikkelsen's sense is the only available reading for this sentence. This means that the precopular constituent must be of type $\langle\langle e, t\rangle, t\rangle$. This is the very type we need to assume for it in (36b) to explain the ungrammaticality.
Here we should go back to the question of what the semantic type could be that the complex NP starts out with. I will assume that the NP in (36) is basically of type $\langle\langle e, t\rangle, t\rangle$, and that it gets coerced in (36a) to change its type to $\langle e, t\rangle$. What happens in (36a) is the following: The initial NP is a proper name. Generally, we do not find proper names used as functors, but rather as arguments. This means that in a sentence like (36a), we automatically expect a functor as soon as we have parsed the initial proper name-NP. Therefore, the complex NP in post-copular position is

coerced to change its semantic type to $\langle e, t\rangle$ if we assume type $\langle e\rangle$ for the subject NP. Depending on the overall semantic set-up, the constituents could of course be of higher types as well. Thus, we could also have the proper name as a generalized quantifier and the post-copular expression as a functor that takes a generalized quantifier as its argument. However, the argument-functor order remains the same in that case because, as mentioned before, proper names get argument interpretations.
All in all, we must say that Heller's theory cannot explain more than Mikkelsen's, though it makes use of more premises. Therefore, parsimony lets us favor Mikkelsen's analysis because it can account for the difference between predicational and specificational clauses without an extra concept like discriminability. In Mikkelsen's theory everything simply follows from the order of semantic types.

If we compare the position of Heller (2005) and Rothstein (2001) to where we started, we see that this view is diametrically opposed to Higgins (1976), who clearly wanted to get away from the interpretation of specificational clauses as identity statements: "Many philosophers have tended to treat sentences of the Specificational variety as if they were identity sentences, and have then proceeded to build theories which naturally rest on shaky foundations."[42]

2.1.4 Summary

Many authors after Higgins have picked up his list comparison. So today it is usually said that a specificational sentence consists of a variable and a specification of values for that variable, which is very similar to enumerating the items on a list. Thus, for a sentence like *The teacher is Mike* we say that *the teacher* is the variable and *Mike* is the value. Here the list consists only of the item *Mike* whereas in a sentence like *The girls who we met at the coast are Katrina and Rita* the list, i.e. the possible values, are *Katrina* and *Rita*. As Declerck puts it:

(39) "[. . .] any specificational sentence expresses something like 'The following values satify the variable: value$_1$, value$_2$, etc.' A paraphrase of this form is therefore always available, and, moreover, every specificational sentence can be

[42] Higgins (1976, p. 133).

> read with a 'colon intonation' (i.e. with a slight pause after *be*) as long as the constituent indicating the variable precedes the one denoting the value."[43]

We have seen that in Mikkelsen (2004b) we find an analysis that is compatible with the concept of a list. A subject of type $\langle e, t\rangle$ constitutes a good heading of a list and post-copula constituents of type $\langle e\rangle$ constitute good list members. Mikkelsen's work offers strong empirical evidence for a trias of copular sentences along the lines explicated. Only a part of the evidence could be presented here. An advantage of Mikkelsen's work is that these findings are more or less framework-independent. This means one does not have to follow Mikkelsen's implementation of them. However, any theory that deals with only one of the possible copula structures in particular must make sure that its findings fit into this trias. This means it should make use of two copulas or rather *be's*: one semantically inert and one expressing identity. Furthermore, one has to treat the subject in specificational clauses like the subject in predicational clauses insofar as they should be placed in the same position. And finally, this subject should be the semantic predicate of the specificational clauses.

2.2 Head-driven Phrase Structure Grammar

This section gives an introduction to Head-driven Phrase Structure Grammar. It points out certain properties of HPSG that contrast with other frameworks, and it gives an overview of the basic concepts and mechanisms that are needed to assess the later analysis of pseudoclefts. The version of HPSG that is used here is the fragment in Ginzburg and Sag (2000), with certain additions where necessary.

2.2.1 General aspects

The grammar that is going to be used in this study belongs to the domain of generative grammars. This means, in line with Chomsky, it is an "explicit grammar that makes no appeal to the reader's 'faculté de langage' but rather attempts to incorporate the mechanisms of this faculty [...]. [*It*] is a system of rules that relate signals to semantic interpretations of these signals."[44] Or as Chomsky puts it elsewhere: "If

[43] Declerck (1988, p. 5).
[44] Chomsky (1966, p. 12).

the grammar is [...] perfectly explicit – in other words, if it does not rely on the intelligence of the understanding reader but rather provides an explicit analysis of his contribution – we may [...] call it a *generative grammar*."[45]

The system that is going to be used here, Head Drive Phrase-Structure Grammar, differs from other approaches like Government and Binding or the Minimalist Program in two major points. First, HPSG is a framework of constraint-based architecture. It is a *constraint-based grammar* (CBG). One might say 'everything is allowed unless its forbidden'. A CBG is a set of statements about certain models that are correlated to sound, syntactic information, and meaning. There are no operations within such a grammar other than constraints. This precludes, for instance, transformational operations from the beginning. A second difference between approaches based on Government and Binding (and its derivatives) and HPSG is that HPSG in the version used here assumes constructionism. Constructionism here means that HPSG gives grammatical constructions the status they have in Construction Grammar[46]. The main insight of Construction Grammar is that language consists of more or less complex patterns, i.e. constructions, which unify form and meaning in conventionalized and often and more importantly non-compositional ways. One of the major benefits of CBG is the elimination of any need for transformations. There is no independent psycholinguistic evidence for the existence of transformations anyway. Furthermore, having just one representation instead of several levels makes a language model more vivid. Ginzburg and Sag (2000) note that CBGs are also psycholinguistically plausible, since an unordered set of constraints fits in well a psycholinguistic model where nonlinguistic and linguistic data are easily and incrementally integrated in on-line language processing.[47]

One of the most important concepts in HPSG is structure sharing. Structure sharing means that two distinct paths in a feature structure can lead to one and the same node. "Informally (but not quite correctly), the values of the two paths are often said to be unified."[48] This is why grammars of this sort are sometimes called unification-based. Note that in the case of structure sharing we are dealing

[45] Chomsky (1965, p. 4).

[46] See e.g. Kay (1998).

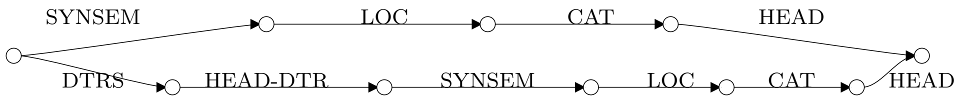
[47] Ginzburg and Sag (2000, p. 4).

[48] Pollard and Sag (1994, p. 19).

with token identity, not just type identity or structural identity. Token identity here means that two paths point to the same node in a feature structure model. This is illustrated below.

(40) $\begin{bmatrix} \text{SS}\mid\text{LOC}\mid\text{CAT}\mid\text{HEAD} & \boxed{1} \\ \text{DTRS}\mid\text{HD-DTR}\mid\text{SYNSEM}\mid\text{LOC}\mid\text{CAT}\mid\text{HEAD} & \boxed{1} \end{bmatrix}$

(41)



In (41) we see a feature structure representation of the argument value matrix (AVM) in (40). Both paths in the AVM in (40) lead to one and the same item in the feature structure as shown in (41). That is what is meant by structure sharing in HPSG.

If one wanted to localize HPSG in the field of linguistic traditions, one can say that HPSG follows the Saussurian tradition. It is assumed that languages are made up of signs. These signs are form-meaning pairs. An HPSG sign is a typed feature structure representation that specifies values for features such as PHONOLOGY, CONTEXT (pragmatic), CONTENT (semantic), and CATEGORY (syntactic). These are the features of the basic type *sign*.

The modeling assumptions of HPSG represent a unique tool when it comes to the basic components of the grammar. They have provided a novel way of working with certain traditional notions of grammar like ‘lexical entry’ or ‘phrase structure rule’ that allows for increased precision and analytic uniformity. Lexical entries can now be seen as constraints on feature structures that belong to the type *word* and phrase structure rules or construction rules are partial descriptions of feature structures of the type *phrase*.[49] Since both, *word* and *phrase*, are subtypes of *sign*, they work together. The lexical entries define a set of words and the construction rules define a set of phrases built from words or phrases.

The representational efficiency of HPSG is mainly based on the primacy of constructions within the system. The constructionism part of HPSG that is used here utilizes multiple inheritance hierarchies as used in object-orientated programming and knowledge representations to express cross-classifying generalizations about words,

[49] Types are given in italics, features in capital letters.

phrases, and clauses. Transferred into a linguistic environment, this means for instance that the following examples[50] all share certain properties, while they may still differ in others:

(42) a. Were they involved?
b. Can she sing?

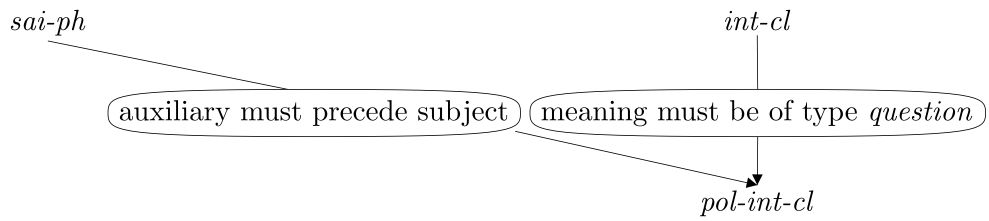
(43) a. Boy, was I stupid!
b. Wow, can she sing!

(44) a. May they live forever!
b. May live long enough to see the end of this job!

(45) a. Were they here now, we wouldn't have this problem.
b. Should there be a need, we can always call for help.

All of the sentences have in common that they are inverted (which means their subject is realized post-verbally) and they are finite. At the same time, they all differ when it comes to semantics. The examples in (42) are straightforward polar questions. The examples in (43) are non-wh-exclamations. The examples in (44) belong to the class of wishes/curses/blesses, and the examples in (45) are conditionals. So on the one hand, we might say that they all belong to the same group of phrases, which we could call *subject-auxiliary-inversion-phrases* (*sai-ph*), but on the other hand, each sentence also belongs to a set of expressions, which makes it a conditional, exclamation, question, etc. They all inherit properties from being *sai-ph*, which means they fall under all the constraints that exist for *sai-ph*. And they all inherit another set of properties from being a conditional, question, or exclamation.

(46)



[50] These are Fillmore's (1999) examples taken from Ginzburg and Sag (2000, p. 5).

The diagram shows how the type *polar question* inherits constraints from two sources. It inherits the constraint that the auxiliary has to precede the subject from the *sai-ph*, and it inherits the constraint that its CONTENT-value must be of the semantic type *question* from what we might call an interrogative phrase. Using inheritance structures like this makes it possible to reuse types again and again once they are developed, thus giving rise to a large number of different structures that share certain properties but differ in others.

2.2.2 Typed feature structures

HPSG grammars always consist of two components: the signature and the theory. The signature of an HPSG grammar defines what kind of objects are distinguished. It consists of a type hierarchy and appropriateness conditions, defining which type has which attributes with which values. The theory is a set of constraints. It singles out a subset of objects declared in the signature, namely the grammatical ones. Thus, we can say that "a linguistic object is admissible with respect to a theory if it satisfies each of the descriptions in the theory and so does each of its substructures"[51].
Before we turn to the constraint-based aspect of HPSG again, we have to take a closer look at the feature structure. In HPSG utterances are modeled as feature structures of the type *sign*. The constraints we impose on signs correspond to the general conventions governing the sound-syntax-meaning relation in a given language because the features associated with structures of this type include PHONOLOGY and SYNSEM, the latter specifying information belonging to syntax and semantics. Thus, a system of signs provides a finite specification of an infinite set of utterances. However, due to the complexity of linguistic information, further distinctions within the feature structures that are specified as values have to be made. So *case* is not just case, but can be *nominative* or *accusative* etc., *pers* can be *1st*, *2nd* and so forth. In order to achieve such distinctions, the grammar has to "posit many kinds of linguistic entities 'smaller' than the signs, and must provide an account of the specific properties of each such kind."[52] Figure 2.8 gives the geometry of the basic types and their features with their values as they are used in Ginzburg and Sag

[51] Levine and Meurers (2006, p. 10).

[52] Ginzburg and Sag (2000, p. 17).

(2000).[53] If we take these types to describe a word, we get structures like (47) (this time expressed as an attribute value matrix (AVM)).[54]

TYPE	FEATURES / TYPE OF VALUE	IMMEDIATE SUPERTYPE
sign	$\begin{bmatrix} \text{PHONOLOGY} & \textit{list}(\textit{form}) \\ \text{SYNSEM} & \textit{synsem} \\ \text{CONTEXT} & \textit{conx-obj} \\ \text{ROOT} & \textit{boolean} \end{bmatrix}$	*feature structure*
phrase	$\begin{bmatrix} \text{DTRS} & \textit{nelist}(\textit{sign}) \end{bmatrix}$	*sign*
lex-sign	$\begin{bmatrix} \text{ARG-ST} & \textit{list}(\textit{synsem}) \end{bmatrix}$	*sign*
lexeme		*lex-sign*
word		*lex-sign*
synsem	$\begin{bmatrix} \text{LOCAL} & \textit{local} \\ \text{SLASH} & \textit{set}(\textit{local}) \\ \text{WH} & \textit{set}(\textit{scope-obj}) \\ \text{REL} & \textit{set}(\textit{scope-obj}) \\ \text{BACKGRND} & \textit{set}(\textit{fact}) \end{bmatrix}$	*feature structure*
loc(al)	$\begin{bmatrix} \text{CATEGORY} & \textit{category} \\ \text{CONTENT} & \textit{sem-object} \\ \text{STORE} & \textit{set}(\textit{scope-obj}) \end{bmatrix}$	*feature structure*
cat(egory)	$\begin{bmatrix} \text{HEAD} & \textit{part-of-speech} \\ \text{SUBJ} & \textit{list}(\textit{synsem}) \\ \text{SPR} & \textit{list}(\textit{synsem}) \\ \text{COMPS} & \textit{list}(\textit{synsem}) \end{bmatrix}$	*feature structure*
context-object	$\begin{bmatrix} \text{C-INDICES} & \textit{c-inds} \\ \text{SAL(IENT)-UTT(ERANCE)} & \textit{set}(\textit{local}) \\ \text{MAX(IMAL)-QUD} & \textit{question} \end{bmatrix}$	*feature structure*

Figure 2.8: Basic types

[53] Abbreviations usually used for the features: CONT=CONTENT, CAT=CATEGORY, ARG-ST=ARGUMENT-STRUCTURE, NUCL=NUCLEUS, LOC=LOCAL, SS=SYNSEM, SUBJ=SUBJECT, SPR=SPECIFIER, COMPS=COMPLEMENTS, BACKGRND=BACKGROUND.

[54] Note that I will later follow the convention of simply numbering the participants in semantic relations. This means instead of DENIER and DENIED as in (47), I will use labels like ARG_1 and ARG_2 for argument number 1, 2, etc.

$$(47)\quad \begin{bmatrix} \textit{lexeme} & \\ \text{PHONOLOGY} & \left\langle \textit{deny} \right\rangle \\ \text{SYNSEM} & \begin{bmatrix} \textit{synsem} & \\ \text{LOC} & \begin{bmatrix} \textit{local} & \\ \text{CAT} & \begin{bmatrix} \textit{cat} & \\ \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{AUX} & - \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \textit{soa} & \\ \text{NUCL} & \begin{bmatrix} \textit{deny-relation} & \\ \text{DENIER} & \boxed{1} \\ \text{DENIED} & \boxed{2} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle NP_{\boxed{1}}, NP_{\boxed{2}} \right\rangle \end{bmatrix}$$

In HPSG the set of features that is assigned to a linguistic object is structured. Sets of features that describe one and the same aspect are represented together, i.e. they are in the same pair of brackets as can be seen in (47)[55]. Everything that is semantic or syntactic information goes into SYNSEM. Under the feature LOC(AL), we find local information. This means it encapsulates e.g. the information that gets transmitted in extraction dependencies. Part of local information is information about the syntactic category of a sign, information about the semantic content of a sign, and information about possibly stored quantifiers. The values for CONTENT will be explained in Section 2.2.4. The feature SUBCAT that is used in Pollard and Sag (1994) will not be used here. Instead, the argument structure (ARG-ST) will be used. It takes as a value a list of elements with which the sign has to be combined in order to get a saturated or complete phrase. These elements need not necessarily be fully specified. The argument structure is complemented by the features SPR, SUBJ, and COMPS (list of complements).[56] The argument structure and the valence features together do more or less the job of the SUBCAT-list in Pollard and Sag (1994). The value of HEAD is a feature structure that specifies the

[55] Note that the abbreviation “NP” in AVMs is short for a sign that is headed by a noun and which is syntactically saturated.

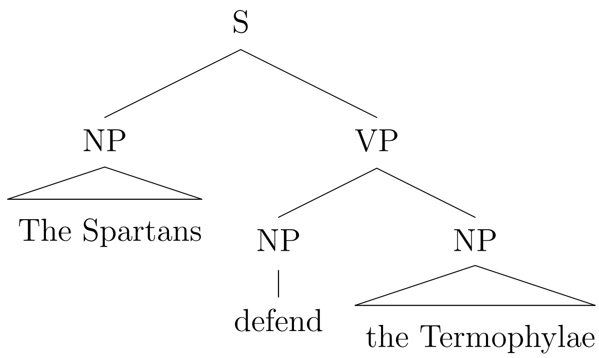
[56] SPR and SUBJ could just as well take singleton elements instead of lists. Note that Van Eynde (2006) uses a marking construction instead of the SPR-feature, which improves the fragment of Ginzburg and Sag (2000), especially with respect to pied-piping and the inner NP/DP structure.

morpho-syntactic properties which a lexical sign shares with its projections.

This particular organization of linguistic information seeks to provide an account of the empirical fact that subcategorization (category selection in the familiar sense), case and role 'assignment', semantic selection, and head-valent agreement all operate in highly constrained local domains. Agreement with or selection for the complement of a complement, for example, is systematically precluded, as is case or role 'assignment' to a complement's complement. By constraining head-valent constructions in such a way that the head daughter's value for valence features like SUBJ, COMPS, and SPR is identified with the SYNSEM value of the relevant valent daughter(s), it follows that lexical heads have restricted access to information about the elements they combine with. They may only select for information that is encoded within a valent's *synsem*. The relevant locality effects are thus a consequence of the interaction of the geometry of *synsem*-objects and the theory of head-valence constructions. Phrases can be modeled with typed feature structures just like words and lexemes. Consider the examples below.

(48)
$$\begin{bmatrix} \textit{hd-subj-ph} & \\ \text{PHON} & \left\langle \boxed{1}, \boxed{3}, \boxed{4} \right\rangle \\ \text{SYNSEM} & \textit{S} \\ \text{DTRS} & \left\langle \begin{bmatrix} \text{PHON} & \left\langle \boxed{1}\textit{The Spartans} \right\rangle \\ \text{SYNSEM} & \textit{NP} \end{bmatrix}, \boxed{2} \right\rangle \\ \text{HD-DTR} & \boxed{2} \begin{bmatrix} \textit{hd-comp-ph} & \\ \text{PHON} & \left\langle \boxed{3}, \boxed{4} \right\rangle \\ \text{SYNSEM} & \textit{VP} \\ \text{HD-DTR} & \boxed{5} \begin{bmatrix} \textit{word} & \\ \text{PHON} & \left\langle \boxed{3}\textit{defend} \right\rangle \end{bmatrix} \\ \text{DTRS} & \left\langle \boxed{5}, \begin{bmatrix} \text{PHON} & \left\langle \boxed{4}\textit{The Termophylae} \right\rangle \\ \text{SYNSEM} & \textit{NP} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix}$$

(49)

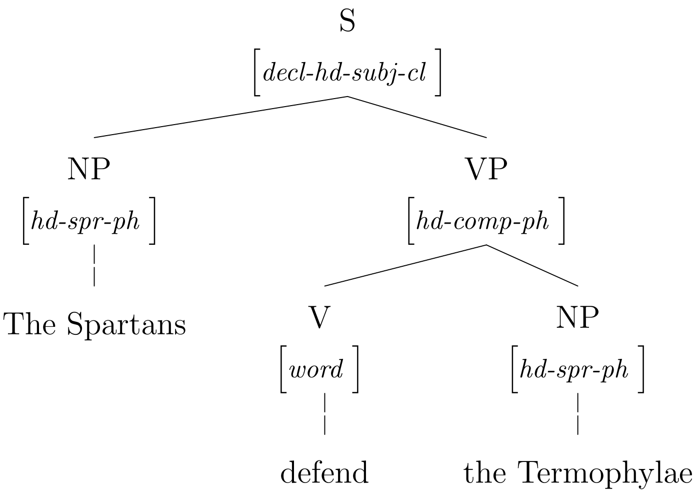


Features such as HEAD-DAUGHTER (HD-DTR), whose value is a *sign*, i.e. a *word* or a *phrase*, and DAUGHTERS (DTRS), whose value is a list of *signs*, encode roughly the same information that branches encode in conventional phrase structure trees. This means that what we see in (48) is an attribute-value description of the tree in (49).

The most important advantages of a sign-based theory of phrases were pointed out by Sag (1997). According to Sag, such a theory allows us to address questions such as: How are specific constructions related to one another? How can cross-constructional generalizations be expressed? How can constructional idiosyncrasy be accounted for? If we model phrases as typed feature structures, the different phrasal types can be ordered in a hierarchy. Their organization will then correspond to that of the lexical types. Similarities between certain phrasal types can then be modeled via association with appropriate supertypes (see (46)). Furthermore, a type-based approach allows for generalizations on arbitrarily high levels, which can account for 'family resemblances' on every possible level.

Although the representation of a phrase as an AVM has certain advantages, phrases will often be described here with the more familiar tree diagrams, which then are based on the feature-type analysis. An example is given below.

(50)



For the sake of clarity, the features in (50)[57] are not shown, although they are all present. It is assumed here that all phrases found in English are classified according to the hierarchy of phrasal types in figure 2.9.

Note that figure 2.9 is only an excerpt of the phrasal types in Ginzburg and Sag (2000). It is not the complete taxonomy.

2.2.3 Basic constraints

In the following, some of the basic HPSG constraints as used in Ginzburg and Sag (2000) will be presented. A principle that applies to the most general type *sign* is the Principle of Canonicality.[58] Note that this constraint uses the formalization of Ginzburg and Sag (2000). This means the symbol "⇒" is used in standard type constraints, while the symbol "→" is used in 'phrase structure rules'. Technically these phrase structure rules are type constraints, too. They are constraints on constructional types.

(51) Principle of Canonicality

$$sign \Rightarrow \left[\text{SYNSEM} \;\; \textit{canon-ss}\right]$$

[57] Note that there will be no triangles in tree structures that represent AVMs. This means that there is only a single branch above the Spartans, although the NP node has of course two daughters.

[58] Ginzburg and Sag (2000, p. 364).

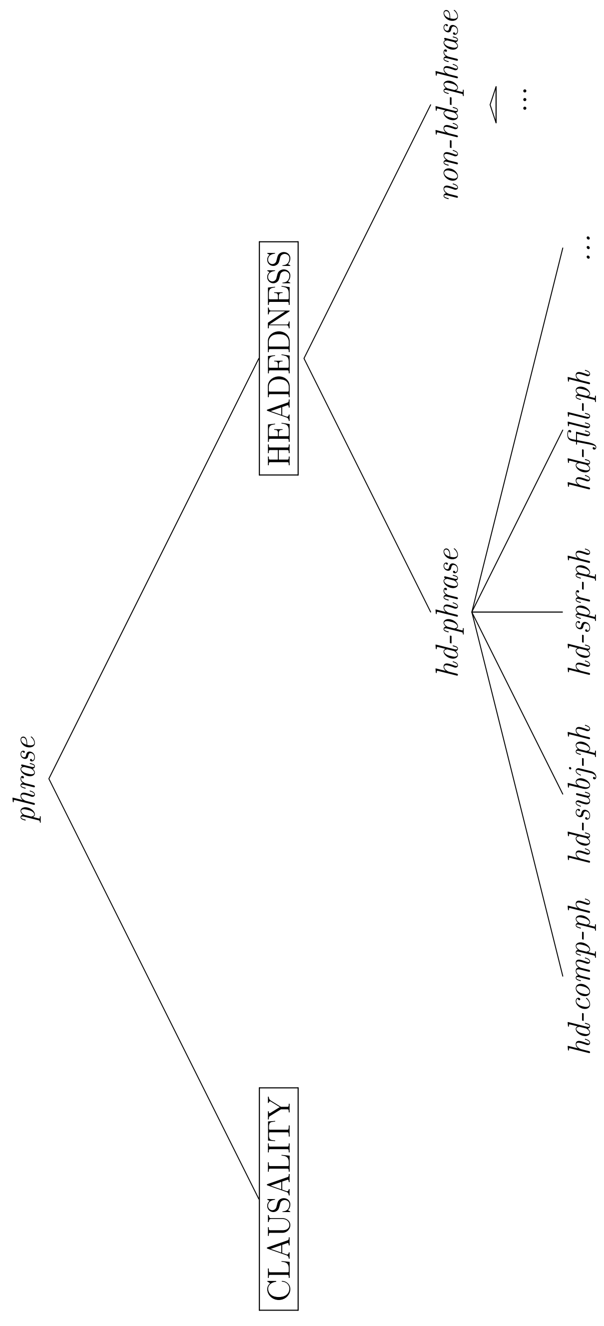


Figure 2.9: Phrase types

This simple principle requires a sign to be canonical. This means a sign cannot be an unexpressed controlled subject, nor a gap element (an unexpressed argument). The latter elements are considered non-canonical, i.e. of type *noncan-ss* (*noncanonical-synsem*). They are represented in the types *pro-ss* and *gap-ss*. These elements exhibit exceptional properties. They cannot be locally realized through simple combination of a head with its subject, complement, or specifier. The hierarchy of possible *synsem* subtypes is shown in figure 2.10:

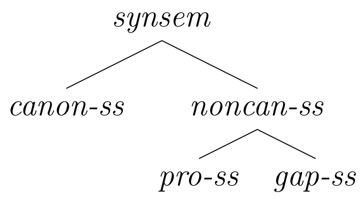


Figure 2.10: *Synsem* subtypes

Another constraint, the ECC, deals with combinatory possibilities of phrases. It ensures that all complements must have been realized when the phrase level is reached.

(52) Empty COMPS Constraint (ECC)[59]
phrase:
$\left[\text{CAT}\ \left[\text{COMPS}\ \langle\rangle\right]\right] \rightarrow \ldots$

The effect of this constraint is that all complements are sisters of the lexical heads that project the dominating phrase. Another fundamental constraint of HPSG is the generalization of the Generalized Head Feature Principle.

(53) Generalized Head Feature Principle (GHFP)[60]
hd-ph:
$\left[\text{SYNSEM}\ /\boxed{1}\right] \rightarrow \ldots\ \text{H}\left[\text{SYNSEM}\ /\boxed{1}\right] \ldots$

This principle is the pendant to the *X'-identity condition* in X'-theory. It ensures that mother and head-daughter share as many *synsem*-values as possible. The "H" marks the head-daughter and the "/" indicates that the value following it is a

[59] Ginzburg and Sag (2000, p. 364).
[60] Ginzburg and Sag (2000, p. 364).

default.[61] This way it is possible for other constraints to override this condition. A constraint on type A overrides another constraint on type B, if A is a subtype of B, i.e. if A is more specific than B. Overriding is, for instance, necessary when a head is combined with its complement. Looking at the constraint on the type *head-comp-phrase* in (54), we see that the COMPS-value of mother and daughter must of course be different, since the complement has already been realized.[62]

(54) *hd-comp-ph:*[63]

$$\big[\ \big] \longrightarrow \mathrm{H}\begin{bmatrix} \textit{word} \\ \mathrm{COMPS}\ \ \textit{nelist}(\boxed{\mathrm{A}} \oplus\ \textit{list}) \end{bmatrix}, \boxed{\mathrm{A}}$$

All three constraints from above work together. The constraint in (54) ensures that the complements appear to the right of the head. The GHFP ensures that daughter and mother share all *synsem*-properties, while the ECC overrides the GHFP with respect to the COMPS-value of the mother, which is constrained to be empty.

This is at least the way it is intended to work. Unfortunately, there is a flaw in the system at this point. Note that the ECC is formulated on the type *phrase*, while the GHFP is formulated on *hd-phrase*. Since *hd-phrase* is a more specific type than *phrase*, the constraints on *hd-phrase* are allowed to override the constraints on *phrase*. Therefore, the GHFP will always pass on a filled COMPS-value to the mother node and thus negate the purpose of the ECC. As a work-around for this

[61] On the defeasibily of constraints see Ginzburg and Sag (2000, p. 33, footnote 27): “Note that one could replace the GHFP with a set of nondefault constraints, each of which specifies the relevant identities on particular subtypes of *hd-ph*. Our use of defaults could thus be regarded as abbreviatory. However, our system of constraints is conceptually quite different from one cast in a pure monotonic system. By using defeasible constraints, we express generalizations about construction types [. . .]. We thus gain a significant gain in descriptive simplicity which [. . .] is typical of systems using default constraints.”

[62] Note that Ginzburg and Sag (2000) abbreviate paths, if they are unambiguous. I will do so, too.

[63] Ginzburg and Sag (2000, p. 364). This rule is an abbreviation for the following type constraint:

$$\text{(i)}\ \ \textit{hd-comp-ph} \Rightarrow \begin{bmatrix} \mathrm{HD\text{-}DTR}\ \boxed{1}\begin{bmatrix} \textit{word} \\ \mathrm{COMPS}\ \ \texttt{signs-to-synsem}(\textit{nelist}\,(\boxed{\mathrm{A}} \oplus\ \textit{list})) \end{bmatrix} \\ \mathrm{DTRS}\qquad \left\langle \boxed{1} \right\rangle \oplus \boxed{\mathrm{A}} \end{bmatrix}$$

problem, the type *hd-phrase* should get one (and only one) subtype, which is then constrained to fulfill the ECC. Since the original ECC is supposed to work for the type *non-hd-phrase*, too, the same should of course be done for this type. This means *non-hd-phrase* should also get one (and only one) subtype, which is then constrained by the ECC. All the current subtypes of *hd-phrase* and *non-hd-phrase* will then be subtypes of the newly introduced intermediate types. Alternatively, one could skip the ECC entirely and make the empty COMPS-list a condition in every single phrase structure rule. Since I would like to keep as much of the existing fragment untouched as possible, I will follow in principle the first solution.
Going back to figure 2.9, we also see the following: Phrases cannot only be classified in terms of their X'-type (e.g. whether they are headed or not; if headed, what kind of daughters are involved, etc.) to express generalizations about the shared properties of diverse construction types. They can be classified relative to an independent dimension of CLAUSALITY, too. Thus, each type of phrase in this theory is cross-classified. This means each maximal phrasal type inherits both from a CLAUSALITY type and from a HEADEDNESS type. This classification recognizes a distinction between clauses and nonclauses, and also identifies at least the following subtypes of clause: *decl(arative)-cl(ause)*, *inter(rogative)-clause*, *imp(erative)-clause*, *excl(amative)-cl(ause)*, *core-cl(ause)* and *rel(ative)-cl(ause)*.[64] Ginzburg and Sag (2000) describe the advantage of such an analysis as follows.

(55) "[This analysis] lets us express generalizations about phrases with the same simplicity and precision that is standard in work on hierarchical lexicons. With the phrasal multiple inheritance hierarchy, we also have no need to posit phantom formatives – the inaudible functional heads that are routinely assumed in many competing analyses of clausal structure. The work done by these elements is replaced by constraints associated with various types of clause."[65]

A clause is a construction which relates a certain syntactic configuration with a semantic one. This makes the clause a kind of construction which gives the constituents a communicatively relevant form. Therefore, the first and most important

[64] This analysis might be extended to purpose, rationale, absolute, gerund, and conditional clauses. See Ginzburg and Sag (2000, p. 40, footnote 35).
[65] Ginzburg and Sag (2000, p. 40).

constraints of the type *clause* are the following.[66]

(56) *clause:*[67]

$$\begin{bmatrix}\text{CONT} & \textit{message}\end{bmatrix} \rightarrow \ldots$$

(57) *clause:*[68]

$$\begin{bmatrix}\text{SUBJ} & \textit{list (noncan-ss)}\end{bmatrix} \rightarrow \ldots$$

The first constraint says that a clause's semantic content must always be of type *message*. That fits well to the intuition that a verb and the verb phrase which it projects are not yet a proposition. They only describe a state-of-affairs (soa). Hence, neither verbs nor their VPs can function as independent utterances; nor can they be complements of verbs that subcategorize for propositional arguments. In order to build a phrase whose CONTENT-value is *message*, it is necessary to embed a VP within a clausal construction. This makes all clauses communicatively complete constructions. The second constraint ensures that as soon as the clausal level is reached, the subject has been realized (i.e. the list could just as well be empty) or we are dealing with a non-finite clause, which must have a subject of type *pro-ss*. An abbreviated inventory of clause types is given in figure 2.11.

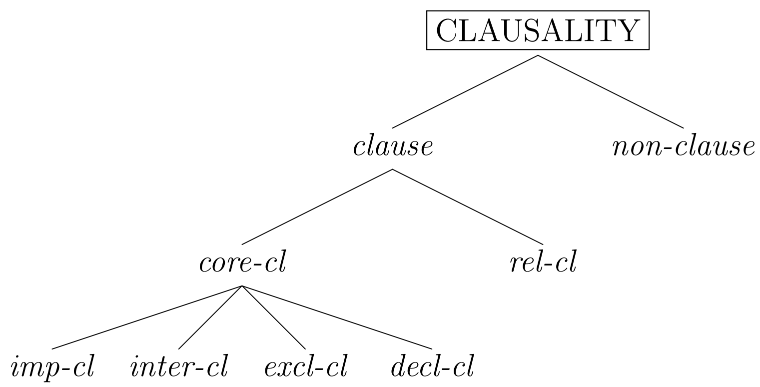


Figure 2.11: clause types

Each subtype of clause is subject to some constraint that determines its specific form. For the subtypes of *core-clause* these would be the following.

66 Note that a notation like *list(noncan-ss)* means: *nelist(noncan-ss)* ∨ *elist*.

67 Ginzburg and Sag (2000, p. 365).

68 Ginzburg and Sag (2000, p. 365).

(58) *imp-clause:*[69]

$$\begin{bmatrix}\text{CONT} & \textit{outcome}\end{bmatrix} \rightarrow \ldots$$

(59) *excl-clause:*[70]

$$\begin{bmatrix}\text{CONT} & \textit{fact}\end{bmatrix} \rightarrow \ldots$$

(60) *inter-clause:*[71]

$$\begin{bmatrix}\text{CONT} & \textit{question}\end{bmatrix} \rightarrow \ldots$$

(61) *decl-clause:*[72]

$$\begin{bmatrix}\text{CONT} & \begin{bmatrix}\textit{austinian} \\ \text{SOA} \; \boxed{1}\end{bmatrix}\end{bmatrix} \rightarrow \ldots\text{H}\begin{bmatrix}\text{CONT} & /\boxed{1}\end{bmatrix}$$

The constraint in (62) prevents all subtypes of *core-cl* from being used as modifiers. Being a modifier is a function reserved for relative clauses.

(62) *core-clause:*[73]

$$\begin{bmatrix}\text{HEAD} & \begin{bmatrix}\textit{verbal} & \\ \text{VFORM} & \textit{clausal} \\ \text{MOD} & \textit{none}\end{bmatrix}\end{bmatrix} \rightarrow \ldots$$

Together with the type hierarchy in figure 2.12[74], this means that constraining the verb form to be *clausal* allows for finite and non-finite verbs to head a clause, but prevents all other possible verb forms from doing so.

Another important principle is the Argument Realization Principle (ARP). It ensures that the arguments of a word, which are grouped on the argument structure, appear in the right valency slots.

(63) Argument Realization Principle[75]

$$\textit{word} \Rightarrow \begin{bmatrix}\text{SS}|\text{LOC}|\text{CAT} & \begin{bmatrix}\text{SUBJ} & \boxed{A} \\ \text{SPR} & \boxed{B} \\ \text{COMPS} & \boxed{C} \ominus \textit{list(gap-ss)}\end{bmatrix} \\ \text{ARG-ST} \; \boxed{A} \oplus \boxed{B} \oplus \boxed{C} & \end{bmatrix}$$

69 Ginzburg and Sag (2000, p. 366).
70 Ginzburg and Sag (2000, p. 366).
71 Ginzburg and Sag (2000, p. 365).
72 Ginzburg and Sag (2000, p. 365).
73 Ginzburg and Sag (2000, p. 365).
74 Ginzburg and Sag (2000, p. 24).

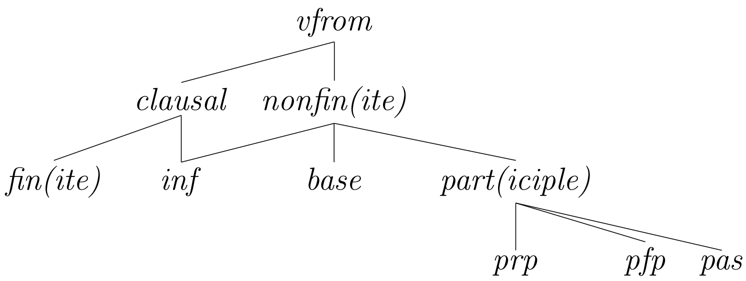


Figure 2.12: Possible verb forms

A second function of the ARP is to make sure that no complement slots are filled with phonologically empty elements ('traces' so to say).[76] These *noncan-ss* elements are put into the SLASH-set by another principle, the SLASH-Amalgamation Constraint.

(64) SLASH-Amalgamation Constraint[77]

$$word \Rightarrow \begin{bmatrix} \text{SS}|\text{SLASH} & \boxed{\Sigma_1} \cup \ldots \cup \boxed{\Sigma_n} \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{SLASH } \boxed{\Sigma_1}\end{bmatrix}, \ldots, \begin{bmatrix}\text{SLASH } \boxed{\Sigma_n}\end{bmatrix} \right\rangle \end{bmatrix}$$

If any argument of a word has a non-empty SLASH-value, this SLASH-value will be copied to the SLASH-set of that word. If none of the arguments is slashed, the word will not be slashed, either.

2.2.4 Semantics

As is the case for the other aspects of grammar, HPSG uses typed feature structures for the semantic representation, too. These typed feature structures correspond to logical forms of intensional logic. The semantic universe corresponds to a Montagovian structure like the one below.[78]

[76] See Levine and Sag (2003) for some evidence on the issue of why the treatment of extraction in a monostratal system with 'base-generated gaps' must clearly be distinguished from an approach with derivationally derived gaps.

[77] Ginzburg and Sag (2000, p. 169).

[78] Form Ginzburg and Sag (2000, p. 62). '\' here denotes set difference.

(65) [D, *Prop*, *True*, $\rightarrow$, $\prod_T$]
where:
1. D is a set representing the universe.
2. *Prop* is the power-set of the set of possible worlds ($P(W)$ for some set W).
3. *True* is $\{W\}$.
4. For each type $T, \prod_T$ is a function from $P^{[T]}$ to *Prop* which, given as input a function f from $[\![T]\!]$ to $P(W)$, returns W just in the case for all d in $[\![T]\!]$, $f(d) = W$. Otherwise f returns the empty set.
5. $\rightarrow$ is a function from *Prop* to $Prop^{Prop}$ representing entailment: $\rightarrow (A, B) = (W \backslash A) \cup B$.

The main difference between this and a Montagovian system is that different types are taken as basic and that the HPSG theory makes use of certain set-theoretic operations that the former does not use. However, the details of such fundamental differences cannot be dealt with here.[79] I will content myself with presenting the relevant types and constraints. The most important types are shown in the type hierarchy in figure 2.13 and in figure 2.14.

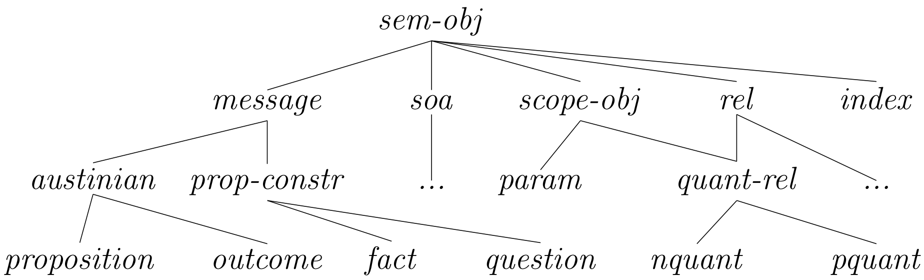


Figure 2.13: Hierarchy of semantic types

The *sem(antic)-obj(ects)* are what we find under the feature CONTENT. Provided that we distinguish between 'content' and 'meaning', "the semantic object associated with an expression context independently is its meaning. Given a context c, a meaning can be used to evaluate the content of an expression ϕ in c. Thus, a common formalization of a meaning is a function f from contexts to contents."[80] The

[79] See Ginzburg and Sag (2000, Chp. 3) for a detailed account.

[80] Ginzburg and Sag (2000, p. 119f).

TYPE	FEATURES / TYPE OF VALUE	IMMEDIATE SUPERTYPE
sem-obj		*feature structure*
message		*sem-obj*
austinian	$\begin{bmatrix}\text{SIT} & \textit{situation}\\ \text{SOA} & \textit{soa}\end{bmatrix}$	*message*
proposition	$\begin{bmatrix}\text{SOA} & \textit{r-soa}\end{bmatrix}$	*austinian*
outcome	$\begin{bmatrix}\text{SOA} & \textit{i-soa}\end{bmatrix}$	*austinian*
prop-constr	$\begin{bmatrix}\text{PROP} & \textit{proposition}\end{bmatrix}$	*message*
fact		*prop-constr*
question	$\begin{bmatrix}\text{PARAMS} & \textit{set}(\textit{param})\end{bmatrix}$	*prop-constr*
soa	$\begin{bmatrix}\text{QUANTS} & \textit{list}(\textit{quant-rel})\\ \text{NUCL} & \textit{rel}\end{bmatrix}$	*sem-obj*
r-soa		*soa*
i-soa	$\begin{bmatrix}\text{T-PARAMS} & \textit{param}\end{bmatrix}$	*soa*
scope-obj	$\begin{bmatrix}\text{INDEX} & \textit{index}\\ \text{RESTR} & \textit{set}(\textit{fact})\end{bmatrix}$	*sem-obj*
rel		*sem-obj*
param		*scope-obj*
quant-rel		*scope-obj* & *rel*
index		*sem-obj*

Figure 2.14: Semantic types and features

contextual parameters are represented in the attributes C(ONTEXT)-INDICES and B(A)CKGR(OUN)D. This means that what is encoded in the *sem-objects*, i.e. under CONTENT, is the value which the meaning function takes as its input.[81]

As was mentioned before, the content of a clause will always be of type *message*. Its subtypes correspond to the illocutionary acts like assertion, querying, commanding, and exclaiming. The subtype *austinian* introduces the feature SIT, which takes as a value the situation involved in the relevant *outcome* or *proposition*. The feature SOA takes as a value an element of type *soa*, which gives a description of the under-

[81] Note that this is a speaker-orientated simplification of the meaning/content/context interrelationship as Ginzburg and Sag (2000, p. 120) admit. Besides, when one uses the distinction between 'content' and 'meaning', the name of the feature CONTENT is misleading. A name like MEANING might be more appropriate.

lying state of affairs.[82] With the *soa* subtypes *i(rrealis)-soa* and *r(ealis)-soa*, we can distinguish between possible and impossible state of affairs, but that distinction will not play a role here. The other subtype of *message*, *prop(ositional)-constr(uction)*, is named so because its subtypes both involve a proposition. In addition to the feature PROP, the subtype *question* shows the feature PARAMS, whose value will be a set of *parameters. Parameters* can be described as restriction-bearing indices. This makes them the typical CONTENT-value of NPs. For questions *parameters* correspond to the set of entities that gets abstracted away. PARAMS is the wh-phrase counterpart to QUANTS, which takes as its value a list of quantifiers in scopal order. Quantificational expressions have a CONT-value of type *quant-rel*, which is a subtype of *rel* and *scope-obj*. Their index is that of their restrictor and their set of restrictions is the union of their restrictions and those of their restrictor.
Quantifier scope is handled in HPSG via an implementation of Cooper Storage[83]. Quantifiers are collected under the local feature STORE and passed up the tree until they get retrieved. Retrieval is possible at nodes with a content of type *soa*. Retrieved quantifiers are added to the list of quantifiers under QUANTS, which means they take scope in an soa. Ginzburg and Sag (2000) follow the implementation of Pollard and Yoo (1996) in principle. In Pollard and Yoo (1996) quantifier retrieval works as shown in the structure in (66).

(66) Pollard and Yoo (1996) Quantifier Retrieval[84]

$$\begin{bmatrix} \text{CONT} & \begin{bmatrix} \text{QUANTS} & \boxed{A} \oplus \boxed{B} \\ \text{NUCL} & \boxed{5} \end{bmatrix} \\ \text{STORE} & \boxed{\Sigma_2} \\ \text{RETRIEVED} & \boxed{A} = \mathit{order}(\boxed{\Sigma_1}) \end{bmatrix} \rightarrow \text{H} \begin{bmatrix} \text{CONT} & \begin{bmatrix} \text{QUANTS} & \boxed{B} \\ \text{NUCL} & \boxed{5} \end{bmatrix} \\ \text{STORE} & \boxed{\Sigma_2} \uplus \boxed{\Sigma_1} \end{bmatrix}$$

Pollard and Yoo (1996) further restrict quantifier retrieval with the Semantics Principle in (67) and the Well-formedness Principle in (68).

(67) Semantics Principle
In a headed phrase:

[82] Despite the name, state of affairs are intended to be neutral with respect to eventive/stative distinction. See Ginzburg and Sag (2000, p. 81, footnote 36).

[83] As in Cooper (1983).

[84] The feature RETRIEVED is not used in Ginzburg and Sag (2000) anymore.

a. the RETRIEVED-value is a list whose set of elements forms a subset of the union of the STOREs of the semantically potent daughters; and the STORE-value is the relative complement of that set; and

b. (Case 1) if the semantic head is of sort *soa* and semantically nonvacuous, then the NUCLEUS-value is identical with that of the semantic head, and the QUANTS-value is the concatenation of the RETRIEVED-value and the semantic head's QUANTS-value;
(Case 2) otherwise the RETRIEVED-value is empty and the CONTENT-value is token-identical to that of the semantic head.

(68) Well-formedness Principle

a. A lexical head is *semantically vacuous* just in case its CONTENT-value is structure-shared with that of one of its arguments. Such an argument is called the semantically vacuous head's *sponsor*.

b. For a semantically nonvacuous lexical head, the STORE is the union of the STOREs of all arguments that are subcategorized for and assigned a thematic role by the head. For a semantically vacuous lexical head, the STORE is structure-shared with that of its sponsor.

As for the Semantics Principle, a daughter is "semantically potent" just in case it is either a selector daughter, i.e. an adjunct, specifier, or head daughter. This means subjects, complements, and fillers do not pass on their STORE-values. Instead, their STORE-values are collected by the head which subcategorizes for them. Thus, Part (a) of the Semantics Principle basically says that all quantifiers from the semantically potent daughters appear in the mother either under STORE or RETRIEVED. Part (b) of the Semantics Principle ensures that quantifier retrieval is only possible if the semantic head is semantically nonvacuous and has a meaning of type *soa*. A lexical head that is "semantically vacuous", as refered to in (68a), appears in raising constructions like *A unicorn seems to be approaching*. Here the raising verbs *be* and *to* share a CONT-value with their complements and therefore a STORE-set, too. The semantically nonvacuous head in that example is *approaching*. Semantically nonvacuous lexical heads collect the STORE-values of the arguments that they subcategorize for in their STORE-set as stated in (68b).

Before we turn to the representation of the example sentence from above, we need to look at another type from figure 2.14. The last type that needs introduction is *index*. According to Pollard and Sag (1994), the HPSG type *index* should be thought of as an analog to reference markers in discourse representation theory (DRT) as in Kamp (1981).[85] It is to these indices that semantic roles are assigned.
In (69) we see how these features and types can be used to describe an NP/DP like *every person*.[86]

(69)
$$\begin{bmatrix} \textit{hd-spr-ph} & \\ \text{SS|LOC} & \begin{bmatrix} \text{CAT} & \begin{bmatrix}\text{HEAD} & n\\ \text{SPR} & \langle\rangle \\ \text{COMPS} & \langle\rangle\end{bmatrix}\\ \text{CONT} & \begin{bmatrix}\textit{param} & \\ \text{INDEX} & \boxed{1}\\ \text{RESTR} & \left\{\textit{person}(\boxed{1})\right\}\end{bmatrix}\\ \text{STORE} & \left\{\begin{bmatrix}\textit{every-rel} & \\ \text{INDEX} & \boxed{1} \\ \text{RESTR} & \left\{\textit{person}(\boxed{1})\right\}\end{bmatrix}\right\}\end{bmatrix}\end{bmatrix}$$

every person

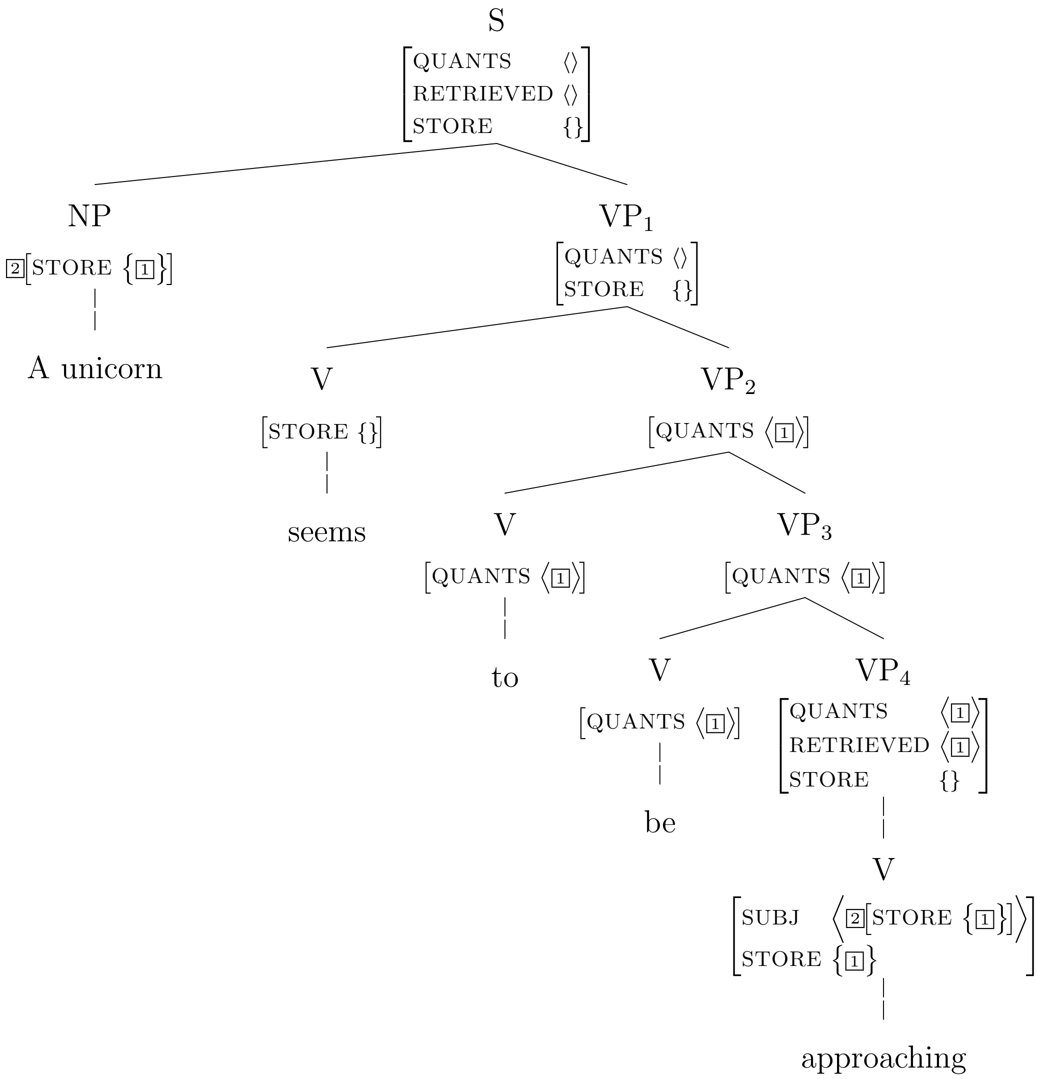
The NP/DP *every person* is of type *hd-spr-ph*. This means the noun *person* is the head and is combined with the specifier *every*. The specifier *every* introduces a quantifier, which is put in the STORE-set. How quantifier store and retrieval works is exemplified in (70) and (71). Here it is also shown how this theory can account

[85] Pollard and Sag (1994, p. 24).
[86] Note that a structure like *(person(i))* is shorthand for:

(i)
$$\begin{bmatrix} \textit{fact} & \\ \text{PROP} & \begin{bmatrix} \text{SIT} & s \\ \text{SOA} & \begin{bmatrix} \text{QUANTS} & \langle\rangle \\ \text{NUCL} & \begin{bmatrix} \textit{person\_rel} & \\ \text{INSTANCE} & i \end{bmatrix}\end{bmatrix}\end{bmatrix}\end{bmatrix}$$

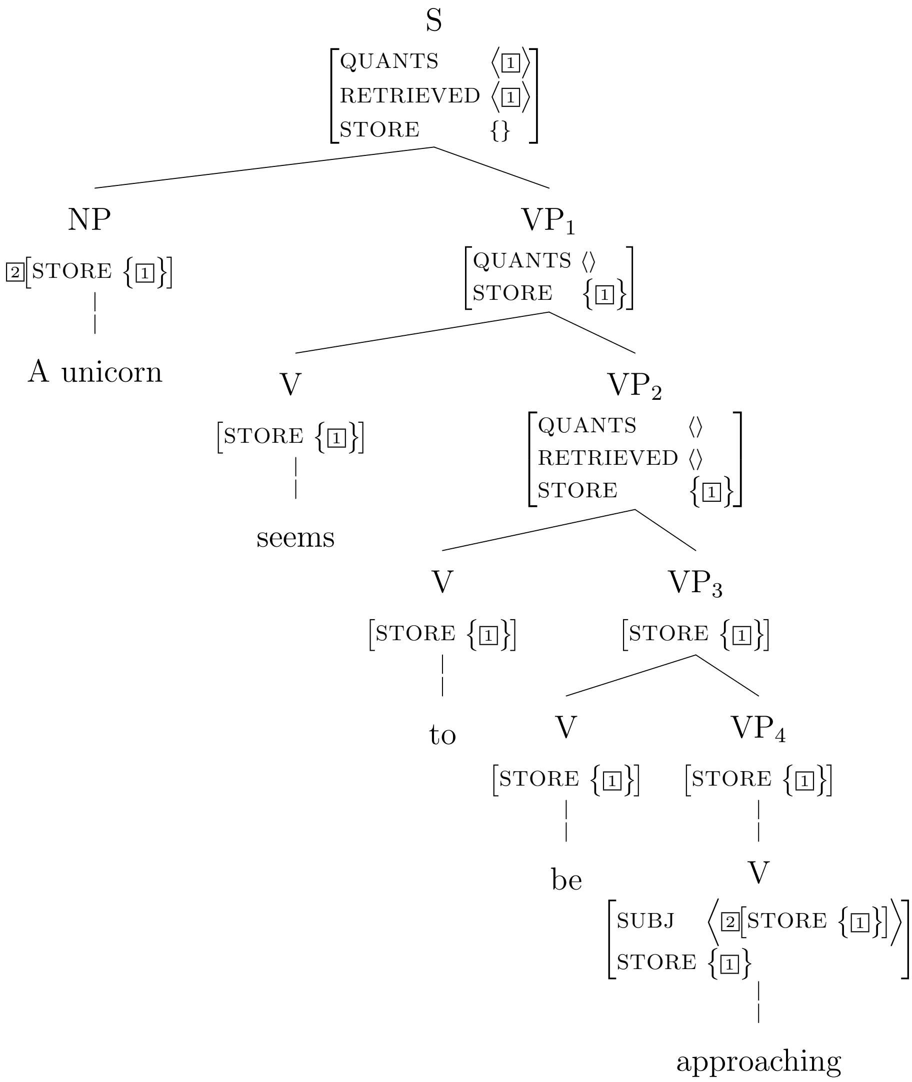
for de dicto and de re ambiguity in subject-raising constructions. The structures in (70) and (71) give one interpretation each.[87]

(70) De dicto



[87] From Pollard and Yoo (1996). Note that these examples are still formalized according to the system of Pollard and Yoo.

(71) De re



In both readings the quantifier gets into the STORE-set at the V-node of *approaching*. From there it is 'copied' up the tree. For the de dicto reading in (70), the quantifier is retrieved from the STORE-set in VP_4, i.e. below *seems*. That the quantifier also appears in the STORE-set of the subject NP does not matter. A subject daughter is semantically not 'potent' (see the Semantics Principle), i.e. its STORE-values are not passed up to the dominating node. Furthermore, note that the QUANTS-list of the top node (and of VP_1) is empty. The QUANTS-list of VP_2 is not passed up because there is neither an amalgamation principle that would pass

this list to *seems*, nor is VP_2 the semantic head for VP_1, which it would have to be to pass up the list. Besides, note that the syntax with a single-branching VP above *approaching* is the one of Pollard and Yoo (1996). In the system of Ginzburg and Sag (2000) there would be no such node.
For the de re reading in (71), the quantifier is passed up to the highest node. Here it is retrieved and interpreted, which gives the existential quantifier scope over the entire structure.

Certain aspects of the system in Pollard and Yoo (1996) are changed in Ginzburg and Sag (2000) according to Manning et al. (1999). Collecting of the quantifiers in the STORE-set is handled by the Store Amalgamation Constraint given below.

(72) Store Amalgamation Constraint[88]

$$\mathit{word} \Rightarrow / \begin{bmatrix} \text{SS|LOC} & \begin{bmatrix} \text{CONT} & \begin{bmatrix}\text{QUANTS} & \mathit{order}(\boxed{\Sigma_0})\end{bmatrix} \\ \text{STORE} & \boxed{\Sigma_1} \cup ... \cup \boxed{\Sigma_n} \div \boxed{\Sigma_0}\end{bmatrix} \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{STORE } \boxed{\Sigma_1}\end{bmatrix}, ... ,\begin{bmatrix}\text{STORE } \boxed{\Sigma_n}\end{bmatrix}\right\rangle \end{bmatrix}$$

Note that this constraint is overridden by words with empty argument structure lists (like proper nouns) and by words whose CONTENT-value is not of type *soa*. The idea behind this approach is to get rid of the spurious ambiguity that the system of Pollard and Yoo (1996) and Pollard and Sag (1994) caused. For a simple sentence like *Some person reads every memo*, those systems produce multiple analyses of every possible reading. All quantifiers could either be retrieved at the VP-level or at the sentence level, or one quantifier could be retrieved at each node. Now with the STORE Amalgamation Constraint, the quantifier scope is 'pushed into the lexicon'. There is no structure-based retrieval anymore. Every lexical head gets the chance to scope the quantifiers of its role-assigned arguments. Unscoped quantifiers still get passed up. Other aspects of the theory of Pollard and Yoo (1996) remain unchanged.

For functional readings as shown in the examples in (73)[89], we need another principle.

[88] Ginzburg and Sag (2000, p. 208). Note that the division operator must actually be the *dotdiv* operator, which is unfortunately not in my fontset. The symbol '$\div$' designates a relation of contained set difference that is identical to the familiar notion of set difference ($\Sigma_1 - \Sigma_2$= the set of all elements in Σ_1 that are not in Σ_2), except that $\Sigma_1 \div \Sigma_2$ is defined only if Σ_2 is a subset of Σ_1.

[89] From Pollard and Sag (1994, p. 327).

(73) a. One of her$_i$ students approached [every teacher]$_i$.
b. The picture of himself$_i$ in his office delighted [each dictator]$_i$.
c. [Each man]$_i$ talked to a friend of his$_i$.

The principle that we need for quantifiers that bind variables is given below.[90]

(74) Quantifier Binding Principle
Given a quantifier within a CONT value, every occurrence within that CONT value of the quantifier's index must be captured by that quantifier.

The occurrence of a quantifier in a CONT-value here refers to a quantifier on a QUANTS-list. Capturing an index here means that the index either appears in RESTR-set of the quantifier, or in another quantifier on the QUANTS-list to the right, or in the nucleus of the soa to which the QUANTS-list belongs.

2.2.5 Context modeling and information packaging

The features used to model the context are given in figure 2.8. While Pollard and Sag (1994) used a local feature CONTEXT with *context-objects* with the feature BACKGROUND, Ginzburg and Sag (2000) make BACKGRND a feature of *synsem* and CONTEXT a feature of *sign*. The *context-objects* as they are used here introduce three features: C(ONTEXT)-INDICES, SAL(IENT)-UTT(ERANCE), and MAX(IMAL)-QUD(QUESTION UNDER DISCUSSION). How the last two are used will be shown in Chapter 4.1, so I will not give an explanation here. These features will not play a role for my own analysis. The values of C-INDICES indicate the contextual anchors for an utterance, e.g. pointers to speaker, addressee, time of utterance, or location of utterance.
While the CONTENT-values represent the contribution to the truth-conditional meaning, the BACKGROUND-values represent conditions on anchors that correspond to presuppositions or conventional implicatures. Passing on the BACKGROUND-values to the top is handled by a constraint that collects all non-local information. Using a general constraint as given in (75) for collecting non-local information has one big advantage: this way one can do without special constraints

[90] From Pollard and Sag (1994, p. 327).

for SLASH-amalgamation (as presented above), WH-amalgamation, and BACKGROUND-amalgamation.

(75) Non-LOCAL Amalgamation Constraint
For every non-LOCAL feature **F**:

$$\textit{word} \Rightarrow / \begin{bmatrix} \text{SS}|\mathbf{F} & \boxed{\Sigma_1} \cup \ldots \cup \boxed{\Sigma_n} \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\mathbf{F}\ \boxed{\Sigma_1}\end{bmatrix}, \ldots, \begin{bmatrix}\mathbf{F}\ \boxed{\Sigma_n}\end{bmatrix} \right\rangle \end{bmatrix}$$

Note that this constraint must be a default, not only because those constraints which it substitutes were defaults, but also because of the inheritance of the BACKGROUND-values. There are certain cases in which the presuppositions of an embedded clause may not be inherited by the matrix clause. A few such cases are shown below.[91]

(76) a. Pat regrets that Terry is dead.
b. Kim fears that Pat regrets that Terry is dead.
c. Terry is dead.

Only sentence (76a) presupposes the proposition in (76c). For a sentence like (76b) one would have to make sure that *fear* does not pass on the presuppositions of its complement daughter. In such a case one would have to override the Non-LOCAL Amalgamation Constraint, therefore, the latter must be a default.
Note furthermore that although BACKGROUND takes a list of *facts* as its value, one should not take these *facts* to be facts in the real world. As Green (1994) puts it:

(77) "It is nonsensical to think of either linguistics signs or utterances of them as actually limiting the world [. . .] and in general, it is empirically incorrect to treat BACKGROUND propositions as propositions about the objective world in which the sign is used. It is [. . .] trivial to show that the relevant background propositions are not about objective aspects of any world, but rather are propositions about beliefs which the speaker supposes to be mutual."[92]

[91] From Pollard and Sag (1994, p. 333).
[92] Green (1994, p. 5). Note that in Green's HPSG version BACKGROUND takes a list of *propositions* not of *facts*.

The CONTEXT path is also the place where the information structure[93] is incorporated into the HPSG sign. When it comes to information structure, I use the system of Engdahl and Vallduvi (1996). Engdahl and Vallduvi follow Chafe (1976) and Prince (1986) in assuming that a partition of the information structure is needed to "'package' the information conveyed by a sentence so that hearers can easily identify which part of the sentence represents an actual contribution to their information state at the time of utterance, and which part represents material that is already subsumed by this information state."[94] Here we first turn to the technical aspects of their approach. Engdahl and Vallduvi add the feature INFO-STRUCT(URE) to the type *context-objects*. Having the information structure represented under the CONTEXT path means that in principle it is considered to be independent of the truth-conditional dimension of meaning.[95] The feature INFO-STRUCT takes *info-struc-objects* as its value, which themselves introduce the attributes FOCUS

93 In the current work, information structure is understood as a certain part of pragmatics. When it comes to pragmatics we can distinguish (at least) two relevant branches in this respect. Lambrecht (1994) calls these two "discourse pragmatics" and "conversational pragmatics". Lambrecht uses Haliday's term "information structure" synonymously with "discourse pragmatics". Discourse pragmatics deals with the relationship between grammar and discourse in such a way that it asks how the discourse may influence the form of an utterance. Sentence pragmatics on the other hand deals with the interpretation of an utterance in relation to the conversational setting. In other words: conversational pragmatics is concerned with the question of why one and the same sentence form can be used to express several different meanings, whereas discourse pragmatics deals with the reversed question, i.e.: how come the same meaning can be expressed in several different sentence forms? For the present purpose only information structure, i.e. discourse pragmatics, is of interest.

94 Engdahl and Vallduvi (1996, p. 2).

95 Note that this view is not universally shared.

and GROUND.[96] The attribute FOCUS takes as its value items of type *sign* and GROUND takes values of type *ground*. *Ground* introduces the two attributes LINK and TAIL, which again take values of type *sign*. The feature matrix below summarizes the types for context modeling.

$$(78)\quad \begin{bmatrix} \textit{sign} & \\ \text{SS} & \begin{bmatrix}\text{BACKGRND} & \textit{set (facts)}\\ \ldots & \end{bmatrix} \\ \text{CONTEXT} & \begin{bmatrix} \text{C-INDICES} & \textit{c-inds} \\ \text{INFO-STRUC} & \begin{bmatrix} \text{FOCUS} & \textit{sign} \\ \text{GROUND} & \begin{bmatrix}\text{LINK} & \textit{sign}\\ \text{TAIL} & \textit{sign}\end{bmatrix}\end{bmatrix}\end{bmatrix}\end{bmatrix}$$

Another addition is made to the phonological strings under PHON. They get the attribute ACCENT. If the accent is not *u(ninstantiated)*, it can either be an A-accent or a B-accent. These accents correspond to the accents proposed in Jackendoff (1972).[97]

The idea behind dividing the sentence into focus and ground is to have “a part that anchors the sentence to the previous discourse or the hearer’s ‘mental world’ and

[96] In Steedman (1991, 2000), which offers another influential view on information structure, we find Vallduvi’s (1992) focus-ground distinction as the theme-rheme distinction. The theme is the part that establishes the connection to the discourse and corresponds to the ground. The rheme is the informative part and corresponds to the focus. Steedman uses a focus-background distinction within each theme and rheme. Focus in this respect is a contrastive or otherwise highlighted element. Background is the opposite. Steedman’s theme-focus corresponds to Engdahl and Vallduvi’s (1996) link. The theme background corresponds to the tail in Engdahl and Vallduvi (1996). The following example shows Steedman’s set-up.

(i) A: I know that Mary envies the man who wrote the musical. But who does she admire?
B:

Mary	admires	the woman who	directed	the musical
THEME		RHEME		
BACKGROUND	FOCUS	BACKGROUND	FOCUS	BACKGROUND

Since *admires* contrasts with *envies*, it is the focus within the theme. The focus in the rheme is *directed* because it contrast with *wrote*. The remaining elements are background, where *Mary* is the theme background and *the woman who* and *the musical* are the rheme background.

[97] A-accents are simplex high pitch accents(H*). B-accents are complex fall-rise pitch accents (L+H*) in the notation of Pierrehumbert (1980).

an informative part that makes some contribution to the discourse or the hearer's 'mental world' ".[98] Engdahl and Vallduvi (1996) define the focus as "the actual information or update potential of a sentence S, i.e. the only contribution that (according to the speaker) S makes to the information state of the hearer at the time of utterance".[99] The ground on the other hand is "subsumed by the input information state and acts as an usher for the focus: it guarantees the appropriate attachment or anchoring of the information in the hearer's information state."[100] This is in accordance with the definition of topic that we find in other works like e.g. Krifka (2007), which is given below.[101]

(79) The topic constituent identifies the entity or set of entities under which the information expressed in the comment constituent should be stored in the CG [common ground][102] content.

Within the ground, the link indicates where to update information and the tail indicates how to do so. Focus and link come about by the following two principles.[103]

(80) $\begin{bmatrix} \textit{word} & \\ \text{PHON}|\text{ACCENT} & A \end{bmatrix} \Rightarrow \boxed{1}\begin{bmatrix}\text{INFO-STRUCT}|\text{FOCUS} & \boxed{1}\end{bmatrix}$

(81) $\begin{bmatrix} \textit{word} & \\ \text{PHON}|\text{ACCENT} & B \end{bmatrix} \Rightarrow \boxed{1}\begin{bmatrix}\text{INFO-STRUCT}|\text{GROUND}|\text{LINK} & \boxed{1}\end{bmatrix}$

The principle in (80) ensures that a word that is marked by an A-accent instantiates a focus value, i.e. is focused. The principle in (81) ensures that a word that carries a B-accent instantiates a link. The information structure of a word that does not show an accent is unspecified. This is expressed in the principle below.[104]

[98] Engdahl and Vallduvi (1996, p. 3).
[99] Engdahl and Vallduvi (1996, p. 3).
[100] Engdahl and Vallduvi (1996, p. 3).
[101] From Krifka (2007, p. 29).
[102] Krifka distinuishes between *Common Ground management* and *Common Ground content*. Those aspects of information structure that have truth-conditional impact are associated with CG content, and those which relate to the pragmatic use of expressions with CG management. See Krifka (2007, p. 5).
[103] Note that these principles are reformulated variants of Engdahl and Vallduvi's original ones.
[104] Note that this principle is a reformulated variant of Engdahl and Vallduvi's original one.

(82) $\begin{bmatrix} \textit{word} \\ \text{PHON}|\text{ACCENT} \;\; u \end{bmatrix} \Rightarrow \begin{bmatrix} \text{INFO-STRUCT} \; [\;] \end{bmatrix}$

The contribution to the information structure that a word with an uninstantiated accent makes can only be determined by its combination with other signs. Engdahl and Vallduvi (1996) propose two principles that handle the inheritance and projection of INFO-STRUCT-values. Informally they read as follows:

(83) If a daughter's INFO-STRUCT is instantiated, then the mother inherits this instantiation.

(84) If the most oblique daughter's FOCUS is instantiated, then the focus of the mother is the sign itself.

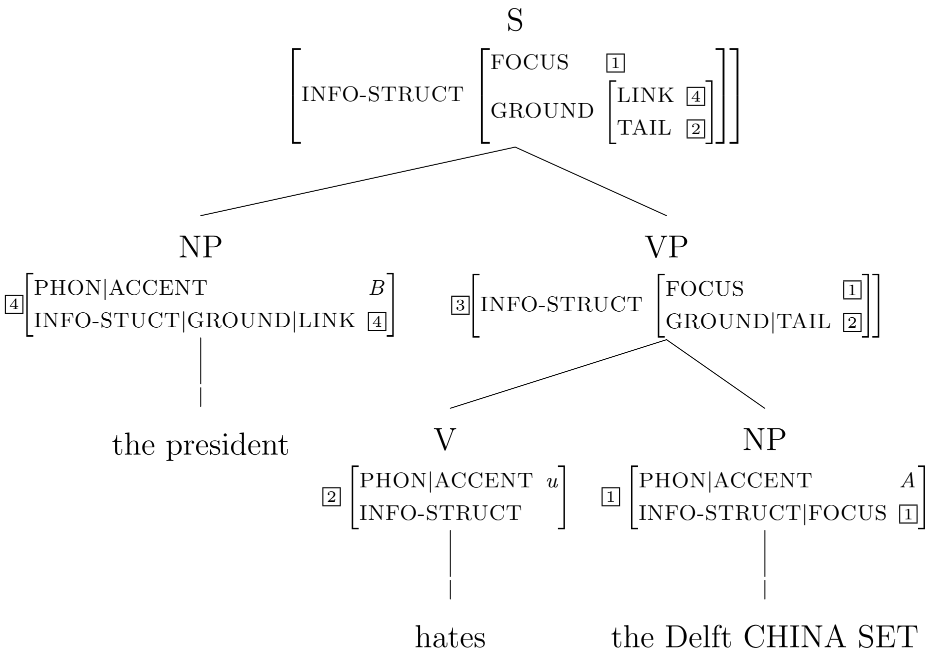
While the first principle ensures that the mother shows the FOCUS-, TAIL-, and GROUND-values of its daughters, the second principle makes sure that a sentence with a focused constituent at the right periphery can get a wide focus reading.[105] The latter is shown in the example below, where bold face indicates B-accent and capital letters A-accent.

(85) a. The **president** hates the Delft CHINA SET.
b. The **president** hates [$_{focus}$ the Delft CHINA SET].
c. The **president** [$_{focus}$ hates the Delft CHINA SET].

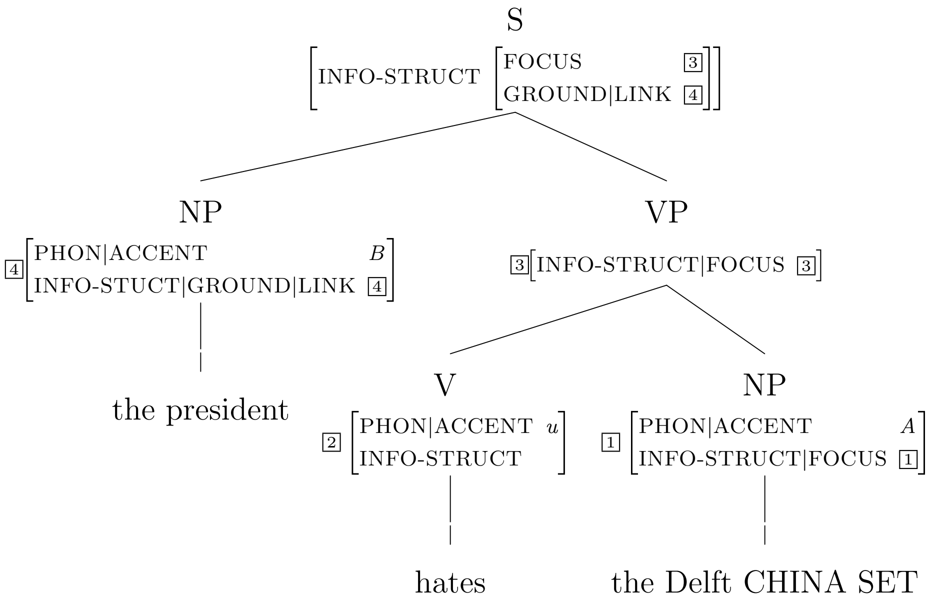
For a sentence like (85a) we can get two readings. The reading in (85b) is the narrow focus reading with the object noun phrase in focus. The reading in (85c) gives the wide focus reading with the entire VP in focus. We get two readings because the principles on focus instantiation are in competition with each other. Only one may be applied to each daughter. In case a structure meets both conditionals of the two principles, the result is two readings. The two tree structures below show how these two readings come about by different applications of the instantiation principles from above.

[105] These principles are basically the same that other authors use. See e.g. Selkirk (1996).

(86) Narrow focus reading



(87) Wide focus reading



In (86) the B-accent on *the president* makes this NP the link. The NP *the Delft China set* becomes the focus due to its A-accent. The verb lacks any focus, hence its

information structure is uninstantiated. The principle in (83) makes the LINK-value of the subject the LINK-value of the S-node. Furthermore, it makes the FOCUS-value of the object NP the FOCUS-value of the VP and the S-node. The focus projection principle is not used in this interpretation.
In (87) the B-accent on *the president* makes this NP the link again. The NP *the Delft China set* gets a FOCUS-value due to its A-accent. However, this time this FOCUS-value is not passed on because the focus projection principle is applied instead of the inheritance principle. Since the direct object is the most oblique daughter of the VP, the VP itself gets focused.
A third reading in which the entire sentence would be in focus is not available. To achieve this we would need a subject (which is considered the most oblique daughter) with an instantiated focus. Then the S-node could 'put itself into focus'. Yet, since in this example the subject carries a B-accent, it cannot instantiate a focus, but must instantiate a link.

Although Engdahl and Vallduvi (1996) correctly predict the lack of such a reading with the sentence in focus, there is still a problem. As Ericsson (2005) notes, it is not quite clear how *hates* becomes the tail in (86).[106] All that Engdahl and Vallduvi say on this matter is "the unaccented daughter *hates* must be interpreted as instantiating the value of the mother's GROUND|TAIL (since [...] every element in the sentence must contribute to information structure)".[107] It seems like the TAIL-value only comes about because the other two possibilities (a FOCUS- or LINK-value) are linked to ACCENT-values and therefore not available for *hates*. This makes an instantiated TAIL-value the only choice left. However, since this information structure value does not come about by an accent, it does not count as instantiation. Therefore, there is no structure sharing between *hates* and the VP with regard to the TAIL-value.
Another problem that might occur in the system of Engdahl and Vallduvi (1996) is that 'traces' as well as their fillers may contribute to the information structure. This is due to INFO-STRUCT being a local feature. Making INFO-STRUCT a feature of *sign* can solve this problem.[108]

[106] See Ericsson (2005, p. 191).
[107] Engdahl and Vallduvi (1996, p. 13).
[108] See e.g. De Kuthy and Meurers (2003).

Although there are some minor shortcomings in the theory of Engdahl and Vallduvi, the system will serve its current purpose: it offers diacritics to distinguish focus and ground (theme/rheme). Admittedly there are more advanced system theories on focus projection and interpretation implemented in HPSG, like e.g. Webelhuth (2007). Unfortunately, the latter is not entirely compatible with the fragment used here because the semantics are very different. However, a particular analysis of focus projection and interpretation is not needed for the present purpose. Focus projection and interpretation come about the same way in pseudoclefts as in all other sentences. Another question that will not be handled with respect to information structure is how givenness comes about. This means that what it takes for a constituent to be considered given (or old) will not be analyzed. If one wanted to add this, one could use a dialog system and combine it with Schwarzchild's (1999) analysis of givenness and accent placement. In a way Webelhuth (2007) does something like that. Here we are not interested in how any given/non-given marking comes about because this is not specific to pseudoclefts. As mentioned before, all we need is a marker for focus and ground, i.e. rheme and theme.[109] The way this distinction is established in Engdahl and Vallduvi (1996) also covers the given/new-distinction because the ground is considered the given part.

[109] See Engdahl and Vallduvi (1996, p. 3): "The partition of sentences into a focus-ground structure (also known as focus-topic, rheme-theme, new-given) [. . .]."

Chapter 3

Properties of the pseudocleft

This chapter takes a closer look at four aspects of the pseudocleft. The first section deals with the structural properties of the pseudocleft, i.e. it address the question of what grammatical categories and constructions we find in those sentences that are called pseudoclefts. The second section puts together the pieces that are discussed in the first section and shows how they can be 'glued together' semantically. In particular, this means that pseudoclefts will be related to the types of copular structures that were discussed in Chapter 2.1. The third section deals with a certain phenomenon found in (some) pseudoclefts, namely connectivity effects. The fourth section deals with the information structure of pseudoclefts. Reverse pseudoclefts are analyzed in the fifth section before all insights are summarized in the last section.

3.1 The basic inventory

This section addresses the question of what should fall under the term *pseudocleft*. The structure below shows once again the typical structure of a (standard) pseudocleft.

$$\underset{\text{cleft clause}}{\underline{\text{What I bought for my professor}}} + \underset{\text{copula}}{\underline{\text{was}}} + \underset{\text{post-copula constituent}}{\underline{\text{this muffin}}}.$$

Figure 3.1: The standard pseudocleft structure

The apparent characteristics of the pseudocleft are a subject clause that resembles a free (or head-less) relative clause and a constituent that (usually) corresponds to the wh-pronoun of the subject clause and which is located in post-copular position. In the following we will take a closer look at each of these pieces, but first we have to sketch the outlines of the set of sentences that are to be considered.

3.1.1 What we call a pseudocleft is what we call a pseudocleft

Within the study of pseudoclefts there is a controversy about what should actually be considered a pseudocleft. As Higgins puts it: "Unfortunately, the domain of application of the term is not completely clear, and there is much confusion in the literature."[1] We can basically distinguish three kinds of definition: a restricted one, a broader one, and an extended definition. This is rooted in the following observation. For sentences that follow the pattern *wh-clause + copula + X* we find a large variety of possible wh-constituents.

(88) a. What is missing is a good doctor.
b. What Bill cooks is the food for the dog.
c. Whoever knows my name is a friend of mine.
d. Who you should meet is the Russian professor.
e. Whatever he did in his former life is none of my concern.
f. How he settled the matter was by cutting the thing into pieces.
g. When you leave is the time I should also leave.
h. Why I did it is none of your business.

What these sentences have in common is obviously that they all start out with a wh-word and that they are not questions. However, it has sometimes been claimed that pseudoclefts only allow for *what* and *who* as initial wh-words. This is the restricted definition of *pseudocleft*. Quirk and Greenbaum (1973) relativize this by saying that wh-clauses which are introduced by *who*, *where*, or *when* "do not easily enter into the pseudocleft sentence construction".[2] This restriction is extended to

[1] Higgins (1976, p. 1f).
[2] Quirk and Greenbaum (1973, p. 417).

why and *how* in Declerck (1988). His examples are given below together with his judgments:[3]

(89) a. ??Who I meant was the police chief.
b. ??Where the accident took place is here.
c. ??When the countryside is most beautiful is in autumn.
d. ??Why he did it is lack of money.
e. ??How it should be done is with a gentle touch.

Declerck considers the questionability of these sentences evidence for a ban of wh-words except *what*. However, these judgements could as well be considered evidence against a general restriction like Declerck's. There are indeed speakers who accept such sentences. The broader definition of pseudoclefts allows for wh-words other than *what*. Some more examples from Ross (2000) that support this definition are given below.

(90) a. Where there were no tornadoes reported was Boston.
b. Where there were no tornadoes reported was in Boston.
c. When this report was due was January.
d. When this report was due was in January.
e. ?How long he worked in Reading was for six weeks.

Declerck not only proposes a restriction on the choice of wh-words, but he also claims that there is a way around it:

(91) "Some people might object to my calling [*The way he spoke to me was flatteringly*] a WH-cleft because its 'WH-clause' does not begin with a true WH-word. However, I consider it an accidental gap in the potentialities of *how* that the WH-cleft *How he spoke to me was flatteringly* is unacceptable. The fact that we normally use *the way* instead of *how* is no reason for claiming that the structure is not a WH-cleft. (There is a similar problem in connection with *who*, which must normally be replaced by *the one who* in a WH-cleft.)"[4]

[3] Declerck (1988, p. 41).
[4] Declerck (1988, p. 71, footnote 8).

One consequence of a view like Declerck's is of course that one has to posit this possibility for all wh-words apart from *what*. Thus, one would have to allow something like *the place/the location* for *where*, *the point of time* for *when*, and *the reason* for *why*. In the end one would have to postulate that there are as many possible pseudocleft initial 'wh-phrases' as there are synonyms for place, reason, person, and point of time. If one also allowed for a substitute for *what*, one might even have to take synonyms for *thing* into consideration. This would stretch the concept of pseudoclefts to any structure consisting of: a synonym of the aforementioned nouns, followed by a restrictive relative clause, followed by the copula, followed by a noun corresponding to that noun. Several authors took this very approach for their accounts of pseudoclefts.[5] They related pseudoclefts to definite descriptions, e.g. Geluykens (1988), Sornicola (1988), and Percus (1997), while others like Hankamer (1974) and Akmajian (1970) explicitly argue against this position. Boskovic (1997) deliberately ignores such sentences. The extended definition of pseudoclefts allows for head nouns with restricted relative clauses as subjects.
I will follow Higgins, who states that "certain speakers" accept wh-words other than *what* in wh-clefts.[6] Those sentences that fall under the extended definition will be called pseudoclefts with definite description (or DP/NP) subjects.

How pseudoclefts are related to canonical sentences can be seen when the post-copular constituent is 'pushed' into the cleft clause and the copula is dropped. The result is sometimes called the 'declefted/unclefted' counterpart of a pseudocleft. In most cases one can derive a canonical sentence by this substitution, as is shown below for the first examples of (88).

(92) a. A good doctor is missing.
b. The food for the dog Bill cooks.
c. A friend of mine knows my name.
d. The Russian professor you should meet.

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[5] These sentences are sometimes called *th*-clefts, but I will not follow this terminology because this term is also used for a variant of *it*-clefts as mentioned in chapter 1.

[6] Higgins (1973, p. 2). Note that sentences in which the *who* is an object of the cleft clause are a lot better than those in which it is subject.

These sentences might need certain contexts, but they are not ungrammatical. However, this way of declefting sometimes results in ungrammatical sentences and constituents have to be 'moved' to a different position in the sentence. Such a 'movement-based' paraphrase (as well as a grammatical declefted sentence) can be called a 'canonical counterpart' of a pseudocleft, too. Yet, sometimes even that does not work. If one wants to come up with a canonical counterpart in such a case, one has to find a sentence that expresses the same underlying proposition as the pseudocleft, which will be a pseudocleft with a DP or definite description subject. One such case is shown below.

(93) a. What I don't like about Mike is his pants.
  b. *His pants I don't like about Mike.
  c. *I don't like his pants about Mike.
  d. The thing I don't like about Mike is his pants.

Sentence (93b) is the declefted/unclefted variant of (93a) but it is ungrammatical. Putting the clefted constituent in the object position does not render a grammatical sentence either, as shown in (93c). So in this case a paraphrase of (93a) with a DP subject is the pseudocleft's canonical counterpart.

3.1.2 The cleft clause

Another issue about the pseudocleft is the question of what sentence type the subject clause belongs to. Since it makes use of wh-words, it could either be a free or headless relative clause (as in e.g. Lambrecht (2001)) or a wh-question (as in e.g. Ross (2000)). How a more elaborate, i.e formal, analysis of pseudoclefts as questions looks will be shown in Section 3.3.4. Here I will only present some of the structural arguments that are brought up in the literature and which support the analysis of the cleft-clause as a wh-question.

One of the arguments that is brought up is that only interrogatives allow for *what else* and that pseudoclefts allow for this, too, as is shown below.

(94) a. I know what else she cooked.
  b. *I ate what else she cooked.

c. ?What else she is going to cook is spaghetti carbonara.

We see that the interrogative clause embedded under *know* in (94a) allows for a *what else*-sequence, whereas this sequence renders the free relative clause-complement of *ate* in (94b) ungrammatical.[7] With respect to this argument it must be noted that the pseudocleft with *else* like (94c) is usually considered bad, though not ungrammatical in the literature. In contrast to this, all of my informants considered it clearly ungrammatical. Besides, it is possible in certain contexts to have *else* in free relative clauses, too.[8]
Another argument that supports the wh-question analysis is the observation that only non-interrogatives, i.e. free relatives, allow for *whatever* and that *whatever* is also disallowed in pseudoclefts.[9] Examples are given in (95).

(95) a. *I know whatever she cooked.
b. I ate whatever she cooked.
c. *Whatever he is is silly.
d. *Whatever he is looking for is his car.

It should be noted that the judgments on both of the above arguments are not uncontroversial. Schlenker (2003) quotes Percus, who informed him that pseudoclefts with *what else* are bad, while questions with *what else* are fine. He also gives an example of a free relative that allows for *what else*, namely: *I'll eat whatever else you cook for me (... but I won't eat that).* Trotta says about this matter: "The ban on *-ever* compounds [...] in [wh-]clefts is not relevant since wh-clefts always have specific reference and the explicitly indefinite *-ever* form clashes with this meaning."[10] Apart from this it should be noted that in certain contexts it is possible

[7] For an analysis that shows that verbs like *know* really take interrogative complements and not free relatives see e.g. Ginzburg and Sag (2000). They claim that a verb like *know* can subcategorize for a complement clause that is structurally interrogative, but is coerced to express a fact and not a question.

[8] See further down.

[9] This observation supposedly goes back to Faraci (1974). Note that Schlenker (2003, p. 10), who makes use of this observation too, seems to have 'starred' the right examples (at least in my version of his paper), but gives a contradictory explanation for them.

[10] Trotta (2000, p. 167).

to have *whatever* in pseudoclefts, too.[11]

Another similarity between pseudoclefts and wh-interrogatives is that they both supposedly allow multiple wh-phrases as in (96a,b). This is supposedly not allowed in free relative clauses as shown in (96c).

(96) a. ?**Who** ordered **what** was Tom ordered a beer and Jim a watermelon flip.[12]
b. ?**What** John gave **to whom** was a book to Mary and a CD to Sue.[13]
c. *I looked at **what** and **who(m)** she pointed at.

The judgments are taken from Yoo (2003) or in accordance with what she says with respect to (96c). However, native speakers that I consulted judged the first two sentences ungrammatical and the last one questionable.[14] Besides, there are other authors like e.g. Halvorsen who clearly deny that multiple wh-phrases are allowed in pseudoclefts.[15] Others like Trotta claim that multiple wh-phrases are also allowed in free relative clauses as in (97).[16]

(97) a. I will ride this skateboard **when**, **where**, and **however** I feel like it.
b. He moves through Harlem, therefore, like an occupying soldier in a bitterly hostile country; which is precisely **what**, and **where**, he is, and is the reason he walks in twos and threes.

Although these examples are grammatical, they cannot really count as multiple wh-phrases because here we are dealing with a conjunction of wh-phrases.

[11] According to Carl Pollard (p.c.) it should work with the 'free choice construction' as shown in footnote 19.

[12] From Den Dikken et al. (2000).

[13] From Ross (1997).

[14] I must admit though that the German example from Den Dikken et al. (2000) sounds far better to me than the English examples. The example is:

(i) a. Wer hier wem geholfen hat war die Hilde dem Heinz.
b. 'who helped whom was the-*nom* Hilde the-*dat* Heinz'

Yet, I do not entirely agree with their claim that the order of the wh-words could be changed.

[15] Halvorsen (1978, p. 32).

[16] From Trotta (2000, p. 142).

When it comes to topicalization, pseudoclefts and wh-questions are also said to behave alike. Free relatives again behave differently as shown below.[17]

(98) a. ?To Mary, what I wouldn't give is any wine.
b. ?To Mary, what will you give?
c. *To Mary, what I gave caused a scandal.
d. ??What to Mary I wouldn't give is any wine.
e. *What to Mary will you give?
f. To John, what I did was smash him in the face.

While topicalization out of wh-questions and pseudoclefts is permitted, as shown in (98a,b), it is not possible with the free relative in (98c). Furthermore, Den Dikken et al. (2000) claim that the topicalized element can appear on either side of the wh-constituent in pseudoclefts as in (98d), where it follows the wh-constituent, but not in questions as in (98e). As was the case with the judgments on the first two similarities, the latter judgments are clearly not uncontroversial, either.
Another similarity between wh-questions and pseudoclefts is mentioned by Faraci (1971). It concerns the distribution of *exactly* and *precisely*. These words, it is claimed, can occur after the introductory word of embedded indirect questions as in (99a), but they cannot occur in this position in free relative clauses as in (99b).

(99) a. John wants to know when, precisely, the game will be over.
b. *John wants to leave when, precisely, the game is over.

However, the correctness of this claim was called into question among others by Halvorsen, who gives the following example.[18]

(100) a. What, exactly, John is doing is washing himself.
b. ?What, precisely, John is doing is washing himself.
c. ?What, exactly, John needs is a wife to look after him.

Although there is no embedded question involved in (100), the examples seem to be correct. This casts some doubt on Faraci's claim.

[17] The first five examples are taken from Yoo (2003). The last one is from Carl Pollard (p.c.).
[18] Halvorsen (1978, p. 32).

At this point we should take a look at the arguments of the other side. Apart from the questionable status of the grammaticality judgments for some of the examples above, there are also some clear differences between pseudoclefts and wh-questions that call into question the interpretation as an interrogative structure.
One difference between wh-question and pseudoclefts is that wh-questions allow for the entire set of wh-expressions, while certain wh-expressions are not allowed in specificational pseudoclefts.

(101) a. *Which record Mike found was that one.
b. *Whose record Mike borrowed was George.
c. *How many books Kim read was five.
d. *How much Sue weighs is 130 pounds.

This seems closely related to Delahunty's solution from above. Delahunty could claim that the sentence *How many books Kim read was five* makes as good a pseudocleft as *The number of books Kim read was five.* But this kind of argument does not help here since *The number of books Kim read was five* does not constitute a good question. It seems that in general pseudoclefts, in contrast to wh-questions, do not allow for wh-determiners.[19]
Another dissimilarity between pseudoclefts and wh-questions is their pied-piping behavior as shown below.

(102) a. *With whom he went to the movie was with Jane.
b. *About what he is thinking is about his new movie.
c. To whom did he introduce Jane?
d. About which woman are they speaking?

While the questions (102c,d) allow for pied-piping, the pseudoclefts (102a,b) do not. If wh-questions and pseudoclefts were based on the same construction type, we

[19] A special case of wh-determiners in free relatives is the so called 'free choice construction':

(i) a. I'll use whichever edition I can get hold of.
b. He appears to have lost whatever interest he ever had in it.

See (Huddleston and Pullum (2002, p. 1074–1076)).

would not expect such a difference.[20]
Another difference between pseudoclefts and interrogatives that Trotta (2000) brings up is that pseudoclefts do not allow for *whether* and they do not allow for interrogative word order.

(103) a. What he had was strange.
b. *Whether he was angry was strange.
c. *What do they want is a better salary.

If the cleft clauses were 'real' questions, this would be rather unexpected because *whether* is a typical question complementizer and *do*-support is a typical question phenomenon. Another difference concerns predeterminer distribution. Trotta claims that pseudoclefts in contrast to questions allow for predeterminers, as shown below.

(104) a. Twice what they offered is/would be a good salary.
b. He was persuasive, and the salary was twice what I had been getting.

In this respect it must be mentioned that Trotta did not find (104a) in his corpus, but only a reversed version as in (104b). This weakens his argument, of course.
Another kind of evidence for the assumption that the cleft clause is not a question comes from German. Consider the examples below.

(105) a. *Mike fragte was Maria ja schon immer gemacht hat.
Mike asked what Maria yes already always done has

[20] With respect to pied-piping in English it should also be mentioned that sentences like those in (i) are not counter-examples for the ban on pied-piping in free relative clauses, as has sometimes been claimed. The following examples are taken from Bresnan and Grimshaw (1978, p. 344).

(i) a. I'll work on whatever problems John assigns.
b. I'll work on whatever problems John works on.

(ii) a. I'll work on whatever problems that John assigns.
b. I'll work on whatever problems that John works on.

The examples in (i) are not a case of pied-piped propositions, but rather, as is shown in (ii), instances of NPs with free choice *whatever* that are modified by bound relative clauses. This means the free relative here functions like a head noun for a headed relative clause.

b. Was Maria ja schon immer gemacht hat ist laut geschrien.
what Maria yes already always done has is loud cry
'Maria has always cried loud.'

(106) a. Mike fragt was Maria denn gerade macht.
Mike asks what Maria prtcl presently does
'Mike asks what Maria is doing.'

b. *Mike ignoriert was Maria denn gerade macht.
Mike ignores what Maria prtcl presently does

c. *Was Maria denn gerade macht ist schlafen/uninteressant.
what Maria prtcl presently does is sleep/uninteresting

The examples in (105) show that in German the particle *ja* cannot occur in questions, whereas it can be used in the cleft clause of pseudoclefts. This supports the assumption that the cleft clause of the pseudocleft is not an interrogative clause (in German). The examples in (106) show that the particle *denn* can only appear in questions. It cannot appear in free relative clauses and it cannot appear in the cleft clause of pseudoclefts. Again, this is evidence for the non-interrogative status of the cleft clause.
Further evidence from other languages that goes against the assumption that the cleft-clause can be a question is given in Caponigro and Heller (2005). They show that in languages which have different forms for free relative clauses and questions[21], subject clauses must take the form of free relative clauses.

All in all we must say that there were not more or stronger arguments presented for the assumption that the cleft clause of a pseudocleft is a free relative than for the assumption that it is a wh-question. However, following my informants I must say that the reasoning of the latter is based on shaky judgments. Most tests that are supposed to support the 'interrogative-side' work with relative clauses, too, provided the right context is given. This makes them basically useless for distinguishing the two. The 'free relative-side' on the other hand can offer some arguments that even their opponents concede. The pied-piping behavior of the cleft clauses and the impossibility of question introducing words like *whether* clearly support the 'free

[21] Hebrew, Wolof, Hungarian, Macedonia.

relative side'. The picture will be completed in Section 3.3.4, when the post-copular constituents are further compared to answers.

It should also be mentioned that some authors like e.g. Halvorsen (1978) adopt a third analysis, which is also what is also adopted in standard grammars of English like Huddleston and Pullum (2002). Halvorsen points out that there are three constructions of the form *wh-clause + be + NP*. He distinguishes "pseudo-clefts" (what here are called specificational pseudoclefts), predicational copular sentences (what here are called predicational pseudoclefts) and copular sentences with indirect questions as subject, like *What pharaoh built the pyramids is a mystery*. Taking an approach that considers the cleft clause of pseudoclefts to be a free relative clause, one would in fact have to make this distinction. Since there are certain expressions that take interrogative clauses as arguments, there must also be cases in which these arguments are realized as subjects. *Mystery* might be such a predicate. *(Un)known*, as in *What Mike had for dinner is unknown*, might be another one. Since these subject clauses are interrogative clauses, they can of course show all the properties which they show elsewhere. This means it is no surprise that they e.g. allow for *what else*: *What else Mike had for dinner is unknown.* However, these predicates can appear with plain noun phrases, too, and because noun phrases can usually be substituted for free relative clauses, a sentence like *What Mike had for dinner is unknown* can have two readings; one in which the subject clause is a free relative clause and one in which it is an interrogative clause. Yet, the two readings are in no way dependent on the kind of copular structure. Both are straightforwardly predicative, since *unknown* can only be interpreted as a predicate here. How to distinguish predicative readings from other readings will be shown after the following section. First, we will take a brief look at what we find in post-copular position in pseudoclefts.

3.1.3 The post-copular constituent

When it comes to the post-copula constituent, we find that the whole range of available categories is allowed in this position. Some examples are given below.

(107) a. VP: Well, what Wisconsin did was answer the question that my magazine asked, "Can Jesse win?"[22]

b. VP: What he then did was cut his finger.[23]

c. NP: What I am opposed to is detente and all this dancing around.[24]

d. NP(ref.): What Sue did not see was the Eiffel Tower.

e. NP: When they're coming for the box is Friday.[25]

f. AP: What I haven't been in years is drunk.

g. ADV: ?How she ran home was quickly; very quickly to be exact.

h. S(object gap): What Steven heard about Mike was that he sold all his records.

i. S(subject gap): What proves that you are wrong is that they weren't even there.[26]

j. S(non-finite): What he wants is for us to get out of here.[27]

k. S(interrog): What puzzles me is why they came up with this lie in the first place.

The most straightforward case is an NP in post-copular position as in (107c), but in contrast to *it*-clefts we also find VPs as in (107a,b).[28] Adverbs and APs can appear in post-copular position, too, though the acceptance of adverbs seems to be more context-dependent, and sentences with adverbs never show the standard wh-pronoun *what*. As the last four examples show, a sentence in post-copula position can correspond to an object or a subject in the cleft clause, and it can be finite as in (107f,g) or non-finite as in (107h). Even interrogative clauses are possible as (107k)

[22] From Hedberg (1988, p. 6).

[23] From Yoo (2003, p. 1).

[24] From Hedberg (1988, p. 6).

[25] From Hankamer (1974, p. 229).

[26] From Higgins (1979, p. 2), after Yoo (2003, p. 1).

[27] From Gundel (1977, p. 554).

[28] Compare this to the *it*-clefts:

(i) *It was answer the question that my magazine asked that Wisconsin did.

(ii) *It was cut a finger that he did then.

shows. The acceptance of particles in post-copula position seems to be problematic, considering the examples in (108).

(108) a. What he pulled his boots was on, not off.
b. What he pushed the lever was up, not down.
c. ?What this stock turns isn't under, it's over.
d. ?What he took the project was on, not over.
e. *What I called him on the phone was up.
f. *What they took the country was over.

As the examples show, a particle can usually only appear after the copula if it is used contrastively to another particle. While we can find a contrastive pair like *pull on* and *pull off*, no such pairs exists for *call up*.
An interesting phenomenon can be found with non-finite clauses after the copula. Given an appropriate setting as in (109), we find putative type mismatches between the post-copular constituent and the gap in the cleft clause.[29]

(109) a. What Steven is most eager **for** is **for** Mike to sell his Beatles records.
b. *What Steven is most eager **for** is Mike to sell his Beatles records.
c. *What Steven is most eager is **for** Mike to sell his Beatles records.
d. ?What Steven is most eager **for** is **for** Mike's record sale.
e. What Steven is most eager **for** is Mike's record sale.

If there were a one-to-one correspondence between the *what* in (109a) and the post-copular item, the complement of *eager* would be something like *for for Mike to sell his Beatles records*. Yet, if one *for* is left out to achieve a one to one correspondence, the result is ungrammatical as (109b,c) show. Comparing the sentences in (109a–c) shows that we must have both: a *for* in the cleft clause and a *for* in the post-copula constituent. Furthermore, taking the last two examples into account, we

[29] Here I follow Delahunty's grammaticality judgments (Delahunty (1984, p. 86)). Similar effects can be found in *it*-clefts.

(i) It is for Mike to sell his Beatles records that Steven is most eager for.

see that the post-copula constituent may either be a sentence as in (109a), a PP as in (109d), or an NP as in (109e). This is unexpected, as one should think that the predicate (*eager*) in the cleft clause subcategorizes for the same item in all cases (be it a PP or a complementizer). Schlenker (2003) makes a similar observation, which is shown in the following example.[30]

(110) a. What he$_i$ fought against was against John$_{*i,k}$'s motherland.

b. What he$_i$ fought against was John$_{*i,k}$'s motherland.

c. *?The country I fought against was against Russia.

d. The country I fought against was Russia.

For some reason it seems like the repetition of the preposition is blocked with a DP as subject as in (110c). Whereas, when the subject is a CP, the preposition may be repeated as in (110a). Schlenker himself has no explanation for this. This observation is especially interesting since it is one of the few cases where we see a difference between wh-pseudoclefts and pseudoclefts with DP-subjects.

With respect to PPs, Delin and Oberlander (2005) even go so far as to claim that they are not allowed as clefted constituents in general. Although they can support their claim by Delin's (1989) analysis of 162 pseudoclefts, this view is not held by many. The unacceptability is ascribed to syntax, but unfortunately Delin and Oberlander do not elaborate on this.[31]

Collins (1991), the most thorough corpus study of cleft structures, offers some figures on this matter. Figure 3.2 shows what Collins found as clefted constituent in pseudoclefts and how often each item occurred.[32]

We see in figure 3.2 that finite clauses are the most frequent clefted constituents in pseudoclefts. While we also find a lot of NPs and non-finite clauses in that position, PPs are indeed very rare, though not impossible. The different functions referred to

30 From Schlenker (2003, p. 15, footnote 16). Schlenker's judgments.

31 See Delin and Oberlander (2005, p. 10).

32 From Collins (1991, p. 58). "Comp. prep." means "complement of preposition". "Comp. subj." means "complement of subject" and refers to cases where the clefted constituent is the predicate in a copular construction or small clause. "Comp. verb" means "complement of verb" and refers to cases where the clefted constituent is a (clausal) complement of a verb.

Function / Class	Subject	Direct object	Adjunct	Comp. prep.	Comp. subject	Comp. verb	Total
finite cl.	87	92	19	6	4		208 (44.8%)
NP	55	73	4	20	2		154 (33.2%)
non-fin. cl.	10	8		1		78	97 (20.9%)
PP			4			1	5 (1.1%)
Total	152 (32.8%)	173 (37.3%)	27 (5.8%)	27 (5.8%)	6 (1.3%)	79 (17%)	464 (100%)

Figure 3.2: Class and function of clefted constituent

in the table are given in the examples below. They are ordered by the frequency of their occurrence.[33]

(111) a. What the great masses or ordinary people in the world desire most of all is the certain prospect of peace for as long ahead as possible.

b. but what is important and interesting is the political movement of our times

c. what they did was to collect opinions and voices

d. What we can and do object to, however carefully 'landscaped' and however beautifully designed this power station may be, is the fact that we shall be able to see it from all parts of the Solent.

Analyzing the category (i.e. class in Collins terminology) of the reversed pseudocleft's clefted constituent is rather uninteresting because in 99% of all cases it is an NP. Usually it is either the demonstrative *this* or *that*.[34]

Collins (1991) also compares the syntactic functions of the clefted constituents among the three major cleft types. Figure 3.3 shows the syntactic function of the three types in comparison.[35]

[33] From Collins (1991, p. 62). Note that the corpus annotation is left out.

[34] Note that Collins also included headed reversed pseudoclefts (i.e. sentences like *This house is what you should buy*), which means that not necessarily the entire 99% use *this* or *that*. However, Oberlander and Delin (1996) also analyzed reversed pseudoclefts and also concentrated on the cases with the demonstratives because they are the most frequent reversed pseudoclefts.

[35] From Collins (1991, p. 65).

it-clefts	pseudoclefts	reversed pseudoclefts
subject (38.3%)	object (37.3%)	object (38.3%)
adjunct (36.7%)	subject (32.8%)	adjunct (34.4%)
object (6.8%)	adjunct (5.8%)	subject (14.2%)

Figure 3.3: Class and function of clefted constituent

We see that pseudoclefts and reversed pseudoclefts favor having objects as clefted constituents. This clearly distinguishes them from *it*-clefts, which prefer subjects in that position. The second most frequent function of clefted constituents found in pseudoclefts is subject, while for reversed pseudoclefts it is adjunct. In this respect the reversed pseudocleft resembles the *it*-cleft more than the pseudocleft.

3.2 Predicational or specificational or neither

This section deals with the question of how the two pieces of the pseudocleft that were looked at in the two preceding sections fit together. It will be analyzed in which cases their interaction must be considered a predicational sentence and when it must be considered a specificational sentence. It will also be argued that some sentences that fall into the frame of pseudoclefts must be considered equative structures.

3.2.1 Truth conditions and beyond

Going back to the beginning of this chapter, we see that apart from the status of the wh-words that are questionable to some speakers, there is another division among pseudoclefts.

(112) a. What Mike bought is expensive.

b. What Mike bought is a red car.

Following Mikkelsen's findings about the possible semantic functions of the post-copular constituents, we see the following in (112). The most salient reading for sentence (112a) is a predicative reading in which the post-copular AP is of type $\langle e, t\rangle$. In this case the subject clause cannot be a functor that takes such an argument. Equating the cleft clause with the post-copular AP, i.e. an equative reading, would only work if the extension of both predicates happened to be the same. However, the usage of such an equative reading is heavily contextually constrained. Sentence (112b) on the other hand allows for two equally likely readings. The quantified NP in post-copular position could be interpreted as an argument or a functor, which determines whether we are dealing with a predicative or a specificational structure. A theoretically possible third reading as an equative is as unlikely for (112b) as for (112a).

How about the specificational reading? Many find it difficult to get a predicational or specificational reading if a sentence allows for both and no context is given. Higgins (1973) claimed that the insertion of *also* in certain positions can help to favor a predicational or specificational reading in these cases. Consider the following examples.

(113) a. What Mike buys is *also* a muffin.
b. What Mike *also* buys is a muffin.

For (113a) one would prefer a predicational reading and for (113b) a specificational one. Although this seems to work well for sentences in isolation, the insertion of *also* does not necessarily disambiguate the sentences truth-conditionally. Sentence (113a) still allows for two readings as Halvorsen points out. He gives examples along the lines of the sentences below.[36]

(114) a. What Martin buys is a muffin, and what Mike buys is *also* a muffin.
b. What Mike *also* buys, in addition to a banana, is a muffin.

This means to disambiguate (113a) *also* needs to focus *a muffin.* For (113b) the insertion of *also* works better. Here the specificational reading is really the only available reading. Thus, the sentence in (113b) could mean something like the one in (114b).
Gundel (1977) uses another 'test'. She adds *a certain* to ambiguous sentences to enforce a specificational reading, and she changes the copula to *used to be* to enforce a predicational reading.[37] This works quite well for NPs in post-copular positions, as shown below.

[36] Halvorsen (1978, p. 76, footnote 18).
[37] *Attributive* and *identifying* in her terms.

(115) a. What she played last was a Broadway hit. SPEC/PRED

b. What she played last was a certain Broadway hit. SPEC

c. What she played last used to be a Broadway hit. PRED

d. *What she played last used to be a certain Broadway hit.

However, since it is difficult to tell the difference between a specificational and predicational pseudocleft by their mere surface structure, we should take a look at their logical structure. In (116) we see a simplified (i.e. without tense and modality) logical structure of a sentence that is ambiguous between a specificational and a predicational interpretation. The formulas are given in the form that Halvorsen (1978) uses.[38] Underneath them we see the main conventional implicatures that Halvorsen associated with them.[39]

(116) What Mike buys is a muffin.

a. $\exists x\,[\text{buy}\,(m, \lambda P.P(x)) \wedge \exists y\,[\text{muffin}\,(y) \wedge y = x]]$ PRED-LOGICAL FORM

$\exists x\,[\text{buy}\,(m, \lambda P.P(x)) \wedge \forall y\,[\text{buy}\,(m, \lambda P.P\,(y)) \rightarrow y = x]]$ CONV. IMPL.

b. $\exists x\,[\text{muffin}\,(x) \wedge \exists Q\,[\text{buy}\,(m, Q) \wedge [\lambda P.P\,(x) = Q]]]$ SPEC-LOGICAL FORM

$\exists x\,[\text{buy}\,(m, x) \wedge \forall Q\,[\text{buy}\,(m, Q) \rightarrow [\lambda P.P\,(x) = Q]]]$ CONV. IMPL.

Starting with the similarities, the comparison of the two readings shows that their (main) conventional implicatures are the same. Both show an implicature of

[38] A simplified version, which does not treat the complement of transitive verbs as quantifiers, would look like this:

(i) What Mike buys is a muffin.

$\exists x\,[\text{buy}\,(m, x) \wedge \exists y\,[\text{muffin}\,(y) \wedge y = x]]$ PRED-LOGICAL FORM

$\exists x\,[\text{buy}\,(m, x) \wedge \forall y\,[\text{buy}\,(m, y) \rightarrow y = x]]$ CONVENTIONAL IMPLICATURE

$\exists x\,[\text{muffin}\,(x) \wedge \exists y\,[\text{buy}\,(m, y) \wedge x = y]]$ SPEC-LOGICAL FORM

$\exists x\,[\text{buy}\,(m, x) \wedge \forall y\,[\text{buy}\,(m, y) \rightarrow [x = y]]]$ CONVENTIONAL IMPLICATURE

[39] Note that there are two misleading typos in Halvorsen's otherwise excellent work. Once he uses a universal quantifier and an entailment in the second conjunct in the logical form of the predicational pseudocleft. Another time he uses an existential quantifier in the second conjunct of the conventional implicature of a predicational pseudocleft (see Halvorsen (1978, p. 78, 84)). This is not in accordance with what he does elsewhere.

existence, which is expressed in the left conjunct of the implicature line, and an exhaustiveness implicature. The exhaustiveness implicature is expressed as a uniqueness implicature in the right conjunct of the implicature formula. This means both sentences conventionally implicate that there is a thing that Mike buys and that there is only one such thing. Before we turn to the implicatures in more detail, we can record the fact that the truth conditions of the two readings are in fact the same. This becomes even more apparent if we look at the simplified terms in footnote 38. The different formulas in (116) are just a result of Halvorsen's semantic translation rules.[40] Put differently: although a pseudocleft like *what Mike buys is a muffin* can answer two different questions, the answer is in both cases truthconditionally equivalent.

Turning back to the implicatures in (116) we can say the following. The line with the logical form tells us that there is a muffin and that the thing that Mike buys is that muffin. The line with the conventional implicatures tells us that there is an implicature of existence, which is expressed in the left conjunct of the formula, and an exhautiveness implicature, which is expressed in the left conjunct. The exhaustiveness implicature is expressed as a uniqueness implicature. This means the sentence conventionally implicates that there is a thing that Mike buys and that there is only one such thing. According to Halvorsen the implicatures stem from the free relative clause in subject position.[41] However, this is not the only possible interpretation for

[40] Halvorsen (1978) assumes a predicational and a specificational copula that differ in the type of their subjects. If the subject is interpreted as an individual, the predicational copula is used. If the subject is interpreted as a property of sets, the specificational copula is used (see Halvorsen (1978, p. 71)).

(i) [What John wants] is [a trunnion].
a. $\langle e \rangle\, V\, \langle e \rangle$
b. $\langle s, \langle \langle e, t \rangle, t \rangle \rangle$ V $\langle e \rangle$

This sentence is true under its predicational reading if there is a want-relation between John and some individual which has the property of being a trunnion. This is at the same time the truth condition for the de re specificational reading. Under the de dicto specificational reading the sentence is true if John stands in a want-relation to some property of sets which is identical to the property of all sets containing a trunnion.

[41] See Halvorsen (1978, p. 78) for more examples with free relative clauses.

a free relative clause, as Halvorsen admits:

(117) "It is difficult to decide whether to assign headless relatives like the one in *what John wants is a mammal* an existentially quantified extension expression and a uniqueness implicature, or a universally quantified extension expression and an existential and/or uniqueness implicature.[42]
If the headless relative was assigned a universally quantified extension expression and only an existential implicature, *what John wants is a mammal* should be true, and not in violation of any conventional implicatures if uttered in a situation where John wants Fido, a dog, and Felix, a cat. This [prediction] does not seem to hold. The sentence is in my opinion clearly out of place in the context just described. It is hard to tell whether it is better considered false. If it is inappropriate, but not false, one could assign the headless relative a uniqueness implicature, and the correct prediction concerning the acceptibility of the sentence would result. The sentence would also be predicted to be true but inappropriate if the headless relative is treated as an indefinite noun phrase with a uniqueness implicature [...].
If the sentence should instead be deemed false, none of the hypotheses concerning the meaning of headless relatives that I outlined [...] will be adequate. Consider a slightly different situation: John wants Fido, the dog, and Gliv, the rattlesnake. My feeling is that the sentence *what John wants is a mammal* is inappropriate in a situation like this, but that it is not false. This is in accordance with the predictions following from the meaning I assign to headless relatives in the text. If instead I had used a universally quantified extension expression for the headless relative, the sentence would have been predicted to be false."[43]

The idea that we are dealing with conventional implicatures here and not with presuppositions is not uncontroversial. For instance Horn's (1981) view on the matter is different from Halvorsen's. He claims that a sentence like (116) conventionally implicates (pragmatically presupposes) that someone buys a muffin, that it entails that Mike buys a muffin, and that it suggests that Mike does not buy anything else. This last suggestion is assumed to be a generalized conversational implicature: "a

[42] These would look like this:

(i)	Logical form:	$\lambda P\,[\exists x\,[P\,(x) \wedge \text{want}\,(j,x)]]$
	Conventional implicature:	$\exists x\,[\forall y\,[\text{want}\,(j,y) \rightarrow y = x]]$
(ii)	Logical form:	$\lambda P\,[\forall x\,[\text{want}\,(j,x) \rightarrow P\,(x)]]$
	Conventional implicature:	$\exists x\,[\text{want}\,(j,x) \wedge \forall y\,[\text{want}\,(j,y) \rightarrow x = y]]$

[43] Halvorsen (1978, p. 79, footnote 26).

pragmatic assumption naturally (as opposed to conventionally) arising from focusing or exhaustive listing constructions in the absence of a specific contextual trigger or block".[44] Unfortunately these terms are used slightly differently in every work. This is one of the reasons why it is sometimes not quite clear whether implicatures should be handled with respect to the (truth conditional) semantic set-up or with respect to the information structure. Atlas and Levinson (1981), for instance, call "presupposition" what Halvorsen (1978) calls "conventional implicature". In Horn (1981) conventional implicatures "count as part of the semantics without participating in truth-conditional semantics per se".[45] Horn's aim is to argue against Halvorsen's assumption that exhaustiveness in clefts is expressed via a conventional implicature and to argue against Atlas and Levinson's (1981) assumption that it is an entailment. Horn, following Kuno (1972), assumes that even a simple declarative sentence like *John kissed Mary* can (though need not) be interpreted exhaustively. However, as soon as it is "uttered against the background assumption (or pragmatic presupposition) that someone kissed Mary [...] [exhaustivity] will tend to be 'automatically' (not conventionally) inferred".[46] This 'automatic inferring' is what has been called "generalized conversational implicature" above.

The literature offers a confusing mixture of analyses. So what is left at the core? Most recent authors assume that the exhaustiveness in clefts is an implicature, i.e. it is cancellable by particularisers like *not only*, *mainly*, *especially*, *primarily*.[47] Unfortunately evidence for this assumption is difficult to obtain. As Collins notes, "the types of sentences one may construct to test the exclusiveness implicature elicit variable responses when submitted to the judgment of native speakers"[48]. Consider the examples below.[49]

(118) a. The car needs a new battery, {amongst other things./and it needs a new alternator, too.}

[44] See Horn (1981, p. 132). Horn mostly discusses *it*-clefts, but he assumes that with respect to the matter at issue they show the same implicatures as pseudoclefts.

[45] Horn (1981, p. 125).

[46] Horn (1981, p. 131f).

[47] See Den Dikken (2005, p. 29).

[48] Collins (1991, p. 32).

[49] From Collins (1991, p. 32f).

b. *The car only needs a new battery, {amongst other things/and it needs a new alternator, too.}

c. ?It is a new battery that the car needs, {amongst other things/and it needs a new alternator, too.}

d. ?{What/The thing} the car needs is a new battery, {amongst other things/ and it needs a new alternator, too.}[50]

e. *{All/The only thing} the car needs is a new battery,{amongst other things/and it needs a new alternator, too.}

f. *It is only a new battery that the car needs, {amongst other things/and it needs a needs a new alternator, too.}

Sentences like (118c) and (118d) are rejected by many speakers as Collins notes. To Collins "this rejection can only be attributable to the exclusiveness implicature associated with the cleft and the pseudo-cleft construction".[51]
What is still controversial is whether this exhaustiveness is a property of cleft constructions or a general property of specificational clauses. Pavey (2004), it seems, wants exhaustiveness to be understood as a result of specification.[52] Though it should be noted that in this discussion the definitions of *specificational* differ from the one used here (i.e. the strict semantic one). Den Dikken (2005), for instance, calls clauses *specificationally identifying* when they show exhaustiveness, *it*-cleft paraphrases, and reversibility.[53] However, not showing exhaustiveness does not automatically mean

[50] Note that this sentence is ambiguous between a predicational and a specificational reading. However, taking an unambiguous sentence like (i) we see the same effect.

(i) ?{What/The person} Mike hates is himself, {amongst other things/and Mike hates his mother, too.}

Why this sentence is unambiguous in contrast to (118d) will be explained in Section 3.3.

[51] From Collins (1991, p. 33). Others like e.g. Krifka (2007) would call this *exhaustive focus*. This is a subtype of semantic focus, which "indicates that the focus denotation is the only one that leads to a true proposition, or rather more general: that the focus denotation is the logically strongest that does so", see Krifka (2007, p. 21).

[52] See Pavey (2004, p. 41). Pavey cites Declerck (1988) about this, but she seems to ignore DeClerck's own counterexamples.

[53] Den Dikken (2005, p. 4).

that the sentence is not specificationally identifying.[54] Den Dikken (2005) follows Declerck (1988), who points out that exhaustiveness "can only arise if the variable is uniquely defined"[55]. DeClerck's examples are the following.

(119) a. An example of this is World War II.
b. Typical instances of this are Julius Caesar and Napoleon.
c. Something that I don't understand is how the thief managed to get in.

Here we see that this observation carries over to specificational clauses as defined in chapter (2.1), too. The subject in (119a), for instance, is clearly a predicate and the post-copular constituent is obviously a referential expression. Thus, we could be dealing with a specificational clause in Mikkelsens sense, which does not show exhaustivity.[56] From this we could conclude that when we see exhaustiveness in specificational pseudoclefts and specificational sentences, the exhaustiveness implicature stems from the subject, i.e. from a cleft clause and from a definite expression, respectively. However, note that the examples above might also be predicate inversions and not specificational sentences.[57] For the time being I will assume that exhaustiveness in specificational pseudoclefts is triggered by the cleft clause.

Another issue that is often discussed in this respect is contrastiveness. Pavey (2004) says the following on this matter.

(120) "The function of the specificational sentence is to help determine the correct identity for the variable. [...] In narrowing the identity to the correct interpretation, it follows that others are excluded, and thus the asserted 'value' is inherently contrasted with other potential values. This contrastiveness is

[54] Den Dikken (2005, p. 30): "any copular construction that has an exhaustiveness implicature is specificational; but not every specificational copular sentence necessarily has this exhaustiveness implicature."

[55] Declerck (1988, p. 31).

[56] Note that it could still be a predicate inversion.

[57] Consider the tag-question below which supports the interpretation of (119a) as predicate inversion.

(i) An example of such a woman is Mrs Rice, isn't she.

> related to the presuppositions in specificational sentences: the variable (representing the presupposition of the sentence) contains a 'missing' or underspecified element that nevertheless has a presupposition of existence attached to it. In other words, there is an understanding that a fuller identification of the variable can be made, and that there is potentially more than one candidate."[58]

Put differently, this means that the presupposition, i.e. the cleft clause, evokes a set of potential candidates for the post-copular constituent. The realization of the post-copular constituent constitutes such a candidate and the uniqueness implicature narrows down the potential candidates to one. But not only the presence of contrast is controversial, its source is, too. Declerck (1988) claims that "affirmative specificational sentences always convey a contrastive meaning. This follows from the act of specification itself. The fact that a particular value is assigned to the variable automatically creates a contrast with all the other potential values that have not been selected."[59] This is also the reason why according to Declerck universal determiners and universal pronouns "do not normally appear in focus [=post-copular] position".[60] Consider the examples below.

(121) a. *What we saw was everything/anything.
      b. *What I want is all.

In (121a) we see a universal determiner in post-copular position and in (121b) a universal pronoun. It is understandable that Declerck wants to rule out such a sentence in contexts in which the alternatives are single members of the set that is evoked by the cleft clause. However, in a context in which the alternatives are amounts like *some* or *more* it is conceivable that the sentences in (121) could be used.

Here it must also be mentioned that what Pavey calls *contrastiveness* would resemble what is elsewhere conceived as the function of focus. Consider the definition of focus and focus features from Krifka (2007) given below.[61]

[58] Pavey (2004, p. 38f).
[59] Declerck (1988, p. 24).
[60] Declerck (1988, p. 86).
[61] From Krifka (2007, p. 7f).

(122) Focus indicates the presence of alternatives that are relevant for the interpretation of linguistic expressions.

(123) A property F of an expression α is a Focus property iff F signals
(a) that alternatives of (parts of) the expression α or
(b) alternatives of the denotation of (parts of) α are relevant for the interpretation of α.

Krifka assumes that *contrastive focus* is typically used for corrective purposes.[62] Of course specificational pseudoclefts and specificational clauses in general can be used correctively. Yet, they do not have to be used this way in all cases. So if we stick to Krifka's terminology, we have to say that neither specificational pseudoclefts nor specificational clauses in general necessarily have to show contrastive focus. Contrast is not a decisive property of specificational clauses.

Turning back to the truth conditions of pseudoclefts, we see the following. There are only two cases in which predicational and specificational pseudoclefts can have different truth conditions. The first one is a pseudocleft with a plural NP as post-copular constituent or one with two conjoined NPs as in (125) and (126). Since it is possible to distinguish predicational and specificational readings of pseudoclefts with such a structure, this is sometimes referred to as "the plurality test".

(124) What Mike buys is a muffin.

a. $\exists x\,[\text{buy}\,(m, x) \wedge \text{muffin}\,(x)]$ SPEC

b. $\exists x\,[\text{buy}\,(m, x) \wedge \exists y\,[\text{muffin}\,(y) \wedge [x = y]]]$ PRED

(125) What Mike buys is a muffin and a power plant.
$\exists x\,[\text{muffin}\,(x) \wedge \exists y\,[\text{buy}\,(m, y) \wedge [x = y]]] \wedge$
$\exists z\,[\text{power\_plant}\,(z) \wedge \exists w\,[\text{buy}\,(m, w) \wedge [z = w]]]$ SPEC/PRED

[62] Krifka (2007, p. 20f).

(126) What Mike buys is a muffin and low-fat food.

a. $\exists x\,[\text{muffin}\,(x) \wedge \exists y\,[\text{buy}\,(m, y) \wedge [x = y]]] \wedge$
$\exists z\,[\text{low-fat\_food}\,(z) \wedge \exists w\,[\text{buy}\,(m, w) \wedge [z = w]]]$ SPEC

b. $\exists x\,[\text{buy}\,(m, x) \wedge \exists y\,[\text{muffin}\,(y) \wedge [x = y]] \wedge \exists z\,[\text{low-fat\_food}\,(z) \wedge [x = z]]]$ PRED

Example (124) shows again that the truth conditions of the specificational and the predicational interpretation are the same. Sentence (125) also has only one reading, unless we assume that something could exist which can be a muffin and a power plant at the same time. But we do not want to do that here. Hence, Mike must want two different items in (125): one is a muffin and one is a power plant. Thus, what we see in (125) is merely a concatenation of two cases like (124). Sentence (126) on the other hand allows for two readings. The first one corresponds to (125), i.e. there are two things being bought: one is a muffin and the other one is some low-fat food. In the second reading (the predicational one), the thing being bought is identified as something like a low-fat muffin. This means in the first case we are talking about two things with two different properties and in the second case we are talking about one thing that has two properties.
The second case in which predicational and specificational pseudoclefts show different truth conditions depends on opaque contexts. When an intensional verb is used in the cleft clause, we get a de re specificational and a de dicto specificational reading. The de re specificational reading is again truth-conditionally identical to the predicational reading. Consider the example below.

(127) What Mike wants is a muffin.

a. $\exists x\,[\text{want}\,(m, x) \wedge \exists y\,[\text{muffin}\,(y) \wedge [y = x]]]$ PRED/DE RE SPEC

b. $\text{want}\,(m, \lambda P\,[\exists x\,[\text{muffin}\,(y) \wedge P\,(x)]])$ DE DICTO SPEC

Formula (127a) gives the predicational and de re specificational truth conditions. As was the case with non-intensional verbs, there is no difference between the two readings. Formula (127b) gives the truth conditions for the de dicto specificational reading. Here the intensional verb *want* takes scope over the existential quantifier.[63]

At this juncture we can summarize three facts. First, specificational and predicational pseudoclefts without intensional verbs and/or plural NPs or APs as post-copular constituents are truth-conditionally non-distinct. Second, the exhaustivity expressed by a pseudocleft stems from a conventional uniqueness implicature, which is introduced by the cleft clause.[64] Contrastiveness is not a decisive property of pseudoclefts. Whether there is also an existential implicature is open to doubt. It will be shown in Section 4.5 that this must rather be considered a presupposition of existence.

3.2.2 Is the predicational/specificational distinction sufficient?

As mentioned before, it has sometimes been claimed that specificational pseudoclefts only allow for *what* in the cleft clause. All the other wh-words would only occur in predicational pseudoclefts. For this reason many authors restrict their definition of pseudocleft to sentences that have a *what*-cleft clause and are specificational. As was mentioned above, I will not follow this strict definition but use Higgins's broader definition. Nevertheless, I of course clearly distinguish between specificational and predicational pseudoclefts.

But what are we to do with sentences as in (128)[65]? Are they specificational or

[63] Hedberg (1990) notes that Halvorsen's analysis actually implies that the de dicto/de re ambiguity does not play a role in predicational pseudoclefts. However, Hedberg claims that this is not correct. Predicational pseudoclefts could show ambiguity with intensional verbs, too. Her examples are given below (Hedberg took example (ia) from Declerck (1988)).

(i) a. What I need is a car and a boat.
b. What Jane wants is a lover and a coauthor.

The speaker of (ia) does not have to believe that an 'amphibic vehicle' actually exists, nor does Jane's wish depend on the existence of a 'loving coauthor'. This is a point that Halvorsen simply does not discuss.

[64] At least Halvorsen (1978) assumes that it comes from the cleft clause. Other approaches or frameworks might find different ways to get it in.

[65] The first three examples are taken from Yoo (2003), who got them from Higgins (1979). The last one is from Hankamer (1974, p. 229).

predicational?

(128) a. Where he spends his summers is Chester.
b. How he cut his face was by trying to eat while serving.
c. Why they did it was to impress Mary.
d. When she waters them is weekends.

It seems to be very difficult to think of the post-copular constituents in (128) as predicates that take the subject clauses as arguments. However, that would be the predicative analysis. Considering these examples, we must say those wh-words, which some claimed were not allowed in (specificational) pseudoclefts, do not necessarily need to be an indicator for the predicative status of the sentences. Therefore, we must look at some other properties of specificational and predicational pseudoclefts to figure out which group the sentences in (128) belong to. In Chapter 2.1 we saw how Mikkelsen (2004b) differentiates predicational and specificational clauses. Mikkelsen's tests aim at specificational clauses in general and not at specificational pseudoclefts in particular. In fact, they are not applicable to pseudoclefts. However, there are fortunately also properties discussed in the literature which are only found in specificational pseudoclefts. In the following these properties will be discussed.

In contrast to predicational sentences, specificational sentences do not allow for subject-aux-inversion. While sentence (129a), which allows for a predicational reading, can be turned into a polar question (129b) with subject-aux-inversion, this is not possible for the unambiguously specificational sentence (129c) as shown in (129d).

(129) a. What I am looking for is a new car.
b. Is what I am looking for a new car?
c. What I am looking for is a new car and an old car.
d. *Is what I am looking for a new car and an old car?
e. I don't know whether what I am looking for is a new car and an old car.

That we are dealing with a ban on inversion and not with a ban on polar interrogatives can be concluded from (129e). Here we see that the pseudocleft (129c) can be turned into a polar question in an embedded context, and these contexts do not trigger inversion.

Another difference between the different copula clause types concerns extraction. It is neither possible to extract from the counterweight of a specificational sentence nor is it possible to extract the counterweight itself as is illustrated below.

(130) a. [Pictures of Seattle] I think that Mike doesn't have ___.

b. *[Pictures of Seattle] I think that [what Mike doesn't have] is ___.

c. What do you think that Mike doesn't have [any pictures of ___]?

d. *What do you think that [what Mike doesn't have] is [any pictures of ___]?

e. I think that what John buys is the next winner of the consumer award.

f. What do you think that what John buys is the next winner of ___?

(130b) and (130d) are the ungrammatical results of an attempt to extract from the counterweight of the embedded specificational sentences (130a) and (130c) (or the counterweight itself). In contrast to this, the embedded predicational sentence in (130e) allows for such a move, as shown in (130f).
Another restriction on specificational structures is that they cannot occur with raising verbs.

(131) a. What he is appears to be important to him.

b. *What he is appears to be important to himself.

c. What they are doing appears to be amusing them.

d. *What they are doing appears to be amusing each other.

We see that the predicational sentences (131a) and (131c) allow the subject clause to be raised. Such an operation seems to be blocked in the specificational sentences (131b) and (131d).[66] Note that this observation provides another argument for the assumption that the cleft clause of a pseudocleft is not a question. Obviously the construction that clearly takes a interrogative clause as subject can be used with a raising verb, as can be seen in the example below.

(132) a. Who built the pyramids appears to be an important question.

b. What he will become one day seems to be unknown.

[66] Examples from Hankamer (1974, p. 226).

Yet another restriction on specificational structures (not just pseudoclefts) is that they cannot occur with ECM verbs. We have seen this in Chapter 2.1 already, when it was shown that small clauses do not allow for the specificational argument-functor order. Now we see that ECM verbs in general do not allow for specificational pseudoclefts as complements. Consider the examples below.

(133) a. *Mike believes what John didn't buy to be any wine.
b. *Mike called what John didn't buy any wine.
c. ?Mike believes what John bought to be a tyke.
d. Mike called what John bought a tyke.

We see that while the predicational sentences (133c) and (133d) are grammatical, embedding a specificational pseudocleft under an ECM-verb renders the sentences ungrammatical.
One of the most striking properties of specificational pseudoclefts is the fact that their root is subject to very tight restrictions on modality and aspect.[67] They are not shared by any other English construction to this extent. The modality restrictions are illustrated in the examples below.

(134) a. ?What John may/should/could never be *is* angry with any of his friends.
b. *What John never is *may/should/could* be angry with any of his friends.

Example (134b) shows that modal auxiliaries are not allowed in the matrix clause of specificational pseudoclefts. However, they can probably occur in the subject clause as in (134a). Aspectual auxiliaries are also forbidden in the matrix clause, but allowed in the subject clause.[68]

(135) a. ?What John has never been *is* angry with any of his friends.
b. *What John never is *has been* angry with any of his friends.

[67] Sometimes tense is also named together with aspect and modality, but, as will be shown in Chapter 3.3, the restrictions on tense are not quite as Akmajian (1970) thought they were.
[68] Den Dikken (2005, p. 25) claims that there is only an agreement requirement between cleft clause and matrix clause for tense and not for aspect. Note, however, that his examples are ambiguous between an equative and a specificational interpretation. This means they cannot be used to generalize about specificational pseudoclefts.

The only way to get a grammatical interpretation of the ungrammatical sentences would be to attempt to read them predicationally. Yet, such a reading is impossible here. One would have to say that the property that John never has shows the property of being angry with his friends. Since we do not want to assume that properties can have such properties, the sentences are ungrammatical.
Another property of specificational pseudoclefts is that they do not allow for adverbial modification or negation to the right of the (matrix) copula.

(136) a. What John isn't is angry with himself.
b. *What John is isn't angry with himself.
c. *What John is is probably angry with himself.
d. ??What John is probably is angry with himself.

Again we see that the matrix clause behaves very differently from the subject clause. As (136a) shows, the latter allows for post-copular negation, while the former does not.[69]
Another peculiarity about specificational pseudoclefts is that they may not be gapped. The specificational copula contrasts in this respect with all other forms of *to be*. The predicational *be* and the aspectual auxiliary can both be gapped as is illustrated in the paradigm below.[70]

(137) a. *What Bill is is overbearing, and what Sue is ___ timid.
b. Bill is overbearing and Sue ___ timid.

[69] Boskovic remarks in a footnote that a precopular adverb like in (136d) renders the sentence slightly better than (136c). See Boskovic (1997, p. 268, footnote 35). For some remarks about how this might be accounted for under a Government and Binding approach see Den Dikken et al. (2000, p. 66f).

[70] Examples taken from Den Dikken et al. (2000, p. 67). Another good example comes from Ross (2000, p. 399):

(i) a. What I thought was that you were a jerk and what Al thought was that you were a brain.
b. *What I thought was that you were a jerk and what Al thought ___ that you were a brain.

c. What Bill wrote was boring and what Sue wrote ___ interesting.

d. Bill was standing at the door and Sue ___ sitting behind the desk.

e. Bill was rejected and Sue ___ accepted.

f. The best candidate is Sue and the runner-up ___ Bill.

g. (Standing) at the door was Bill and (sitting) behind the desk ___ Sue.

Example (137a) shows a coordination of a full specificational pseudocleft and a gapped one. That the full pseudocleft must be specificational can again be explained via the impossibility of a sensible predicational paraphrase. This would be: the property that Bill has has the property of being overbearing. Such a reading is clearly out. That the full pseudocleft, i.e. the first conjunct, is grammatical is straightforward. Hence, the ungrammaticality must come from the gapped pseudocleft. In examples (137b) and (137c) the predicational copula is used. The latter shows that this *be* allows for gapping in pseudoclefts in contrast with the *be* in (137a). Gapping is also possible with *be* as an auxiliary in progressives and passives as (137d) and (137e) show. A point that Den Dikken et al. (2000) missed is that sentence (137f) seems to offer two possible interpretations at first sight. On the one hand, we could be dealing with an equative structure, and on the other hand, it closely resembles a specificational sentence. Again we can try to disambiguate the readings by using one of Mikkelsen's agreement tests, for which we have to substitute the gender-neutral nouns for nouns that show gender.

(138) a. The best actress is Sue and the best actor ___ Bill, isn't he. EQUATIVE

b. ?The best actress is Sue and the best actor ___ Bill, isn't it. SPEC

(139) a. The best actress is Sue and the best actor, he is Bill. EQUATIVE

b. The best actress is Sue and the best actor, that is Bill. SPEC

c. *The best actress is Sue and the best actor, he Bill.

d. *The best actress is Sue and the best actor, that Bill.

The question-tag test does not render results that are as clear as expected. Analogous to (137a) sentence (138b) should actually be ungrammatical, since it is specificational as the gender-neutral *it* in the question-tag shows. However, since there are two possible readings for the two conjuncts when no question-tag is present, the

judgments on (138b) are not as clear as those on (137a), which has a specificational interpretation only, no matter what question-tags one uses. The left-dislocation test works a bit better for this constellation, but that (139c) and (139d) are ungrammatical was more or less predictable. This just shows that a left-dislocation sentence does not allow for gapping, which is actually not at issue here. What is important here is that (139a) and (139b) show again that a sentence like *the best actor is Bill* can have two interpretations: an equative one and a specificational one. This means if we only took (137f) into consideration, we could not conclude that specificational *be* cannot be gapped. However, comparing (137f) and (137a) we can conclude that we are dealing with gapping over an equative *be* in (137f). Since (137a) is really unambiguously specificational, this leaves gapping over equative *be* as the only possible interpretation for (137f).
The second example that needs to be looked at more closely is (137g). This sentence also resembles a specificational one. However, in this case we are dealing with a locative inversion. The question-tag test can show this convincingly.

(140) a. At the door was Bill, wasn't he. PRED
b. *At the door was Bill, wasn't it.
c. The best player on the team was Bill, wasn't he. EQUATIVE
d. The best player on the team was Bill, wasn't it. SPEC

Comparing (140b) and (140d) we see that the locative inversion – in contrast to the specificational sentence – must show agreement in the question-tag. This shows that the subject of the main clause is *Bill* and not the PP.[71] This would leave open the possibility of reading (140a) equatively like (140c). Yet, equating a person (*Bill*) and a location (*at the door*) does not make any sense. This renders an inverted

[71] I left out *standing*. However, even if it were there, the sentence would still be an example of locative inversion. *Standing* would not be interpreted as a verbal element but as an adverbial expression as Webelhuth and Walkow (2006) show.

predicative reading the only possible interpretation.[72]

At this point we should go back to the examples in (128) from the begining of this section. We have seen that some sentences that look specificational can also be equative. We now know that, if they are equative, they allow for gapping. Conversely, this means that the gapping restriction on specificational sentences is a good test to show that some sentences that look equative must be specificational. Consider the examples below.

(141) a. What Mike persuaded Mary to do was to leave.

b. *What Mike persuaded Mary to do was to leave and what Mike persuaded Kim to do to stay.

[72] A special case that needs to be considered with respect to gapping is the difference between (ia) and (137a) (repeated here as (ib)).

(i) a. ?What Bill is is overbearing, and Sue ___ timid.

b. *What Bill is is overbearing, and what Sue is ___ timid.

c. ?What Bill bought was a bagel, and Sue ___ a croissant.

According to Den Dikken et al. (2000, p. 67ff) we are dealing here with a coordination of a specificational sentence and a gapped predicational one. The gapping of the copula in the second conjunct of (ia) is said to be licensed under identity with the instance of *be* in the wh-clause of the first conjunct. This is confirmed by (ic), in which the gap is interpreted as *bought*. This means (ia) is not derived from (iia) as shown in (iib). The underlying structure of (ia) is rather the one in (iic).

(ii) a. What Bill is is overbearing, and what Sue is is timid.

b. What Bill is is overbearing, and [[~~what~~ Sue ~~is~~] ___ timid].

c. What Bill is is overbearing, and Sue is timid.

To sum things up: (ia) does not show that specificational *be* may be gapped, but only that a specificational sentence may possibly be coordinated with an ellipted predicational one. Under an analysis like the one by Den Dikken et al. (2000) the ellipsis is actually licensed under identity with an instance of *be* in an elided post-copular constituent as shown below.

(iii) [[What Bill is] is [~~Bill is~~ overbearing]], and Sue ___ timid.

However, it is questionable whether a sentence like (ia) must be accounted for at all, since its grammaticality is very dubious.

(142) a. Where Mary spends her summers is Chester.

b. ?Where Mary spends her summers is Chester and where Sue spends her summers Brighton.

(143) a. When Mary saw Kim was in 1984 and when Sue called Kim was in 1985.

b. ?When Mary saw Kim was in 1984 and when Sue called Kim in 1985.

(144) a. How Frank cut his face was by trying to eat while serving.

b. ?How Frank cut his face was by trying to eat while serving and how Mike cut his face by trying to eat while drinking.

(145) a. Why Frank did it was to impress Mary.

b. ?Why Frank did it was to impress Mary and why Mike did it to impress Sue.

We see that, with respect to gapping, (141a) behaves analogously to the clear specificational pseudocleft that we saw in (137a). The difference between the two sentences is that one has an adjective as its post-copular constituent and one has a non-finite VP. However, both are specificational and consequently do not allow for gapping. In contrast to this, gapping seems to be possible in (142a). This tells us that we are not dealing with a specificational sentence here. For a predicational structure we would need a predicate in post-copular position. Since *Chester*, as a proper name, does not constitute a predicate, we can infer that we must be dealing with an equative sentence instead. In this respect it should be noted that Ross (2000) shows examples like (142a) with PPs in post-copular position. One is shown in (146a). For (146a) one could assume a predicational structure, but then of course the meaning would be different from (142a). Assuming a predicational structure for (146a), the sentence would mean something like: "the place where Mary spends her summers is located in Chester". However, the most natural reading is the one in which this place is equated with Chester. In (146a) the PP *in Chester* seems to be interpreted like the NP *Chester* in (142a). This means Mikkelsen's assumption of a strict $\langle e, t\rangle$ denotation for PPs must be revised. It seems like PPs can get a referential interpretation, too, regardless of whether they are case-marking or predicative prepositions.

(146) a. Where Mary spends her summers is in Chester.

b. When the Second World War started was 1939.

What works for (142a) also works for (143a). The possibility of gapping shows that (143a) cannot be specificational, so it must be equative or possibly predicational. The predicational meaning would be that the event of their meeting was some point of time in 1984, while the equative meaning would be 'the year they met was the year 1984'. That an equative reading is not unlikely can be seen in (146b). Here the plain date in post-copular position is referential and the only available interpretation is an equative one. This is analogous to (142a) with *Chester* as a post-copular referential expression. Furthermore, we see that (145a) and (144a) allow for gapping, too. Again this means that these are not specificational clauses. According to my informants (144b) and (145b) are a bit worse than (142b) and (143b). However, I do not think that the fact that they are worse indicates that they might allow for a specificational reading. When we compare them to (142a) and (143a), we see that the extra oddness most probably stems from the semantic variable that is at issue. In (142a) and (143a) the wh-words indicate that the semantic variable that is being equated is the one for place and time, respectively. It is generally assumed that semantic variables for place and time are always present but need not be specified in all cases. In (144a) and (145a) on the other hand, the semantic variables at issue are those of manner and reason. These variables are usually assumed to be optionally present, and it seems like specifying them for a gapped *be* is more restricted, as the oddness of (144b) and (145b) shows.

Considering the above observations we can state the following: "pseudoclefts" with wh-words that refer to adverbial expressions are not specificational. Depending on the post-copular constituent, they can be predicational or equative. The possibly different degrees of acceptance between gapped "pseudoclefts" with *when* and *where* and those with *how* and *why* seem to be based on the different types of semantic variables. The differences in acceptance are not an indicator for different sentence types. For the basic definition of a pseudocleft like *wh-clause + copula + X*, it follows that all three semantic structures for copula sentences are at disposal. Depending on the wh-word (and with that on the semantic variable) they can be specificational, predicational, or equative with *what* and they must be equative or predicational with *when*, *where*, *why*, and *how*. Nevertheless, we might also find interrogative clauses in that position if the predicate selects for them.

Finally, we have to go back to the beginning of this chapter and look at the cleft clause again. Taking Mikkelsen's (2004) analysis of copular structures into account, we see that the free relative clause that constitutes the cleft clause of specificational pseudoclefts is different from 'standard' free relative clauses. It does not have a type $\langle e \rangle$ denotation, i.e. it is not interpreted like a regular NP. Instead it is a predicate. Such an free relative clause is also used in Lambrecht's (2001) analysis of cleft structures: "[. . .] I assume a unitary semantic analysis for the grammatical category 'relative clause'. [. . .] I take as the fundamental property of all RCs [relative clauses] that they are *predicates*." It is this line that I will follow in this work. I will assume that relative clauses can be predicates when they are bound as well as when they are free. For specificational pseudoclefts this means that the cleft clause is a predicative free relative clause.

3.3 Connectivity Effects

This section first takes a look at the so-called connectivity effects and then presents several approaches to explaining them. The solutions that have been offered to explain the connectivity phenomenon can be divided into two main lines. The decisive difference between them is the notion of c-command. One line proposes abandoning the tests for c-command, and the other one proposes revising the problematic sentence structures. Using Schlenker's (2003) terminology we can call the former *conservative accounts* and the latter *revisionist accounts*.

3.3.1 The phenomenon

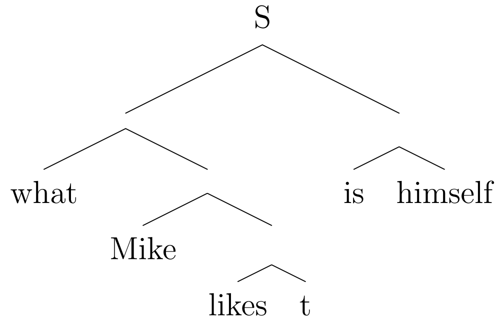
Since Akmajian (1970) linguists have been puzzled by the connectivity effects (sometimes also called *connectedness* or *reconstruction effects*) found in pseudoclefts. The initial observation was that sentences like (147a) show the same command relations as those like (147b).

(147) a. Mike likes himself.

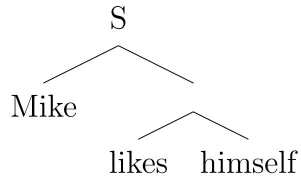
b. What Mike likes is himself.

According to Principle A of the binding theory of the Government and Binding tradition the reflexive pronoun *himself* in (147a) should be c-commanded locally by *Mike*. This is the case in (147a) but not in (147b) as shown in the simplified tree structures below.

(148)



(149)



The reflexive in (148) is c-commanded by the subject clause as a whole but not by *Mike*. However, it is interpreted as if the structure were as shown in (149). Principle A effects are not the only connectivity effect pseudoclefts show. In fact, they show the same behavior as their canonical counterparts with respect to all standard c-command tests. They show the same connectivity effects with regard to all Binding Principles as in (150), to licensing negative polarity items (NPIs) as in (151), to opacity as in (152), and to licensing bound variables as in (153).

(150) a. What he$_i$ is ___ is proud of himself$_{i,*j}$ / him$_{*i,j}$ / John$_{*i,j}$.[73]

b. He$_i$ is proud of himself$_{i,*j}$ / him$_{*i,j}$ / John$_{*i,j}$.

(151) a. What they didn't find was any trace of weapons of mass destruction.

[73] Concerning the judgment on *him$_j$*, I have to say that this is Schlenker's (2003), who claims that he took the example from Sharvit (1999). I consider it wrong. It would work though, if we used something like *a nuisance to* instead of *proud*. Although it would render a predicational interpretation, the sentence would at least not be ungrammatical as it is in Schlenker's version. It seems Schlenker used an early copy of Sharvit (1999) since in my copy I can only find *a nuisance to* where Schlenker claimed to have found *proud of*.

b. They didn't find any trace of weapons of mass destruction.

c. *What they found was any trace of weapons of mass destruction.

d. *They found any trace of weapons of mass destruction.

(152) a. What Mike seeks is a unicorn.

b. Mike seeks a unicorn.

(153) a. What [every linguist]$_i$ loves is her$_i$ first syntax class.

b. [Every linguist]$_i$ loves her$_i$ first syntax class.

c. What [no student]$_i$ enjoys is his$_i$ finals.

d. [No student]$_i$ enjoys his$_i$ finals.

Example (150) shows that all binding principles apply in pseudoclefts in the same way as they apply in their canonical counterparts: reflexives must be bound in their governing category (GC), personal pronouns may be bound from outside their GC, and R-expressions (referential expression) must be free. The sentences in (151) show that an NPI like *any* should only occur if it is c-commanded by a negative marker like *not* or *never* etc. Assuming roughly the same structure for (151a) as in (148), we see that this is not the case. Example (152) shows that we get a opaque reading for the post-copular constituent even though the intensional verb in the cleft clause does not have scope over the post-copular constituent in a structure like the one in (148). In (153) we see that it is possible for a quantified NP in the cleft clause to bind a pronoun in post-copular position. This should actually only be possible under c-command, but assuming again an underlying structure like in (148), we see that there is no c-command relation between the quantified NP and the pronoun.
A further observation about connectivity effects is that they only occur if the post-copular constituent is interpreted non-predicationally.

(154) a. What Mike$_i$ eats is important to him$_i$.

b. *What Mike$_i$ eats is important to himself$_i$.

While the personal pronoun in (154a) is allowed, the reflexive pronoun in (154b) renders the sentence ungrammatical. However, we have already seen in (147) that reflexive pronouns are not forbidden in post-copular position in general. But in contrast to the sentences in (154), the one in (147a) allowed for a non-predicational interpretation and—as can be concluded from comparison with (154)—for a non-predicational interpretation only. As pointed out by Higgins, connectivity effects are not limited to pseudoclefts but are found in all specificational sentences. The sentences in (155)[74] show that connectivity effects are not limited to pseudoclefts that fall under the restricted definition but also occur in the same way in other specificational sentences with definite description subjects that include a relative clause, i.e. specificational pseudoclefts of the extended definition.

(155) a. The thing [every linguist]$_i$ loves is her$_i$ first syntax class.
b. The thing [no student]$_i$ enjoys is his$_i$ finals.
c. The woman who [every Englishman]$_i$ admires (the most) is his$_i$ mother.
d. The only woman that [no Englishman]$_i$ will invite to dinner is his$_i$ mother.
e. ?*The woman who [every Englishman]$_i$ likes the most killed his$_i$ mother.
f. ?*The woman who [no Englishman]$_i$ invited to dinner killed his$_i$ mother.

Sentences (155a) and (155b) show the same connectivity as their wh-pseudocleft counterparts (153a) and (153c). The NPs embedded in the relative clauses can bind the pronouns in post-copular position, although they do not c-command them. This means we are not dealing with a peculiarity of pseudoclefts but with a property of a certain kind of copular clauses. That these effects are indeed limited to copular clauses, or rather specificational clauses, can be seen from comparing the copular clauses (155c) and (155d) with the non-copular clauses (155e) and (155f). In the non-copular (predicational) clauses, it is not possible for the quantified NP to scope out of the relative clause, i.e. to take wide scope.[75]

Akmajian (1970) observed another connectivity effect between the tense of the cleft clause and the matrix clause copula. Higgins referred to this as *tense harmony.*

[74] Examples (155c-f) from Jacobson (1994, p. 1f).

[75] Jacobson (1994, p. 2) points out that even if it were possible, this would give (155d) a reading like (i), which is not the most prominent.

(i) For no Englishman x it is the case that the only woman that x invites to dinner is x's mother.

It is shown in the paradigm below.

(156) a. What Mike was ___ was a fool.
b. What Mike is ___ is a fool.
c. What Mike was ___ is a fool.
d. *What Mike is ___ was a fool.

Akmajian claimed that the tenses of cleft clause and pseudocleft must agree. This claim is still found in many works. However, even though (156c), in which this is not the case, might require a certain context, it is still grammatical. Sharvit (2003) gives a good example which shows that this tense combination is possible:

(157) John is just a nuisance. What he is now is a nuisance to himself. What he was last week is a nuisance to himself and others.[76]

This shows that only the combination of present tense in the cleft clause and a past tense copula in the matrix clause yields an unacceptable sentence as in (156d). In contrast to the specificational sentences in (156), the predicational sentences in (158) do not show tense harmony at all. Consider the examples below.

(158) a. What Mike once bought ___ was expensive.
b. What Mike buys when he is on vacation ___ is expensive.
c. What Mike once bought ___ is expensive (now).
d. What Mike buys when he is on vacation ___ was (once) expensive.

As (158) shows, any tense combination between matrix clause and cleft clause is acceptable in predicational sentences. The different behavior towards tense harmony can sometimes be used to disambiguate sentences that allow for a specificational and a predicational reading. The following example shows such a case.

(159) a. What Rice says she found ___ is an atom bomb. SPEC/PRED
b. What Rice said she found ___ was (once) an atom bomb. SPEC/PRED
c. What Rice said she found ___ is an atom bomb. SPEC/PRED
d. What Rice says she found ___ was (once) an atom bomb. PRED

[76] Sharvit (2003, p. 378)

While examples (159a-c) are ambiguous between a predicational and a specificational interpretation (disregarding intonation), (159d) has only a predicational reading. This becomes more evident if (159d) is combined with the plurality test as in (160).

(160) a. What Rice said she found ___ is/was an atom bomb and a muffin. SPEC
b. *What Rice says she found ___ was (once) an atom bomb and a muffin.

(160a) cannot have a predicational reading since there is nothing that can be a muffin and an atom bomb at the same time. For the same reason (160b) cannot have a predicational reading. However, a specificational reading of (160b) is not possible either because tense harmony is violated. Thus, 'having no reading' (160b) is ungrammatical.
Ross (2000) also checks examples with future tense and comes to the following results.[77]

(161) a. What I was [was/is/*will be] proud of you.
b. What I am [*was/is/*will be] proud of you.
c. What I will be [*was/is/*will be] proud of you.

We see that with present tense in the matrix clause, every tense combination is allowed. The only other possible case is the combination of past tense in the matrix clause and past tense in the cleft clause. These are the tense combinations which the implementation will account for later on. All the other combinations render ungrammatical sentences.

3.3.2 The semantic approach

As mentioned at the beginning, the analyses of connectivity effects can be divided into three lines. In the revisionist line, it is denied that Condition A ('An anaphor must be bound in its governing category') is a reliable test for c-command. It might be in some cases but not in all. While this approach has the advantage that it needs a minimum of syntactic abstraction, it has to come up with a re-analysis of every

[77] From Ross (2000, p. 391).

c-command test (for the specificational clauses) to account for the effects the syntacticians explained via c-command. Advocates of this line of research are e.g. Jacobson (1994), Sharvit (1997, 1999), and Cecchetto (2000, 2001). The revisionist approaches use higher-order semantics and therefore are also labeled *semantic* approaches.

To brighten things up, we will take a brief look at Sharvit (1999) analysis. Sharvit's argumentation goes as follows. The first observation is that variables must be allowed to be bound without appeal to c-command. She proposes using quantification over functions instead. For sentences like (153a), this means that we are dealing with an equation of two functions: one function f from linguists to things they love and one function that associates each linguist with her syntax class. A formalization is given below where (162b)[78] is a simplified version (where ι is the definite description operator) and (162c) gives Sharvit's (1999) original formalism.[79]

(162) a. What [no linguist]$_i$ loves ___ is her$_i$ syntax class.

b. [ιf: f is a natural function & [no x: x a linguist] x loves f(x)] = [λx syntax class of x]

c. Max($\lambda g_{\langle e,e\rangle}$ [Nat'(g) & $\forall$x(linguist'(x) $\rightarrow$ $\neg$loves'(x, g(x)))]) = λy[Max(λz[syntax class'(z,y)])]

As a second step in her argumentation, Sharvit (1999) resorts to Reinhart's theory of binding with the core assumption that Principle C is a reflex of the systematic preference for bound readings over accidental coreference. Sharvit's third step is a higher-order account of Principle A effects. They are interpreted as a morphological by-product of semantic reflexivization. This means Sharvit assumes that a reflexive is always interpreted as an identity function [λx.x]. A formalization is given below where (163b) is a simplified version and (163c) gives Sharvit's (1999) original formalism.

(163) a. What [every man]$_i$ shaved ___ was himself$_i$.

b. [ιf: f is a natural function & [every x: x a man] x shaved f(x)] = [λx x]

[78] For the reason why a 'natural function' is needed see Jacobson (1994). Basically this is meant to prevent random pairings.

[79] Form Schlenker (2003, p. 6). Making the functions intensional would also allow for opacity connectivity.

c. $\mathrm{Max}(\lambda g_{\langle e,e\rangle}\ [\mathrm{Nat'}(g)\ \&\ \forall x(\mathrm{man'}(x) \rightarrow \mathrm{shave'}(x, g(x)))]) = \lambda x\ x$

To account for Principle B effects, Sharvit claims that morphological reflexivization is applied whenever possible. This means that Principle B effects are derived from her account of Principle A effects plus a principle of preference for reflexive marking over 'accidental reflexivization'. Simply put: a pronoun is morphologically turned into a reflexive whenever possible. The last piece in Sharvit's account explains NPI licensing. She postulates that NPIs must only be licensed in downward-entailing environments. As done by many others, she follows Ladusaw (1979) in this respect, and she also shows that the relevant contexts are indeed all downward-entailing.[80] In assuming an equation of two functions, Sharvit (1999) follows Jacobson (1994). Jacobson proposed reconsidering binding as a relationship between argument slots and not between two NPs. This means the setting of one NP binding another NP was reinterpreted as a lambda-operator taking scope over two argument positions.[81]

A problem with the semantic approach is that it runs counter to the analysis of the relevant pseudoclefts as specificational structures as in Mikkelsen (2004b). This means it is incompatible with an analysis of specificational sentences as 'inverted' predicational structures. If the pseudoclefts in question are indeed equative

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[80] See Sharvit (1999, p. 310f).

[81] Jacobson (1994) uses the following rule to achieve that.

(i) Let α be an expression with meaning of type $\langle X, \langle e, Y\rangle\rangle$. Then there is a homophonous expression β with meaning of type $\langle\langle e, Y\rangle, \langle e, X\rangle\rangle$, where $\beta' = \mathrm{z}(\alpha')$. The definition of z is:
For any function g, $\mathrm{z}(g) = \lambda f\,[\lambda x\,[g\,(f\,(x))\,(x)]]$ (for f a variable of type $\langle e, X\rangle$).

Where Jacobson refers to this rule, Sharvit (1999) resorts to a doubly-indexed trace. This is an extension of Chierchia's (1993) account of question-answer pairs to relative clauses and pseudoclefts. Chierchia (1993) assumes that in the LF representation of sentences like (iia) the trace of the wh-element is doubly indexed.

(ii) a. What$_j$ does [every linguist]$_i$ love $t_j{}^i$? Her$_i$ first syntax class.
b. What$_j$ [every linguist]$_i$ loves $t_j{}^i$ is her$_i$ first syntax class.

How Sharvit (1999) applies this approach to pseudoclefts is shown in (iib). The functional readings in (iia) and (iib) are possible because the superscript index of the *wh*-trace is properly c-commanded by the quantificational expression *every linguist*.

structures, then the test used by Mikkelsen and others to distinguish specificational, predicational, and equative sentences should show that they pattern with the equatives. However, Mikkelsen showed that they do not.

3.3.3 The syntactic approach

Within the conservative approaches, we can distinguish two to three varieties.[82] One of the conservative approaches is the *syntactic approach* also called *reconstruction approach*. It is conservative because it leaves the traditional c-command tests untouched. Its basic assumption is that there is more syntactic structure than what is visible at s-structure, and it is exactly in this non-visible part of the structure that the c-command relation is assumed to hold. Therefore, it is claimed that the sentence is reconstructed at Logical Form (LF). A sentence like (147a) here repeated as (164a) is assumed to have a logical form like (164b).

(164) a. [What Mike likes ___] is himself.
b. [What Mike likes himself] is himself.

This approach has been heavily criticized by many. Cecchetto summarizes his critique as follows:

(165) "This version of the movement approach is highly problematic because the alleged movement of the pivot [=post-copular constituent] has a long list of weird and unexpected properties. For example, it would be an overt case of lowering movement (the target of the movement being not c-commanded by the base position of the pivot[see (148)]) and would occur from within a constituent which is at the same time a subject island and wh-island."[83]

Another problem observed by Den Dikken et al. (2000) is the missing explanation for NPI licensing. NPI licensing needs c-command at S-structure rather than at LF (unless one uses the assumptions from the semantic approach).
Boskovic (1997) offers a different version of the movement approach. He assumes that the post-copular constituent moves to the gap in the subject clause only at LF. At LF, the unclefted version of the sentence and the pseudocleft are literally

[82] Here I follow Schlenker's (2003) classification.
[83] Cecchetto (2001, p. 4).

identified. This explains connectivity effects for free. The problem of the standard movement approach is evaded since movement at LF does not leave a trace.[84] Therefore, Boskovic can identify the pseudocleft and the unclefted sentence. However, due to the lack of a trace, there is no record of the superficial structure of the sentence at LF. This is problematic in two cases. First, there are sentences which do not have an unclefted counterpart as was shown in Section 3.1.1. Consider again the example below.

(166) a. What I don't like about Mike is his pants.
b. *His pants I don't like about Mike.
c. *I don't like his pants about Mike.

A second problem is, as noted by Cecchetto (2001), that this approach cannot explain anti-connectivity effects, i.e. it cannot explain why some structures do not show connectivity.[85]

Another variant of the reconstruction approach is offered by Heycock and Kroch (1999). They assume that the connected sentence does not arise at LF. Instead the derivation of a connected sentence is claimed to be a post-LF process, which is licensed on semantic grounds. Like Sharvit (1999) they assume that connectivity sentences are a kind of identity sentences. They reject the possibility of 'inverse predication' for specificational clauses and treat them strictly as equative. But in contrast to Sharvit (1999), they do not equate functions but entities.[86] Furthermore, they assume that a specificational sentence is transformed into a connected sentence by an operation labeled ι-conversion. At some level of representation, this ι-conversion

[84] Boskovic (1997, p. 243): "[...] movement does not have to leave a trace if this is not required by an independent condition of the grammar".

[85] See e.g. (177), where it is shown that (i) and (ii) do not both have the same (number of) readings.

(i) What some student admires is every teacher.
(ii) Some student admires every teacher.

While *every* can out-scope *some* in (ii) this is not possible in (i). This will be discussed later on.

[86] Here, they follow Jacobson (1988). This means *what John likes* denotes a plural individual (in the sense of Link (1983)) of which the sentence *John likes x* holds.

"eliminates the ι operator and substitutes the focus[=post-copular constituent] of the pseudocleft for the ι-bound variable". This operation is shown below.[87]

(167) $\left[\iota \mathrm{x}_{\langle e\rangle} : \text{John likes } \mathrm{x}_{\langle e\rangle}\right]$ = himself -ι-conversion→ John likes himself

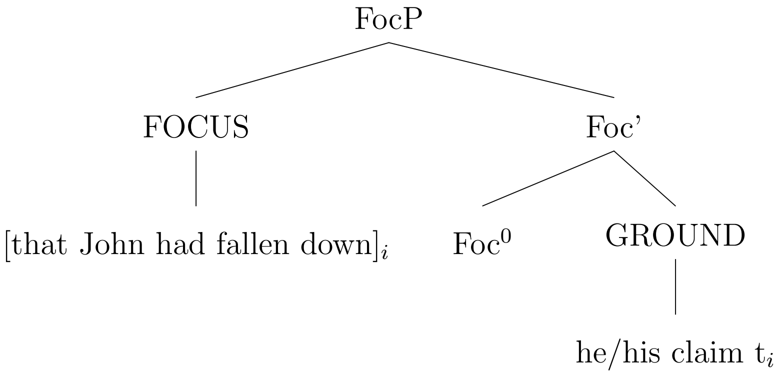
Heycock and Kroch (1999) themselves recognize that this approach is not unproblematic. The problem is that the main source of evidence for the additional level of syntactic representation lies in the phenomenon to be explained itself. Thus, it seems like this level is only needed for pseudoclefts.
Heycock and Kroch (2002) further admit that the assumption of an underlying equative structure is counter-intuitive. Besides, the equative analysis could not explain why connectivity can break down when the order of the cleft clause and the post-copular constituent is reversed. Therefore, Heycock and Kroch (2002) dismiss their former equative analysis of Heycock and Kroch (1999). Instead they propose that the following sentences all share the same underlying representation.[88]

(168) a. He claimed that John had fallen down.
b. His claim was that John had fallen down.
c. What he claimed was [$_F$ that John had fallen down].
d. That John had fallen down he claimed.

The assumption that a pseudocleft has the same underlying structure as its canonical counterpart explains connectivity for free.[89] In contrast to the analysis of Heycock and Kroch (1999), the copula is assumed to be semantically empty in Heycock and Kroch (2002). The mutual structure that is assumed for the sentences in (168) is given in (169).

[87] From Schlenker (2003, p. 7).
[88] Differences in presuppositions and implicatures between these sentences are ignored.
[89] For cases like those in (166) they would probably add another variant like *The thing that I don't like about Mike is his pants.*

(169)



The problematic NPI licensing under c-command that other syntactic approaches faced is done away with by assuming that NPIs must be licensed semantically but not syntactically.[90] This distinguishes Heycock and Kroch's approach from the other reconstruction approaches, which are conservative in this respect. However, the primary challenge of this approach is then to find a mechanism that yields the structure in (169) for the different 'input'-sentences in (168).

3.3.4 The question in disguise approach

Another conservative approach is the *Question in Disguise Theory* (QDT). This approach was originally proposed by Ross (1972).[91] Some more recent elaborations of this theory are found in Schlenker (2003), Yoo (2003), and Romero (2005). The analysis was triggered by Ross' observation that the sentences in (170) are very similar.

(170) a. What I did then was call the grocer.
b. What I did then was I called the grocer.

The basic claim of the *Question in Disguise Theory* is that (170a) is derived via ellipsis from (170b). The examples below show how this can account for connectivity and why it is called question in disguise.

---

[90] Heycock and Kroch (2002, p. 115): "Apparently an NPI cannot c-command its licenser in surface syntax. [. . .] even an environment as strongly subject to syntactic reconstruction as a pseudocleft does not reconstruct an NPI into an illicit position in syntax if it [is] properly licensed semantically".

[91] See also Faraci (1971).

(171) a. What she didn't find was any weapon of mass destruction.

b. What she didn't find was she didn't find any weapon of mass destruction.

c. What did she not find? Any weapon of mass destruction.

d. the answer to the question "What did she not find?" is "Any weapon of mass destruction"

In the QDT a sentence like (171a) is assumed to have an LF corresponding to a sentence like (171b). Thus, the NPI *any* can be licensed by the second *didn't* under c-command. The underlying phenomenon is assumed to be the same as in the question-answer pair in (171c). Like the *any* in the short answer in (171c), the *any* in (171a) is assumed to be licensed by phonologically deleted elements. Hence, a pseudocleft is interpreted as a question (in disguise) which is equated with its answer as in the paraphrase (171d). To cover cases that lack a wh-constituent, too, some authors treat specificational subjects in general as concealed questions[92], i.e. the NP/DP in subject position gets a question interpretation, too.
Taking a look at examples with negation in (173)[93], we see that the post-copular constituents in specificational pseudoclefts pattern the same way as answers to wh-questions with respect to the scope of negation.

(172) a. Jane does not believe that he will graduate.

b. Jane does not hold the belief that he will graduate.

c. Jane holds the belief that he will not graduate.

(173) a. ?What Jane does not believe is that he will graduate. ($\neq$(172c))

b. ??What Jane does not believe is she does not believe that he will graduate. ($\neq$(172c))

c. ?What does Jane not believe? That he will graduate. ($\neq$(172c))

The canonical declarative sentence in (172a) is ambiguous, i.e. it can either be interpreted as in (172b) or (172c). In contrast to this, the sentences in (173) do not

92 See Heim (1979).

93 Examples and judgments taken from Yoo (2003). Note that Yoo does not elaborate on her judgements, i.e. it is not clear whether the oddness of these examples corresponds to the interpretation parallel to (172b) or to (172c). I suppose she means (172b), but then she should actually have 'starred' the examples.

show this ambiguity. Both the pseudocleft (173a) and the short answer in (173c) only allow for an interpretation corresponding to (172b). Such data support the assumption presented in Section 3.1.2, i.e. the assumption that the cleft clause of a pseudocleft is a wh-interrogative clause.
Another observation that is sometimes brought up as an argument for the QDT is *predicativity*. Predicativity here means the parallel behavior of question-answer pairs and specificational pseudoclefts with respect to the type of predication in the answer and in the post-copular constituent, respectively. The examples below help to illustrate this.

(174) a. A fireman is available.
b. There is a fireman available.
c. A fireman has the intrinsic property of being available.

(175) What a fireman is is available.

(176) What is a fireman? A fireman is available.

While the sentence in (174a) is ambiguous between the stage-level interpretation (174b) and the individual-level interpretation (174c), only the latter interpretation is available for the specificational pseudocleft (175). This is also the only interpretation available for the answer in (176).

Since there are several approaches based on the QDT, we have to ask what the differences between them are. Although they are all offshoots of the same idea, the implementations of the QDT differ in some fundamental assumptions. Let us start with Schlenker (2003). In Schlenker (2003) the concealed question subject denotes a proposition, as does the post-copular constituent. He uses Groenendijk and Stokhof's semantics for questions. Hence, the copula equates two propositions. This (the equation of propositions) is also done in Yoo (2003), who shows how this can be modeled in HPSG, which will be presented in Chapter 4.1. In contrast to Schlenker, Romero (2005) uses Kartunen's semantics for questions. She interprets the concealed question subject as an individual concept and the post-copular constituent as a regular individual and as intensions of these with her second copula.[94] What Romero

[94] The copulas will be shown further down.

does is a combination of the semantic approach and the QDT. Her treatment of the specificational subject as an NP resembles the semantic approach, and she shares the usage of intensions with the QDT. In Romero's analysis the copula feeds a world argument (corresponding to the world of evaluation) to its subject and equates the resulting individual with the one contributed by the post-copular constituent. A third approach is Den Dikken et al. (2000). Here the *be* is neither predicative nor equational but simply an inflectional element that spells-out a functional projection called *Topic Phrase*. As Schlenker notes: this is "a somewhat stipulative move, at least from a semantic standpoint (why should the question-answer relation be marked by a special head?)"[95].

How can we assess the QDT? Does it offer any advantages compared to the other approaches? First of all, the QDT has the advantage that it can account for connectivity effects without either postulating an unmotivated sort of movement or reconstruction or an additional level of representation. Apart from this it makes use of the structural similarities between pseudoclefts and wh-questions that were laid out in Chapter 3.1. Further similarities were presented above. In contrast to the structural arguments for the analysis of the pseudocleft's subject clause as a wh-interrogative, which were based on shaky judgments, these similarities are striking and more convincing than those similarities between the clause types presented in Section 3.1.2. Another advantage of this theory is that the ellipsis that has to apply to the post-copular constituent in pseudoclefts is also found elsewhere. Therefore, this approach does not need any pseudocleft-specific stipulation but can rely on more general mechanisms that must be part of any grammatical theory. Besides, Schlenker (1998) observed that the similarities between question-answer pairs and pseudoclefts also hold for the cases where connectivity breaks down as shown in the examples below.

(177) a. What every student admires is some teacher. $\forall\exists/\exists\forall$

b. What does every student admire? Some teacher. $\forall\exists/\exists\forall$

c. What some student admires is every teacher. $*\forall\exists/\exists\forall$

d. What does some student admire? Every teacher. $*\forall\exists/\exists\forall$

[95] Schlenker (2003, p. 16).

The *every>some* reading, i.e. the reading in which *every* takes scope over *some*, is possible in the pseudocleft (177a) and in the question-answer pair (177b). However, the *some>every* reading is neither possible in the pseudocleft (177c) nor in the question-answer pair (177d). This example shows an advantage and a shortcoming of this approach at the same time. Although the theory correctly predicts that the *every>some* reading should be missing in (177c) because it is not possible in (177d), it cannot explain why the *every>some* reading is impossible. As Cecchetto (2001) points out, this problem becomes even more apparent when the elided parts of (177c) and (177d) are spelled out, because then the post-copular sentence and the answer obviously allow for the *every>some* reading, as shown below.

(178) a. What some student admires is some student admires every teacher.
b. What does some student admire? Some student admires every teacher.

As Cecchetto puts it: this theory "reduces" one mystery to another mystery.[96] What looks like a neat similarity between question-answer pairs from one perspective turns out to be a clear difference on closer inspection. More of these anti-connectivity effects can be evoked as shown in the example below.

(179) a. What Mike thinks Sue likes is himself.
b. What does Mike think that Sue likes? Himself.
c. *Mike thinks that Sue likes himself.

While the pseudocleft (179a) and the short answer in (179b) are fine, spelling out the supposedly ellided part as in (179c) renders an ungrammatical sentence. That is why Yoo (2003) opts for an analysis in the QDT vein, which does not rely on deleted full answers but uses non-deletion-based short answers instead. Her analysis will be presented completely in Chapter 4.
Another problem of the QDT is that the pseudocleft sentence does not have the superficial form that would be the outcome of a mere deletion operation. While in English the difference between the pseudocleft and a question-answer pair can be reduced to the *do*-inversion, other languages do not even use the wh-words that

[96] Cecchetto (2001, p. 6).

introduce questions for pseudoclefts.[97] In addition to this, the QDT must explain why connectivity also holds in English sentences with plain noun phrases. This problem was already mentioned in Section 3.1.2 and is exemplified again below.

(180) a. The thing that Mike isn't is mad at himself/*him/John.

b. The thing [every linguist]$_i$ loves is her$_i$ first syntax class.

c. The woman she$_i$ hated most was herself$_i$.

d. The thing that no one found was any beer.[98]

e. ?The thing that Mike didn't do was buy any beer.

As was shown before, it is obviously possible to have 'pseudoclefts' with DPs containing headed relative clauses as subjects. These specificational pseudoclefts of the extended definition show all the connectivity effects just like pseudoclefts with wh-phrases, as can be seen in (180). Yet, lacking a wh-word, these sentences obviously do not constitute interrogative clauses.
As Den Dikken et al. (2000) note, there are two possibilities to reconcile these pseudoclefts with the QDT. One is to claim that the DP-subject has the semantic function of a question without its syntactic form, i.e. it is some sort of 'concealed question'. This is the path taken by Romero (2005). She claims that specificational subject clauses show the same ambiguity that concealed question NPs show. This means a concealed question NP like the complement of *know* in (181) can be interpreted as an answer to two different questions. It could be the answer to a question like (181a) or it could be the answer to a 'meta-question' like (181b).

(181) John knows <u>the price that Fred knows</u>.

a. Fred and John know the answer to the same question like "What is the price of the milk?"

b. There are several prices at issue (the one of the milk, the one of the coffee, etc.) and John knows which one of these Fred knows. John does not need to know what that price actually is (e.g. $2.5).

[97] See Cecchetto (2001) for examples from Greek and Italian.

[98] Den Dikken et al. (2000) judge this sentence ungrammatical. My informants told my that, if anything, it is slightly awkward but definitely not ungrammatical.

Romero argues that the same holds for the subject clauses of specificational sentences. They are interpreted as questions. Whether the subject clause is interpreted as a 'meta-question' or a regular question is disambiguated by the post-copular constituent. This means the subject clause of (182a) is interpreted as in (182b) and the the subject clause of (183a) is interpreted as in (183b).

(182) a. The price that Fred thought was \$1.29 was (actually) \$1.79.
b. The question whose answer Fred thought was '\$1.29' has as its real answer '\$1.79'.

(183) a. The price that Fred thought was \$1.29 was the price of the milk.
b. The question the answer to which Fred thought was '\$1.29' is 'How much does the milk cost?'.

Romero gets the two readings by using the two copulas given in (184). One takes an entity and an individual concept as arguments and the other one takes the intension of an individual concept and an individual concept.

(184) Romero's (2005) copulas
$[\![Be_{1,spec}]\!] = \lambda x_e \lambda y_{<s,e>} \lambda w_s . y(w) = x$
$[\![Be_{2,spec}]\!] = \lambda x_{<s,e>} \lambda y_{<s<s,e>>} \lambda w_s . y(w) = x$

(185) $\iota x_{<s,e>}[\text{price}(x, w) \wedge \forall w'' \in \text{Dox}_f\ (w)[x(w'') = \$1.29]](w) = \$1.79$

We can either feed an NP-intension like (185) to Be_2 directly (as the second argument) to compute reading (183b), or we can feed the world of interpretation w to the NP-intension first to get its extension, which can then be fed to Be_1 to compute reading (182b).[99]
However interesting Romero's observation and interpretation seems to be, it seems like the ambiguity in specificational subjects that she claims to have found is simply the ambiguity between specificational and equative readings that certain sentences allow for. Thus, we are not dealing with a new insight here. It is the same thing Mikkelsen (2004b) (among others) found but 'in disguise'. The following examples illustrate this.

[99] Here $\forall w'' \in \text{Dox}_f(w)$ describes the set of all the doxastically accessible worlds of the subject Fred (=f).

(186) a. The price that Fred thought was \$1.29 was (actually) \$1.79.
b. The boy that Fred thought was Mike was Steve, wasn't he?
c. The boy that Fred thought was Mike was Steve, wasn't it?

(187) a. The price that Fred thought was \$1.79 was the price of the milk.
b. The boy that Fred thought was Steve was the boy from Argentinia, wasn't he?
c. The boy that Fred thought was Steve was the boy from Argentinia, wasn't it?

In (186) and in (187) the first sentence comes from Romero (2005). Examples (b) and (c) are sentences analogous to Romero's examples, but they make use of a person as subject. This enables us to use Mikkelsen's tag-question test that was introduced in Section 2.1. The post-copular constituent in (186b) and (186c) was turned into a name, too. Since this name will be interpreted as an entity, as was the case with *\$1.79* in (186a), this difference does not change the semantic structure of Romero's original example. As a result of the tag-question test, we see that we can use a neutral pronoun and a gender-inflected pronoun in both cases. This means that Romero's sentences must already have been ambiguous. We can infer this because we did not change the semantic types of the constituents. So the opposite of Romero's claim – that the specificational status of (186a) and (187a) is "hardly questionable"[100] – is true: in fact the sentences are truly ambiguous.[101]

As was mentioned above, Den Dikken et al. (2000) note that there are two ways of reconciling specificational DP subjects with the QDT. The second way to do it is to give the 'concealed question'-idea a syntactic form by claiming that the DP-subject has the underlying syntactic representation of a wh-question. This structure is shown below.

(188) a. ?[what [the thing that Mike didn't do] was ___] was buy any beer.

[100] Romero (2005, p. 19).

[101] Romero's claim that (187a) must be specificational because it shows opacity does not help her argument. Even if her claim were true, this only proves that one of the sentence interpretations is not a predicational one (under the assumption that predicational sentences do not show opacity).

b. [~~what~~ [the thing that Mike didn't do] ~~was~~ ___] was ~~he didn't~~ buy any beer.

A sentence like (188a) shows that the subject in the sentence (180e) could be interpreted as a wh-question. This renders an awkward, though not ungrammatical sentence. (188b) gives the underlying representation from which one could derive (180e) via ellipsis. Den Dikken et al. (2000) suggest that evidence for the possibility of embedding such relative clauses in elliptical wh-questions comes from sentences like the following:[102]

(189) a. The reason is is we have no handle on this construction.

b. All it is saying is is that you are being paid out of the grant.

(190) a. [(what)[the reason is *t*]] is [we have no handle on this construction].

b. [(what)[all it is saying is *t*]] is [that you are being paid out of the grant].

The grammaticality of these sentences is misleading.[103] As (190) shows, the first copula in this constructions belongs to an elliptical wh-question, and the second one belongs to the matrix clause. Den Dikken et al. (2000) point out that the ellipsis of the *what* in (189) and of *what* and *was* in (180e) (as shown in (188b)) is misleading, as it is an instance of what they call 'independent ellipsis', i.e. these items are not deleted under any identity relation with another linguistic token. Besides, according to Schlenker (2003) it is in fact identity that causes connectivity. This means stipulating 'independent ellipsis' as a trigger for connectivity goes against the very core of an analysis like Schlenker's: why should there be connectivity if there is no identity.

As mentioned above, Schlenker resorts to Groenendijk and Stokhof's semantics[104] for questions for his account of connectivity. Under his premise that *be* expresses identity, he can circumvent certain (semantic) type mismatches that would turn up with other approaches. Assuming that the answer must be exhaustive, he comes to the following semantics for a pseudocleft like *What John likes is himself.*[105]

[102] From Den Dikken et al. (2000, p. 83).

[103] Massam (1999) shows that such sentences do really exist and are used frequently. He calls this phenomenon the *the thing is*-construction.

[104] Groenendijk and Stokhof (1997).

[105] Schlenker (2003, p. 24).

(191) a. [[John likes himself]] = {w': John likes John in w'}
b. [[John likes [himself]$_F$]] = {w': {John likes John in w'}={John}}

(192) Semantics for '[What John likes] is [John likes himself]':
[[What John$_i$ likes is himself$_i$]](w) = 1 iff
{w':{x:John likes x in w'}={x: John likes x in w}}=
{w':{x:John likes x in w'}={John}}

Since two members of this equation are identical, it comes down to {x: John likes x in w}={John}. This means *What John likes is himself* is true if John likes John and nobody else. For specificational sentences with definite DPs, Schlenker assumes that "*the* spells out the definite feature of a concealed wh-word"[106]. This means a phrase like *the person John likes* is interpreted as *who is the person John likes*, but this is more or less what all QDT-approaches must assume.[107]

The most thorough critique of the QDT is formulated by Caponigro and Heller (2005). Apart from arguments already given, they show that the subjects of specificational sentences are not interpreted as questions either, i.e. neither as a non-concealed nor as a concealed question. This means neither specificational pseudoclefts nor any other specificational clause is based on questions. The evidence they provide comes in three pieces. First, they give some diachronic evidence. They show that a concealed question interpretation does not help to explain connectivity since Macedonian shows connectivity but does not allow for concealed questions. This means connectivity effects might coincide with concealed question interpretations but need not necessarily. Second, they show that free relatives can occur in specificational subject position but are banned from canonical concealed question environments. This means in languages that distinguish morphologically between

[106] Schlenker (2003, p. 27).

[107] Schlenker (2003) also claims that there are cases of 'connectivity' without a DP-construction like *the one/person* etc. Consider the example below.

(i) His$_i$ worry is himself$_{i,*j}$ / him$_{*i,j}$ / John$_{*i,j}$.

Here Schlenker's suggestion is to assume an argument position for *worry* in which *himself* etc. can be placed. However, examples like this should rather be considered examples of ordinary binding effects, not of connectivity.

interrogatives and free-relatives and which allow for concealed question NPs, free-relatives cannot appear in concealed question environments.[108] Put in connection with Schlenker (2003), this is an unexpected result because Schlenker claims that free relatives freely receive a concealed question interpretation. However, the data in Caponigro and Heller (2005) show that "free relatives do not receive a concealed question interpretation via a context-sensitive mechanism". That free relatives receive such an interpretation possibly only in pre-copular position of specificational sentences, which would be a context-sensitive mechanism, is refuted by their final argument. But before we turn to this argument, note that what they found for free relative clauses also goes for headed nominals, as shown below.

(193) a. [The president of the United States] is G.W. Bush.
b. Tell me [the president of the United States].
c. [The boy who ran over my pet snake] was John.
d. */?? Tell me [the boy who ran over my pet snake].

While the bracketed NP in (193a) and (193b) is apparently unproblematic, the NP *The boy who ran over my pet snake* seems to be fine as a specificational subject as in (193c) but not as a concealed question as in (193d).[109] Again this leaves open the possibility of a context-sensitive mechanism that ensures the concealed question interpretation in specificational sentences. Be that as it may, Caponigro and Heller recapitulate: "Unfortunately, we did not find a way to test this claim. Without independent evidence, assuming that nominals can be freely interpreted as concealed questions in the pre-copular position of specificational sentences is stipulative."[110] Finally, and most importantly, Caponigro and Heller show that the interpretation that free relatives receive in specificational subject position is different from their interpretation in canonical concealed question positions (remember that they established before that specificational subjects must be free relatives and not questions).

(194) a. Tell me [what the capitol of France is ___].

[108] Since their examples are not from English, I will not repeat them here.

[109] I must admit that their argumentation is not entirely convincing here because they also give some examples that are in my opinion predicational and not specificational.

[110] Caponigro and Heller (2005, p. 21).

b. Tell me [the capitol of France ___].

(195) a. *[What the capitol of France is ___] is Paris.

b. [What the capitol of France is ___] is beautiful.

In (194) we find a concealed question environment with the verb *tell*. (194b) uses an NP where (194a) uses an interrogative clause. Caponigro and Heller claim that it would be totally infelicitous to reply to (194a) with *beautiful*. They claim the answer must be *Paris*. In contrast to this, *Paris* cannot be the 'answer' in (195). Here it must be *beautiful*. This means when we examine the expected interpretation of a free relative clause in specificational subject position, we do not find the concealed question interpretation. Hence, the specificational subject position cannot be a concealed question position as Romero (2005) and Schlenker (2003) claim.

Collecting the arguments against QDT, we can say the following. First, the QDT seems inappropriate because the cleft clause does not sufficiently resemble an interrogative clause, as was shown in Section 3.1.2. Assuming that the cleft clause is syntactically not an interrogative but a relative clause does not help because relative clauses in concealed question environments do not get the interpretations they get in pseudoclefts. Second, assuming that the post-copular constituent is simply an ellipted answer is inappropriate because the full answers can have different meanings. Third, QDT needs to assign question meanings to many non-interrogative constituents like the definite description subjects in sentences like *The man that Mike met was Martin*. This is not convincing. The putative question interpretation cannot be tested. Finally, a look at other languages shows that cleft clauses do not pattern with interrogative clauses in languages in which the two clause types are morpho-syntactically distinguishable.

3.3.5 Summary

The approaches to connectivity are numerous and partly very divergent. Figure 3.4 summarizes the main lines of research and their assumptions as they were presented above.[111]

[111] This is an extended version of the one in Schlenker (2003, p. 9f).

Type	**Connectivity**	**1^{st} element**	**be**	**2^{nd} element**	**Main features of the analysis**
Predicational	no	What Jon likes	is	good for him	
		entity	$\emptyset$	predicate	
Plain identity	no	John	is	Peter	
		entity	=	entity	
Specificational	yes	What John likes	is	himself	
Revisionists					
Sharvit (1999)		function	=	function	- reanalyzes all c-command tests
					- sticks to appearances
Conservatives					
Heycock and Kroch (1999)		entity	=	entity	- posits an additional level of syntax
Reconstruction		?	?	?	- posits a new variety of movement
QDT 1:					
Den Dikken et al. (2000)		question	'Top'	answer	- must explain why question and answer do not have their normal form
					- must explain why *be* is used
QDT 2		question	=	answer	- must explain why question and answer do not have their normal form
Schlenker (2003)		proposition	=	set of worlds	

Figure 3.4: Approaches to connectivity

For the upcoming implementation of pseudoclefts in HPSG, we can summarize the following facts about connectivity effects. The implementation must explain the following phenomena. First, it must account for binding connectivity, i.e. Principle A, B, and C effects. It would be desirable to account for this via the same HPSG-mechanisms that explain 'binding effects' in general. Second, there should be a semantic explanation for NPI connectivity. This might also explain negation scope effects as in (172). As was mentioned above, this effect is also seen in question-answer pairs. However, as Caponigro and Heller (2005) showed, it is desirable to come up with a pseudocleft analysis that is not based on an interrogative interpretation of the cleft clause. This means the explanation for this effect must be compatible with questions and free relative clauses as subject clauses of pseudoclefts, but it must not depend on either of them. Furthermore, opacity and bound variable effects have to be explained. The account of tense connectivity, as thoroughly analyzed in Sharvit (2003), is probably not too difficult to handle. However, preferably we would not make use of two different *be's* as Sharvit's theory does.

A real challenge, probably for any theory, is the fact that connectivity effects are not limited to a construction form that could be described as *free relative clause + be + X*. As was shown above, these effects occur in all specificational sentences. This means the mechanisms that explain connectivity must also be applicable to certain constructions with a headed relative clause in the subject clause and even to sole NPs in subject position. At the same time, the analysis of specificational sentences must be kept distinct from the one for equatives. This is a desideratum that goes back to Mikkelsen's analysis presented in Chapter 2.1. Last and most importantly, Heycock and Kroch's (2002) insights must be implemented: comparing pseudoclefts and reversed pseudoclefts, they showed that information structure plays a decisive role. This means the occurrence of (anti)connectivity effects must somehow be linked to information structure. Therefore, the next section will take a closer look at the information structure of pseudoclefts and specificational clauses.

3.4 The information structural setup

This section takes a look at pseudoclefts from the perspective of information structure. Going back to the very beginning of this work, we should once again direct our attention to the fact that cleft constructions express a simple proposition via a bi-clausal syntax. This means we should at least expect two sources for semantic and pragmatic information. In the previous chapters we have seen evidence that the semantic information is carried in the cleft clause. The copula is merely an empty predicator. This is expected insofar as for a two-clause sequence like a pseudocleft "to express a logically simple proposition one of the two predicators must be empty"[112]. This of course raises the question of what the actual function of the matrix 'predication' is and why we need it in the first place. In the following I will gather views on this issue from three works. One problem that needs to be tackled in this venture is that the underlying frameworks of these works are not per se compatible with the framework used here, i.e. the one of Engdahl and Vallduvi (1996).

The first work is Delin and Oberlander (2005). They arrive at three generalizations about clefts and information structure. First, clefts must convey some new information. Even if all constituents of a cleft are already shared knowledge (e.g. old in the sense of Prince (1992)), the cleft must present a novel relation between them. Second, no cleft may carry all new information: "They serve to make special or specific links with the preceding discourse".[113] This means they always bear a part that connects them to the previous discourse. Hence, they cannot be thetic statements. This is a difference between clefts and their canonical counterparts, i.e. declefted pendants. Third, different types of clefts have different preferences for coherent relationships with the preceding context. While (comment-clause) *it*-clefts can, for instance, carry new information in their presuppositional part, i.e. the cleft clause, pseudoclefts cannot. This was basically already noted in Prince (1978): "If we compare the logico-semantic notion of presupposition with the discourse notion of known/old/given information, we find that, in the case of the WH-cleft, they seem to match quite closely."[114]

[112] Lambrecht (2001, p. 5).

[113] Delin and Oberlander (2005, p. 5).

[114] Prince (1978, p. 887).

A sketch of the major cleft types and their information structural set-up according to Delin and Oberlander (2005) is given in figure 3.5.

Cleft Type	Clefted constituent	Cleft clause
comment clause *it*-cleft	old	new or inferable
topic clause *it*-cleft	new	old or inferable
pseudocleftcleft	new	old or inferable
reverse pseudocleftcleft	old	new or inferable
reverse pseudocleftcleft	old but contrastive	old or inferable

Figure 3.5: Schematic information structures of three cleft types

At this point we can record the fact that the pseudocleft's information structure is fixed. In contrast to the two other types of clefts in figure 3.5, the pseudocleft allows for one information structure pattern only.

The second work dealing with this issue that will be consulted here is Heycock and Kroch (2002). They make the same observation that Delin and Oberlander made for (specificational) pseudoclefts for specificational sentences in general. Consider the following examples.

(196) a. A: Who was the culprit? (John or Bill?)
b. B: JOHN was the culprit. PREDICATIONAL

(197) a. A: What was John? (was John the culprit or the victim?)
b. B: John was the CULPRIT. PREDICATIONAL

(198) a. A: Who was the culprit? (John or Bill?)
b. B: The culprit was JOHN. SPECIFICATIONAL

(199) a. A: What was John? (was John the culprit or the victim?)
b. B: *The CULPRIT was John. SPECIFICATIONAL

Examples (196) and (197) show that in predicational sentences the focus can either be on the pre- or the post-copular constituent. In contrast to this, the specificational sentence allows only for a focus on the post-copular constituent. Focusing the pre-copular constituent (which here means giving it an A-accent) as in (199) renders the sentence ungrammatical.[115] If we relate this observation to specificational pseudoclefts, this means that the cleft clause holds a connection to the previous discourse, i.e. it is always *ground* in Engdahl and Vallduvi's (1996) terminology and *theme* in Steedman's (2000). The post-copular constituent gives information about the theme, i.e. it is *focus* in Engdahl/Vallduvi's terminology and *rheme* in Steedman's. This means the cleft clause is not a question as the QDT suspected but rather "the ground of the assertion made by the sentence" as Heycock and Kroch (2002) put it.[116]

The third work (or pair of works) that is made use of here is Mikkelsen (2004b) and Mikkelsen (2004a). These studies that do not just consider the information structure of pseudoclefts in particular but that of specificational sentences in general, too. As the other two works that were referred to, Mikkelsen shows that specificational sentences have a fixed information structure. She combines her insights from the analysis of the semantic types in copular clauses (see chapter. 2.1) with Birner's (1994) and (1996) work on inversion and comes to the conclusion that specificational sentences fit Birner's definition of inversion. Birner defines inversion as follows.

(200) An inversion is a sentence in which the logical subject[117] appears in a post-verbal position while some other, canonically post-verbal, constituent appears in clause-initial position.

Following Birner, Mikkelsen uses the concept of discourse-familiarity from Prince (1992) and shows that the subject in a specificational sentence must be as discourse-

[115] Note that under Mikkelsen's analysis the answer in (198) could just as well be an equative sentence.

[116] Heycock and Kroch (2002, p. 109).

[117] Birner (1996, p. 12). See Jacobs (2001, p. 647) on logical/semantic subjects:

(i) In (X Y), X is the *semantic subject* and Y the *semantic predicate* iff (a) X specifies a variable in the semantic valency of an element in Y, and (b) there is no Z such that (i) Z specifies a variable in the semantic valency of an element in Y and (ii) Z is hierarchically higher in semantic form than X.

old[118] or older than the post-copular constituent. This goes together well with Birner's generalization: "The preposed element in an inversion must not be newer in the discourse than the postposed element".[119] Birner (1994) found that there is no significant interaction between hearer-familiarity and position but a clear interaction between discourse-familiarity and position. Her results are summarized in the table in figure 3.6[120].

Initial element → Final element ↓	discourse-old	discourse-new	total
discourse-old	138	3	141
discourse-new	1008	141	1149
total	1146	144	1290

Figure 3.6: Discourse-familiarity in inversion

In figure 3.6 we see that in the majority of cases the preposed element is discourse-old and the final element discourse-new. In the relevant remaining cases, they are of equal status. The 3 tokens with new before old information are not significant. With respect to these figures, we must keep in mind that not all of these examples are specificational in Mikkelsen's sense. Many (possibly the majority) of Birner's examples are predicate inversion structures (or predicate topicalization depending on the terminology chosen). This means, as was shown in Chapter 2.1, that the syntactic subject is in post-copular position. This contrasts with specificational structures, where it is the other way around. Nevertheless, specificational clauses suit the definition of inversion in (200). Furthermore, we must keep in mind that discourse-oldness is not a condition on all parts of the constituent. It is sufficient if some part of it is discourse-old. The information of discourse-oldness then "trickles up" to the con-

118 Birner suggests that factors like recency of mention and salience could be used to define degrees of Discourse-oldness, but she leaves the issue unresolved.

119 Birner (1996, p. 90).

120 Reproduced from Mikkelsen (2004b, p. 211), which is reproduced from Birner (1994, p. 251) but resolved of tokens for which no sufficient context for determining the discourse-familiarity was found.

taining constituent.[121]

Here we should return to Mikkelsen's main proposals. They can be summarized as follows. Specificational clauses are the result of two competing constraints. The first constraint requires that the more definite expression must appear in subject position. The second constraint requires that the topic (which we can now call theme as well) must appear in subject position. Specificational clauses are then a result of the second constraint overriding the first one.[122] Birner's claim that the initial element in an inversion must be as discourse-old as the final element is strengthened by Mikkelsen by excluding the possibility that the initial element is discourse-new.[123]

For the system that will be used in the implementation later on this raises the following problem. Birner says that the initial ("preposed") element in an inversion must not be any newer than the following one.[124] The focus/ground distinction that is used in Engdahl and Vallduvi (1996), which was presented in Chapter 2.2, is not compatible with different degrees of newness. In their system one part, the ground, anchors the sentence to the preceding discourse, i.e. is given, and one part is non-given. There is nothing in between. Taking a definition of giveness as in (201) this means that Engdahl and Vallduvi's system only offers a feature for the first conjunct/disjunct. This is their FOCUS-feature.

[121] See Mikkelsen (2004a, p. 18). See also Mikkelsen (2004b, p. 213, footnote 17):"Further conditions on how much and which parts of the fronted constituent must be Discourse-old for the whole constituent to count as Discourse-old are needed, but I am not at present able to articulate these. The very weak condition suggested in the text (that something is Discourse-old if any part of it is Discourse-old), in effect, elevates Princes (1981) Anchored entities to Discourse-old, which goes against the classification of her 1981 categories in terms of Discourse-familiarity in her 1992 paper". Here we should keep in mind that marking a constituent as discourse-old only means that it should be perceived this way (Birner (1996, p. 140)). Furthermore, note that Birner (1996) treats inferrables a bit differently from Prince (1992). Inferrables are neither quite discourse-old nor quite discourse-new in Prince (1992). Birner makes use of the notion of accommodation and suggests that inferrables represent discourse-new information "being treated as if it were in fact familiar, which in turn (assuming that the appropriate inferential connections can be made) causes the hearer to add the inferrable information to the discourse model and treat it as if it was Discourse-old."

[122] Mikkelsen (2004b, p. 196).

[123] The formulation "as discourse-old as" did not exclude them from both being discourse-new.

[124] See above.

(201) A feature X of an expression α is a Givenness feature iff X indicates whether the denotation of α is present in the CG (Common Ground) or not, and/or indicates the degree to which it is present in the immediate CG.[125]

As was mentioned before, this is also in line with Schwarzchild's (1999) concept of givenness. A feasible way to bring together Mikkelsen's insights and an approach like Engdahl and Vallduvi's is to reconsider what discourse-oldness means with respect to what we see in figure 3.5. It means that one constituent is presented as discourse-older than the other. This means it is used in a way which is intended to signal that it should be perceived by the addressee as discourse-older. Since thematic information is always presented in such a way that it appears older than the rheme information, we might as well say the discourse-older constituent is the more thematic constituent. Put briefly: The discourse-old(er) part always coincides with the theme and the discourse-new(er) part always coincides with the rheme. This is the way we should actually view the oldness/newness distinction in figure 3.5. From the status of being discourse-old(er) or -new(er) and Birner's generalization (see above), we can infer which constituent is more or less thematic. Note, however, that this does not mean that we use a definition of topic as 'the discourse-old constituent'.[126] The topic expression will always appear discourse-older than the focus expression, but the definition of topic that is used here is still the one from (79) in Section 2.2.5.[127]

Reconsidering the data in figure 3.5 in this way is not unlike what Mikkelsen (2004b) does. As she puts it: "[...] we need to connect the (descriptive) notion of Discourse-old with the (theoretical) notion of topic."[128] One problem that Mikkelsen mentions about her analysis is that she did not find a notion of topic that matches

[125] From Krifka (2007, p. 25).

[126] As Krifka (2007, p. 29) notes: "In the Prague School, the notion is called 'theme', and conflated with the one of old information (e.g., Danes (1970)). We should refrain from this, even if in many cases, topic constituents are 'old' in the sense of being inferrable from the context. But there are certainly cases of new topics.".

[127] The definition was the following:

(i) The topic constituent identifies the entity or set of entities under which the information expressed in the comment constituent should be stored in the CG [common ground] content.

[128] Mikkelsen (2004b, p. 237).

specificational subjects.[129] Therefore, she falls back to one precondition for topics, namely discourse-oldness. Yet, she admits that being (treated as) discourse-old is only part of the notion of topic.[130] Mikkelsen uses the following example to show this.[131]

(202) Q: What is John? The winner or the runner-up?
A1: #The WINNER is John.
A2: John is the WINNER.

Obviously *the winner* is discourse-old in both answers, i.e. not any newer than *John*. Nevertheless, the first answer is infelicitous. This means that a discourse-old predicative DP does not automatically qualify as a specificational subject. The question that is under discussion seems to matter, too, i.e. the distinction between theme/rheme and ground/focus. The question at issue in (202) apparently requires *the winner* to be the focus/rheme. The specificational structure, however, requires the subject to be topic. If we now assume that being topic and being focus are two mutually exclusive properties, we can account for the infelicity of answer A1: The subject is required to be topic and focus at the same time.[132]
Be that as it may, this cannot explain why there should be specificational sentences at all. Their job could be done by predicational sentences with narrow focus. Consider the example below.[133]

(203) Q: Who is the winner?
A1: The winner is JOHN. SPECIFICATIONAL
A2: JOHN is the winner. PREDICATIONAL

We see that the predicational sentence with narrow focus can answer the same question as the specificational sentence. So what is the advantage of specificational

129 Mikkelsen (2004b, p. 196).

130 Compare this to Jacobs (2001), who decomposes the notion of topic into prototypical features to show that a general definition of topic is inappropriate.

131 From Mikkelsen (2004b, p. 238). This is basically the same as (199) but with a different grammaticality judgment. This means, while Heycrock and Kroch considered this answer ungrammatical, Mikkelsen considers it inappropriate.

132 See Mikkelsen (2004b, p. 239).

133 Taken from Mikkelsen (2004b, p. 238).

sentences? Why should they be used instead of predicational sentences with narrow focus? Mikkelsen gives the following answer.

(204) "What Discourse-oldness, and Birners work on the discourse function of inversion, bring to the table is the relevance of linear order. The 'advantage' that the specificational answer in [(203)] has over the predicational one is that it presents the relatively familiar information before the relatively new information, or, more abstractly, that it aligns the topic with clause-initial position"[134]

This is also what Halliday (1985) sees in pseudoclefts, which he states as follows.

(205) "[The pseudoclefts's] function is to express the Theme-Rheme structure in such a way as to allow for the Theme to consist of any subset of the elements of the clause. This is the explanation for the existence of clauses of this type: they have evolved, in English, as a thematic resource, enabling the message to be structured in whatever way the speaker or writer wants."[135]

What is also related to the information structure of specificational clauses is the oddness of indefinite NPs as subjects. While (206a) is unproblematic, (206b) is usually considered ungrammatical.

(206) a. John is a doctor.

b. *A doctor is John.

It has sometimes been claimed that examples like (206) were evidence for a general ban of indefinite NPs in the subject position of specificational clauses. Mikkelsen has the following to say about this.

(207) "It is true that certain indefinites do not felicitously occur as subjects of specificational clauses, but that is not because they are semantically predicative, but rather because these particular indefinites fail to contain any Discourse-old material, which in turn takes away the necessary discourse motivation for raising the predicate to subject position."[136]

[134] Mikkelsen (2004b, p. 239).

[135] Halliday (1985, p. 43). Note that although Halliday uses a definition of theme that is a bit different from the theme/topic definition used here, his insight carries over to the present analysis. He assumes that the theme is always the clause-initial element, which explains why predicative narrow focus constructions could not fulfill the purpose that he ascribes to pseudoclefts.

[136] Mikkelsen (2004b, p. 228).

Adding further information within the subject NP in (206b), like e.g. modifiers, would of course improve the ability to include discourse-old material in this constituent. This can increase the subject's degree of thematicity.[137] Consider the example below.

(208) a. A doctor with a good reputation is John.

b. A doctor I would not recommend is John.

Adding modifiers that restrict the set evoked by the indefinite NP seems to avoid the ungrammaticality that we saw in (206b). The additional modifiers help to d(iscourse)-link the subject NP, and they allow for further bridging inferences to preceding discourse.

Summarizing, we can say the following. This section presented some aspects that are discussed with respect to pseudoclefts and information structure as well as specificational sentences and information structure. It is generally agreed that the subject in specificational clauses must be the theme/topic. The exact definitions of theme/topic do often differ though. The given/non-given distinction and the discourse-old/discourse-new distinction obviously play an important role. So does the 'question under discussion', which determines the rheme/focus. For the present purpose it is not necessary to have a full analysis of how the focus/topic marking "trickles up" to the containing constituent. Instead, it is sufficient to assume that the theory of information structure imposes some marking on the relevant constituents that can be used to distinguish theme and rheme. I will rely on such a 'diacritic marking' in my analysis in Chapter 4. A second issue that was raised in this section was the question of why we need specificational clauses in the first place. Mikkelsen's

[137] Note that we see the same effect in the construction that Webelhuth (2007) calls *NP-separation*. Consider the examples below.

(i) a. The plan was to go to the cinema.

b. *A plan was to go to the cinema.

c. A plan that everybody was happy about was to go to the cinema.

While the definite article is unproblematic as shown in (ia), the indefinite article in (ib) causes ungrammaticality. However, adding a modifying relative clause to the indefinite NP 'rescues' the sentence again as shown in (ic).

(2004) appeal to Birner's work on inversion showed that specificational clauses are a means to align the topic with the clause-initial position.

3.5 The reverse pseudocleft

In this section it will be analyzed how reverse pseudoclefts fit in with the previously discussed types of pseudoclefts. Now that we have seen several differences between specificational and predicational pseudoclefts, it is easy to show that reverse pseudoclefts are not specificational. Some evidence for this comes from their gapping behavior. While the reverse pseudocleft in (209a) allows for gapping as shown in (209b), gapping is impossible in the specificational pseudocleft (209c), as shown in (209d).[138]

(209) a. Overbearing is what Bill is, and timid is what Sue is.
b. ?Overbearing is what Bill is, and timid ___ what Sue is.
c. What Bill is is overbearing, and what Sue is is timid.
d. *What Bill is is overbearing, and what Sue is ___ timid.

Although the reverse pseudoclefts superficially consist of the same parts as the pseudoclefts, they allow the copula to be gapped. From these examples one might infer that the reverse pseudocleft is not specificational. Note, however, that the gapping restriction is actually considered a property of pseudoclefts and not of specificational sentences in general. So what (209) rather shows is that reverse pseudoclefts do not behave like pseudoclefts with respect to this test. But can we be sure that the reverse pseudocleft is predicational or equative? Another example from Den Dikken et al. (2000) supports the assumption that reverse pseudoclefts are equative structures.[139]

(210) a. *Overbearing is what Bill is, and Sue, timid.
b. *Overbearing is what Bill is, and timid, Sue.
c. Bill is upset, and Sue timid.
d. *Bill is upset, and Sue Mary.

[138] Judgements and examples are taken from Den Dikken et al. (2000, p. 69).
[139] From Den Dikken et al. (2000, p. 69).

e. Bill is Mike, and Sue Mary.

The crucial example here is (210a). The second conjunct is clearly the gapped version of *Sue is timid*, which is unambiguously predicational. This means it is obviously impossible to coordinate a reverse pseudocleft and a gapped predicational clause. That predicational clauses can be coordinated and gapped is shown in (210c). Example (210d) shows that a predicative clause cannot be coordinated with a gapped equative clause. Example (210e), on the other hand, shows that an equative clause can be coordinated with a gapped equative clause. From this we could infer that the first conjunct in (210a) must be an equative sentence. If it were predicative, we would expect grammaticality analogous to (210c). However, another observation casts strong doubts on such an interpretation. Consider the sentence pair below.

(211) a. Overbearing is the boy next door, isn't he?
b. *Overbearing is the boy next door, isn't it?

If (211a) were indeed an equative, the subject of the tag-question pronoun should be *it*. Yet, this is not possible as is shown in (211b). Therefore, the sentences in (211a) and (209a) that seem to be pseudoclefts must actually be considered predicate inversion structures. Sentence (210a) then shows that a predicate inversion structure and a canonical predicative structure cannot be coordinated. This fits in well with the observation of Oberlander and Delin (1996) that reverse pseudoclefts only allow for *this* and *that* as subjects.[140] Thus for the time being, I will follow Oberlander and Delin (1996) and call reverse pseudoclefts those sentences with *this* or *that* as subject and a wh-clause in post-copular position. Consider figure 3.7, which shows the frequency of different wh-words in the post-copular clause and relates it to the different subjects.[141]

There are two notable aspects of figure 3.7. First, it seems as if wh-clauses with *who* never appear in reverse pseudoclefts. This means sentences like *This is who you should talk to* are apparently not used in natural language. Second, from the range of wh-words we can infer that reverse pseudoclefts can be equative struc-

[140] Only 7% of their reverse pseudoclefts showed a different subject. Collins (1991) also claims to have found a very small number of examples with *it*, *these*, *those*, NPs, and personal pronouns.

[141] From Oberlander and Delin (1996, p. 189).

Relativizer	*this*	*that*	other	total
what	42	142	15	199
why	9	34	2	45
how	3	11	-	14
where	10	23	4	37
when	2	4	1	7
Total	66	214	23	302

Figure 3.7: Reverse pseudoclefts by relativizer and subject

tures. Wh-clauses with wh-words other than *what* and *who* get a type $\langle e \rangle$ interpretation as was shown in previous sections of this chapter. Since this is also the semantic type of (demonstrative) pronouns, reverse pseudoclefts with those other wh-words can only be equative structures. This is also the interpretation they get in Oberlander and Delin (1996). Nevertheless, I will also assume that reverse pseudoclefts with *what* in the cleft clause can also be predicative structures. Since the copula is indifferent to the semantic order of its arguments and since it was shown that we need a predicative interpretation of the cleft clause for specificational pseudoclefts, a predicative interpretation of the cleft clause should also be available in post-copular position. This might also explain why *what* is by far the most frequent wh-word in reverse pseudoclefts. The 199 occurrences of *what* in the table above include cases in which the cleft clause is a predicate as well as the cases in which it is a referential expression. Put differently: it includes equative sentences as well as predicative ones.

A peculiarity about reverse pseudoclefts is that we find most of the connectivity effects that were presented in Section 3.3.1. We previously assumed that connectivity effects were an indicator for specificational clauses. Here we see that we should rather say that they are an indicator for the fact that an argument is reconstructed within its predicate.[142] Under this perspective the following observations support the assumption that reverse pseudoclefts are predicative structures. Let us first look at opacity effects. Consider the examples below.[143]

(212) a. What he is looking for is a cheap house.

[142] Many authors call them *reconstruction effects* anyway.

[143] From Heycock and Kroch (2002, p. 117f).

b. A cheap house is what he is looking for.

(213) a. Her goal is a new house.

b. A new house is her goal.

In (212) we see that the reverse pseudocleft (212b) allows for a de dicto and a de re reading with opaque predicates. We find the same readings in the pseudocleft (212a). Note that the same ambiguity can be found in non-cleft sentences as shown in (213).
Bound variable effects are also found in reverse pseudoclefts as is shown below.[144]

(214) a. What [no Scottish woman]$_i$ can live without is her$_i$ oatcakes.

b. Her$_i$ oatcakes is/are what [no Scottish woman]$_i$ can live without.

Obviously we can get a bound variable reading for (214b) despite the fact that superficially the pronoun is not in the scope of the binder *no Scottish woman*. As was shown before, we see this in pseudoclefts like (214a), too.
Furthermore, we find binding connectivity in reverse pseudoclefts as shown below.[145]

(215) a. Himself$_i$ is who John$_i$ saw.

b. Proud of himself$_i$ is what John$_i$ has always been.

(216) a. *John$_i$ is who he$_i$ thinks they are about to fire.

In (215) we see Principle A connectivity. The reflexive is bound although it precedes its binder. Such binding is even possible with a reflexive embedded inside another phrase as in (215b). Example (216) is supposed to show that we also get Principle C connectivity. Note, however, that Heycock and Kroch admit that there is another reading for this sentence that is grammatical. In that reading *John* would get an A-accent.[146] Furthermore, note that Heycock and Kroch do not give any examples for Principle B connectivity. They claim that the obligatory focal stress found in pseudoclefts would render non-clefted sentences grammatical even if they

[144] From Heycock and Kroch (2002, p. 117).

[145] From Heycock and Kroch (2002, p. 118f).

[146] See Heycock and Kroch (2002, p. 118, footnote 7).

showed apparent violations of Principle B.[147]

What is especially interesting is that reverse pseudoclefts differ from standard pseudoclefts with respect to Principle C effects when we embed a referential expression within another NP/DP or clause. Consider the examples below.[148]

(217) a. What $\text{he}_{*i/j}$ was was proud of John_i.
b. What $\text{he}_{*i/j}$ will never do is scold John_i's children.
c. What $\text{he}_{*i/j}$ really missed was John_i's dog.
d. What $\text{he}_{*i/j}$ had always claimed was that John_i was innocent.

(218) a. Proud of John_i was what $\text{he}_{*i/j}$ was.
b. Scold John_i's children is what $\text{he}_{*i/j}$ will never do.
c. John_i's dog was what $\text{he}_{i/j}$ really missed.
d. That John_i was innocent was what $\text{he}_{i/j}$ had always claimed.

The examples in (217) show that with respect to Principle C connectivity, pseudoclefts always behave as if the post-copular constituent was 'reconstructed' within the cleft clause. It does not matter how the referential expression is embedded within the post-copular constituent. Coreference of the referential expression with the antecedent in the cleft clause is never possible. This contrasts with the reverse pseudoclefts in (218). Here the referential expression and the pronoun can be coreferential if the referential expression is embedded within a DP/NP as in (218c) or another clause as in (218d). The different binding behavior should be considered a result of the ambiguity of such sentences. On the one hand, they could be predicational, in which case coindexation of the proper name and the pronoun would not be allowed. On the other hand, they could be equatives as den Dikken notes.[149] In this case the cleft clause would get an NP interpretation. Coindexation of the proper name and the pronoun would be allowed because in this interpretation the subject NP is not reconstructed into the cleft clause.

147 Heycock and Kroch (2002, p. 118, footnote 6).

148 From Heycock and Kroch (2002, p. 119), who state that they came across this issue in Den Dikken et al. (2000, p. 84).

149 Den Dikken (2005, p. 18).

Another difference between pseudoclefts and reverse pseudoclefts concerns NPI connectivity. Consider the examples below.[150]

(219) a. *Any novels was/were what he didn't buy.

b. *Any wine was what what nobody bought.

c. A doctor who knew anything about acupuncture was what we couldn't find.

While the standard pseudocleft allows for NPIs in post-copular position if there is a licenser in the cleft clause[151], the reverse pseudoclefts in (219) do not. The behavior of the reverse pseudoclefts, however, changes, when the NPIs are embedded within a DP/NP as in (219c).

According to Heycock and Kroch (2002) the different behavior of pseudoclefts and reverse pseudoclefts with respect to connectivity is related to their information structure. There are two possible information structures for reverse pseudoclefts. These are topic>focus and focus>topic. For the standard pseudocleft there is only one: topic>focus. This assumption is also confirmed by a corpus study presented in Hedberg and Fadden (2005). The reverse pseudoclefts that have the topic in the cleft clause show the same connectivity effects as standard pseudoclefts. Conversely, this means that the reverse pseudoclefts with the structure topic>focus do not show the same connectivity as their standard pseudocleft counterparts. Unfortunately, the question of how exactly this difference comes about is not answered by Heycock and Kroch. However, the following example is given to support this claim.[152]

(220) a. Four stories about the war, she would like to rewrite.

b. Four stories about the war, she would like to write.

(221) a. Twenty stories about John$_i$ is/are what he$_{i/j}$ has absolutely refused to rewrite.

b. Twenty stories about John$_i$ is/are what he$_{*i/j}$ has absolutely refused to write.

[150] From Heycock and Kroch (2002, p. 119f).

[151] See Section 3.3.1.

[152] Partly taken from Heycock and Kroch (2002, p. 120ff).

With respect to (220b), Heycock and Kroch claim that a verb of creation like *write* does not allow for a wide-scope existential reading for the quantified phrase *four stories about the war*. Yet, such a reading is possible with *rewrite* as in (220a). Therefore, example (220a) is assumed to have two readings: one which is an instance of *topicalization* and one which is an instance of *focus movement*. The sentence in (220b) only has a *focus movement* reading. Using the system of Engdahl and Vallduvi (1996) as introduced in Section 2.2.5, we can say that in (220a) *four stories about the war* can either have an instantiated LINK-value or an instantiated FOCUS-value. In (220b), on the other hand, it can only have an instantiated FOCUS-value.
If we transfer this insight to the reverse pseudoclefts in (221), we see the following. In (221b) the meaning of *write* reduces the number of possible topic-focus patterns to one, as was the case in (220b). Now, we see that this sentence, which allows for only one reading, behaves exactly like the standard pseudocleft, which also allows for only one reading, with respect to connectivity. The inverted pseudocleft has only one possible information structure, which here means only one possible topic-focus pattern, i.e. the one with the topic in the cleft clause as in standard pseudoclefts. The reverse pseudocleft in (221a) allows for an additional reading, i.e. topic>focus with the cleft clause as focus, and we can infer that it is the second reading that allows for the coreference of referential expression and pronoun. As Heycock and Kroch put it: "where the initial phrase cannot be construed as a topic, the antireconstruction effect disappears."

Another fact that we can state about reverse pseudoclefts is that they show exhaustivity. Consider the example below.

(222) a. ?{What/The person} Mike hates is himself, and he hates his mother, too.[153]

b. Himself is what Mike hates, and he hates his mother, too.

I gave (222a) the judgement that Collins (1991) gives such sentences, although it was judged acceptable by my informants; so was (222b). Since we see exhaustivity in pseudoclefts and reverse pseudoclefts, we should infer that exhaustivity is not related to the matrix clause in these constructions, but to the cleft clause. The matrix

[153] This sentence follows the pattern of Collins's (1991) examples in (118).

clauses in (222a) and (222b) are of different types (the former is specificational and the latter is predicational). The cleft clauses, however, are the same.

This section closes with the following insights. Possible shapes of reverse pseudoclefts were discussed, and it turned out that only sentences with *this* or *that* as subject and a wh-clause in post-copular position should be considered reverse pseudoclefts. Furthermore, the range of wh-words in the cleft clause indicated that certain reverse pseudoclefts must be equative, and others, i.e. those with *what* in the cleft clause, can also be predicative. It was also shown that we find almost all of the connectivity effects in reverse pseudoclefts, too. The difference between pseudoclefts and reverse pseudoclefts with respect to some connectivity effects was ascribed to the fact that reverse pseudoclefts allow for two different information structures, while the information structure of standard pseudoclefts is fixed. However, the information structure is only an indicator for the clause type. This means the predicative reverse pseudoclefts show connectivity effects, while the equative reverse pseudoclefts do not. Both have a fixed information structure. In equative reverse pseudoclefts, the cleft clause is the focus/rheme, and in predicative reverse pseudoclefts, the cleft clause is the topic/theme. It was also shown that we see exhaustivity in reverse pseudoclefts just like in (non-reverse) pseudoclefts.

3.6 Taking stock

This chapter took a look at the syntactic and semantic properties of pseudoclefts and reverse pseudoclefts. First, diverse definitions of pseudoclefts were presented. Then it was shown that there are two different classifications of the cleft clause available. It could either be a free relative clause, or it could be a wh-interrogative clause. After evaluation of the arguments it turned out that the cleft clause should be considered a free relative clause.

On the semantic side the differences between specificational and predicational pseudoclefts were presented. It turned out that there must be a third type of clause, namely an equative, that follows the superficial pseudocleft structure *wh-clause + copula + X*. These equative sentences can either have DP subjects or the whole range of wh-words in the cleft clause. In contrast to this, specificational pseudoclefts only allow for *what* or *who* in the cleft clause. Moreover, it was shown that specificational clauses come with an exhaustiveness implicature. The claim, which is sometimes found in the literature, that specificational clauses necessarily show contrastiveness was discarded. The question of whether they show an existential implicature or presupposition for the post-copular constituent will be answered during the implementation.

Furthermore, connectivity effects were presented. They are not only found in specificational pseudoclefts but in specificational clauses in general. Several ways to explain these effects were discussed. The QDT and the syntactic approach were discarded. The former because it seems to be based on faulty observations; the latter because it does not satisfactorily explain all connectivity effects without violating its own premises. This seems to leave the semantic approach as the only choice. Unfortunately, the semantic approach considers the *be* in specificational clauses to be a *be* of identity. This means specificational clauses are equatives in the semantic approach. As was shown in Chapter 2.1 in the discussion of Mikkelsen's work, this is an undesirable assumption. It seems that this issue demands a new approach. Preferably this new approach should come in a shape that offers the simplicity of reconstruction as found in the syntactic approach. It should allow for an interpretation of the post-copular constituent 'in the right place' without assuming that this constituent must actually be in that place at any time. Such a new approach would be something like a mixture of the semantic and the syntactic approach. It would be semantic reconstruction.

Looking at (specificational) pseudoclefts from the perspective of information structure revealed the following facts. Specificational pseudoclefts and specificational clauses in general have a fixed information structure. The theme must always appear before the focus. Following Mikkelsen and others we can say that pseudoclefts are considered a means of aligning the theme with a clause-initial position.

Taking reverse pseudoclefts into consideration revealed an interesting difference between pseudoclefts and reverse pseudoclefts. While the information structure of (standard) pseudoclefts is restricted to one pattern, reverse pseudoclefts allow for a second pattern. It is the reverse pseudoclefts with the cleft clause as focus/rheme that show connectivity effects different from those of (standard) pseudoclefts. Con-

versely, this means that pseudoclefts and reverse pseudoclefts with the cleft clause as topic/theme show the same connectivity effects as standard (non-reverse, specificational) pseudoclefts. Moreover, reverse pseudoclefts show exhaustivity like standard pseudoclefts.
In the following these findings will be implemented in HPSG.

Chapter 4

Pseudoclefts in HPSG

This chapter shows how pseudoclefts have been analyzed in HPSG before and how pseudoclefts and related constructions should be analyzed if we take the facts presented in the previews chapters into consideration. After the development of an analysis for specificational pseudoclefts, the analysis will be extended to equative and predicative pseudoclefts and to pseudocleft-related constructions, i.e. specificational clauses in general.

4.1 QDT in HPSG

As was mentioned in section 3.3.4, there has been one attempt to implement the QDT in the HPSG-framework. Yoo (2003) opted for an analysis of pseudoclefts as an equation of wh-question and non-deletion-based short answers. Although the underlying assumption that pseudoclefts involve wh-questions was refuted in chapter 3.3, taking a look at Yoo's solutions can offer some insights. It can help to figure out what must be considered in HPSG specifically when it comes to connectivity effects.

4.1.1 A new *be*

The first piece in Yoo's analysis is a lexical entry for *be* which has a question and a proposition on the argument structure.

$$(223)\ \left\langle \textit{be}, \begin{bmatrix} \text{ARG-ST} & \left\langle \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{INT} & + \end{bmatrix} \\ \text{CONT} & \boxed{1}\begin{bmatrix}\textit{question} & \\ \text{PARAMS} & \textit{nelist}\end{bmatrix}\end{bmatrix}, \begin{bmatrix}\text{HEAD} & \begin{bmatrix}\text{IC} & + \\ \text{INV} & -\end{bmatrix}\\ \text{CONT} & \boxed{3}\textit{proposition}\end{bmatrix}\right\rangle \\ \text{CONT} & \begin{bmatrix} \text{QUANTS} & \left\langle\begin{bmatrix}\textit{the-rel} & \\ \text{INDEX} & \boxed{2}\\ \text{RESTR} & \textit{resolves}(\boxed{2},\boxed{1})\end{bmatrix}\right\rangle \\ \text{NUCL} & \begin{bmatrix}\textit{identiy-rel} & \\ \text{ARG1} & \boxed{2}\textit{proposition}\\ \text{ARG2} & \boxed{3}\end{bmatrix}\end{bmatrix}\end{bmatrix}\right\rangle$$

There are a number of things to note about this lexical entry. First, note that it does not equate the question meaning itself with the post-copular constituent. This would render a type mismatch. Instead, it takes the resolving answer to the question and identifies it with the proposition that the post-copular constituent is supposed to express. Thus, Yoo has to make sure that the *be* does not pass up the canonical interpretation of the interrogative clause in subject position, i.e. a question interpretation, but the answer to that question. Here she makes use of the coercion mechanism for interrogative complements of resolutive predicates as proposed in Ginzburg and Sag (2000). What Ginzburg and Sag (2000) propose is that a verb like *know* can embed a structurally interrogative clause as a complement, but coerces it to express a *fact*, not a question.[1] Note that this is not achieved by postulating a new interrogative clause type which allows for a different semantic value, but by formulating a constraint on the lexical entry of resolutive predicates. This constraint is given below.[2]

---

[1] See Chapter 2.2 for the hierarchy of these semantic types.

[2] Ginzburg and Sag (2000, p. 353).

(224) *Resolutive predicate:*

$$\left[\text{SS|LOC}\ \left[\begin{array}{ll}\text{ARG-ST} & \left\langle NP_4, \begin{bmatrix}\text{IC} & - \\ \text{CONT} & \boxed{1}\,\textit{question}\end{bmatrix}\right\rangle \\ \text{CONT} & \left[\begin{array}{ll}\multicolumn{2}{l}{\textit{soa}} \\ \text{QUANTS} & \left\langle \begin{bmatrix}\textit{some-rel} & \\ \text{INDEX} & \boxed{2} \\ \text{RESTR} & \left\{\textit{resolves}(\boxed{2},\boxed{1},\boxed{3})\right\}\end{bmatrix}\right\rangle \\ \text{NUCL} & \begin{bmatrix}\textit{resolutive-rel} & \\ \text{RESOLVER} & \boxed{4} \\ \text{COGNITIVE-ARG} & \boxed{3} \\ \text{FACT-ARG} & \boxed{2}\end{bmatrix}\end{array}\right]\end{array}\right]\right]$$

In contrast to Yoo's lexical entry for *be*, the coercion in (224) of course affects the complement, i.e. the second argument, whereas it is the first argument with the lexical entry of *be*. Put differently: while Ginzburg and Sag must coerce the complement to express a fact, Yoo must coerce the subject to do so.[3]

Another difference to Ginzburg and Sag (2000) is Yoo's assumption that indices can be employed for the representation of both verbal and nominal projections. Therefore, the *identity-rel* in (223) takes two propositional indices as its arguments.[4]

Using the 'answer interpretation' for the subject clause is not unlike what Schlenker

[3] Note that Yoo claims that her lexical entry for *be* is in accordance with Ginzburg and Sag's observation that coercion only occurs with embedded interrogatives. "'Stand alone' fact denoting interrogatives are [...] ruled out": Ginzburg and Sag (2000, p. 353f). Yet, I do not see where the subject clause in (223) is constrained to be [IC –] as is the case in the second argument in (224). The specification [IC –] expresses that the clause is not a main clause. The way Yoo sets things up, I do not see how Yoo can rule out 'stand alone' fact denoting interrogatives or rather 'stand alone' pseudocleft-cleft clauses. As a consequence, Yoo's *be* seems to allow for sentences like *What did Mike buy is this donkey*, in which the cleft clause has the form of an independent interrogative clause.

[4] Yoo does not distinguish between *fact* and *proposition* here. She subsumes them under one type, namely *proposition*. However, I do not see how this is supposed to work, since the two types do not share an immediate supertype in Ginzburg and Sag (2000), as was shown in Chapter 2.2. One is dominated by the type *austinian* and the other one by *prop-constr*. The arguments of the identity-relation should actually be indices. Note that the way Yoo formulates it, two propositions are equated and not two indices of propositions.

(2003) did using Groendijk and Stokhof's semantics. Another similarity is the assumption that the answer is considered to be exhaustive. This is seen in the definite quantifier (*the-rel*) in the content of Yoo's *be*. By assuming exhaustive answers, Yoo can account for the exhaustivity effects that were presented in Chapter 3.2. Furthermore, note that although Yoo does not make use of such a mechanism, she mentions that the first argument of *be* could as well be extracted. In this case it would be of type *gap-ss* and get a SLASH-value corresponding to its LOCAL-value. Then it would not be realized via the SUBJ-slot, but as a filler daughter in a head-filler construction. As far as I can see, this seems to be an undesirable solution because it would allow for sentences like **What Mike did not buy I believe is any wine.*
By constraining the underlying propositions of the pre-copular and the post-copular constituent in (223) to be the same, Yoo can account for the fact that indirect answers are not allowed as post-copular constituents. Her examples are as follows:

(225) a. Q: What did John do?
b. A1: Buy a book.
c. A2: He bought a book.
d. A3: I believe he bought a book.
e. A4: I don't know what he did.

(226) a. [What John did] was [buy a book].
b. [What John did] was [he bought a book].
c. *[What John did] was [I believe he bought a book].
d. *[What John did] was [I don't know].

While the question in (225) can be answered directly as in (A1–A2) or indirectly as in (A3–A4), the pseudocleft in (226) obviously only allows for something that looks like a direct answer. Furthermore, the specification of the second argument as [IC +] in (223) indicates that the post-copular constituent is considered a main-clause (which will be elaborated on below). The last piece of Yoo's *be* that needs explanation is the specification [INT +]. This specification constrains the pre-copular constituent to start with an interrogative wh-phrase. It is a diacritic, as we will see later on.[5]

[5] See constraint (231).

4.1.2 Yoo's constructions

For the analysis of the post-copular constituent, Yoo makes use of Ginzburg and Sag's *declarative-fragment clause (decl-frag-cl)*. This type is proposed to handle short answers and reprises. It inherits properties of its supertypes *headed-fragment-phrase (hd-frag-ph)* and *declarative-clause (decl-cl)*. The type constraints (Yoo's versions) are given below.

(227) *hd-frag-ph:*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} \\ \text{VFROM } \textit{fin} \end{bmatrix} \\ \text{SUBJ } \langle\rangle & \\ \text{SPR } \langle\rangle & \\ \text{CTXT|SAL-UTT} & \left\{ \begin{bmatrix} \text{CAT } \boxed{1} \\ \text{CONT|INDEX } \boxed{2} \end{bmatrix} \right\} \end{bmatrix} \rightarrow \text{H}\begin{bmatrix} \text{CAT } \boxed{1} \\ \text{CONT|INDEX } \boxed{2} \end{bmatrix}$$

(228) *decl-frag-cl:*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{IC } + \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \textit{proposition} & \\ \text{SOA} & \begin{bmatrix} \text{QUANTS} & \boxed{A} \bigcirc \texttt{order}(\boxed{\Sigma_3}) \\ \text{NUCL} & \boxed{5} \end{bmatrix} \end{bmatrix} \\ \text{STORE} & \boxed{\Sigma_1} \\ \text{MAX-QUD} & \begin{bmatrix} \textit{question} & \\ \text{PARAMS} & \textit{neset} \\ \text{PROP} & \begin{bmatrix} \textit{proposition} & \\ \text{SOA} & \begin{bmatrix} \text{QUANTS} & \boxed{A} \\ \text{NUCL} & \boxed{5} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix} \rightarrow \text{H}\begin{bmatrix} \text{STORE } \boxed{\Sigma_1} \cup \boxed{\Sigma_3} \end{bmatrix}$$

The constraint in (227) allows cancelling any subject and specifier valencies that the head-daughter might have without realizing them. Note that SPR and SUBJ are not mentioned in the head-daughter, but they are constrained to be empty in the mother. In Ginzburg and Sag (2000) the rule for the type *hd-frag-ph* is further constrained to apply to nominal heads only, since for simplicity they limit their analysis to fragments of type *param(eter)*, i.e. to NPs and case-marking PPs. Besides, specifying the mother's head to be of the same category as finite verbs allows these

clauses to function as stand-alone clauses, i.e. to be the head daughter of a *root-cl*. Apart from this they could also be embedded under a verb that selects for finite sentential clauses. The underlying idea is more apparent in the original constraint version since there it is obvious that the head of the head daughter (being of type *nominal*) is not of the same type as that of the mother, and for this reason they are not the same.[6] Note that the two HEAD-values are not structure shared. In addition to this, the constraint in (227) identifies aspects of the SAL-UTT with the head daughter. This, as Ginzburg and Sag put it, "has the effect of 'unifying in' the content of the former into a contexually provided content."[7]
Turning to (228), we see that the *decl-frag-cl* shows as a peculiarity that its content is constructed from the contextually salient question, whereas usually the content is primarily derived from the head daughter. Furthermore, this constraint is supposed to ensure that if a fragment is or contains a quantifier, this quantifier must not outscope any quantifiers which are in the contextually salient question. Finally, the constraint in (228) makes sure that if the head daughter contributes a parameter to the STORE-set due to the presence of a wh-phrase, that parameter is included in the mother's STORE-value.[8]
Putting Yoo's constraints into action, we arrive at the structure in (229) and (230) for a sentence like *What John bought was a donkey.*

---

6 The original version of the constraint on *hd-frag-ph* from Ginzburg and Sag (2000, p. 365):

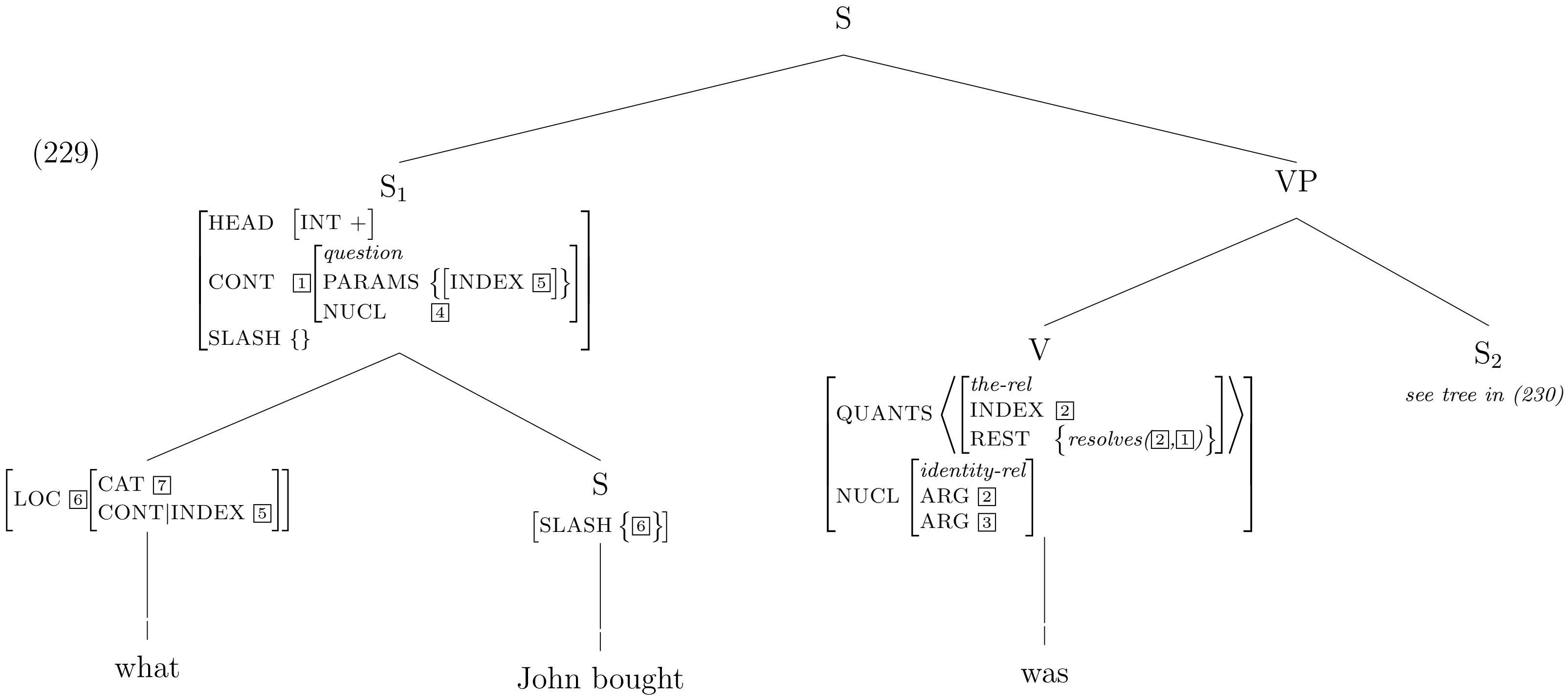
(i) *hd-frag-ph:*

$$\left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \textit{verb} \\ \text{VFROM } \textit{fin} \end{array}\right] \\ \text{SUBJ } \langle\rangle \\ \text{SPR } \langle\rangle \\ \text{CTXT|SAL-UTT } \left\{\left[\begin{array}{l} \text{CAT } \boxed{1} \\ \text{CONT|INDEX } \boxed{2}\end{array}\right]\right\}\end{array}\right] \rightarrow \text{H}\left[\begin{array}{l}\text{CAT } \boxed{1}\left[\text{HEAD } \textit{nominal}\right] \\ \text{CONT|INDEX } \boxed{2}\end{array}\right]$$

7 Ginzburg and Sag (2000, p. 304).

8 In Ginzburg and Sag's version of this constraint it says: STORE $\boxed{\Sigma_1}$*set(param)*.

(229)


S
S1
HEAD [INT +]
CONT 1 question PARAMS {[INDEX 5]} NUCL 4
SLASH {}
VP
LOC 6 CAT 7 CONT|INDEX 5
S
SLASH {6}
V
QUANTS ⟨the-rel INDEX 2 REST {resolves(2,1)}⟩
NUCL identity-rel ARG 2 ARG 3
S2
see tree in (230)
what
John bought
was

$$
\text{(230)}\;
\begin{array}{c}
\mathrm{S}_2 \\
\left[\begin{array}{l}
\textit{decl-frag-cl} \\
\text{IC } + \\
\text{CONT } \boxed{3} \left[\begin{array}{l} \textit{proposition} \\ \text{NUCL } \boxed{4} \end{array}\right] \\
\text{CTXT } \left[\begin{array}{l} \text{MAX-QUD } \boxed{1} \\ \text{SAL-UTT } \left\{ \left[\begin{array}{l} \text{CAT } \boxed{7} \\ \text{CONT|INDEX } \boxed{5} \end{array}\right] \right\} \end{array}\right]
\end{array}\right] \\
| \\
\left[\begin{array}{l} \text{CAT } \boxed{7}_{NP} \\ \text{CONT|INDEX } \boxed{5} \end{array}\right] \\
| \\
\text{a donkey}
\end{array}
$$

In (229) and (230) the maximal question under discussion is the one expressed in the subject clause. In this question the most salient utterance is the wh-word. This is shown in the *decl-frag-cl* in S_2. The identity of categories between the post-copular constituent and the initial wh-phrase can be accounted for because the SAL-UTT value contains the category of the initial wh-phrase.

To account for the limited set of wh-words in pseudoclefts and the anti-pied-piping effects in specificational pseudoclefts Yoo introduces a new head feature INT for nouns, determiners, and adverbs. She also postulates a new clause type *p(seudo-c(cleft)-cl(ause)* as a subtype of *wh-int-cl*. It is subject to the following constraints.

(231) wh-words in interrogatives:

$$\left[\text{HEAD} \left[\text{INT } +\right]\right]$$

(232) *p(seudo)c(left)-cl:*

$$\left[\text{HEAD} \left[\text{INT } +\right]\right] \rightarrow \left[\text{HEAD} \left[\text{INT } +\right]\right], \textbf{H}$$

The constraint in (232) ensures that the INT-value gets passed up to the mother node. This mechanism is needed because the INT-value does not come from the head daughter. If that were its origin, the GHFP could take care of it.[9]

Being a subtype of *wh-int-cl* the *pc-cl* inherits the following constraints, too.

[9] Note that the constraint in (232) does not work. The INT-feature is not a HEAD-feature of verbs. Therefore, an INT-specification cannot be passed up to a clause because clauses are always headed by verbs.

(233) Interrogative Retrieval Constraint (IRC)[10]

inter-cl:

$$\begin{bmatrix} \text{STORE } \boxed{\Sigma_1} \\ \text{CONT } \begin{bmatrix} \text{PARAMS } \boxed{\Sigma_2} \end{bmatrix} \end{bmatrix} \rightarrow \text{H} \begin{bmatrix} \text{STORE } \boxed{\Sigma_1} \uplus \boxed{\Sigma_2} \end{bmatrix}$$

The IRC ensures that the parameters stemming from wh-words are deleted from the STORE-set as soon as the wh-words are realized.

(234) Filler Inclusion Constraint (FIC)[11]

wh-int-cl:

$$\begin{bmatrix} \text{CONT } \begin{bmatrix} \text{PARAMS } \left\{\boxed{1}\right\} \uplus \textit{set} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \text{WH } \left\{\boxed{1}\right\} \end{bmatrix}, \textbf{H}$$

When we look at the FIC, we see that the PARAMS-value must come from the wh-word or -phrase. The FIC ensures that the non-head daughter of a wh-interrogative clause is always wh-specified. This is either the case if the non-head daughter is a wh-specified wh-word or if it contains such a word. Also, the FIC guarantees that the wh-value is a parameter and that this parameter is included in the PARAMS value of the clause's content.
Another constraint on the type *pc-clause* is the PHC.

(235) Propositional Head Constraint (PHC)[12]

wh-int-cl:

$$\begin{bmatrix} \text{CONT } \begin{bmatrix} \text{PROP } \boxed{2} \end{bmatrix} \end{bmatrix} \rightarrow \ldots\ \textbf{H} \begin{bmatrix} \text{CONT } \boxed{2} \end{bmatrix}$$

This constraint ensures that the head-daughter's CONT value is of type *proposition* (since that is the only possible value for PROP). Besides, it guarantees that it is this very proposition on which the clause's question is based.[13]
Now, since the lexical entry of *be* in (223) requires the first argument to be [INT +], a wh-pseudocleft must always begin with a word that shows this specification. This means Yoo can rule out a sentence starting like (236a) by specifying *which* as [INT –] in the lexicon. A sentence like (236b) on the other hand is ruled out because the

[10] Ginzburg and Sag (2000, p. 365).

[11] Ginzburg and Sag (2000, p. 365).

[12] Ginzburg and Sag (2000, p. 365).

[13] See Chapter 2.2 where it was shown that the content of *inter-cl* must always be of type *question*.

INT-value of *what* cannot be passed up since (as required by (232)) this is not done via the path of the head. Hence, the PP dominating *what* might be wh-specified as is required for questions, but it also is specified [INT –] because there is no amalgamation constraint like the one for the WH-value.[14] Hence, the PP headed by *about* remains [INT –].

(236) a. *[[Which student] the teacher visited] was Jane.
b. *[[About what] the student asked] was about music.

Yoo suggests that speakers who do not accept wh-words other than *what* in pseudoclefts would have all wh-words except *what* marked [INT –][15]. Since the constraint in (232) only applies to *pc-cl*, it also ensures that no wh-questions can be used with the *be* in (223). Regular wh-questions that use the copula will always be [INT –].

4.1.3 Solving remaining issues

When it comes to connectivity effects, Yoo discusses two issues. The first is bound variable connectivity. For a sentence like *What everyone$_i$ proved was his$_i$ theory*, the bound variable readings for the post-copular constituent can be represented in the CONT-value. Consider the example below.

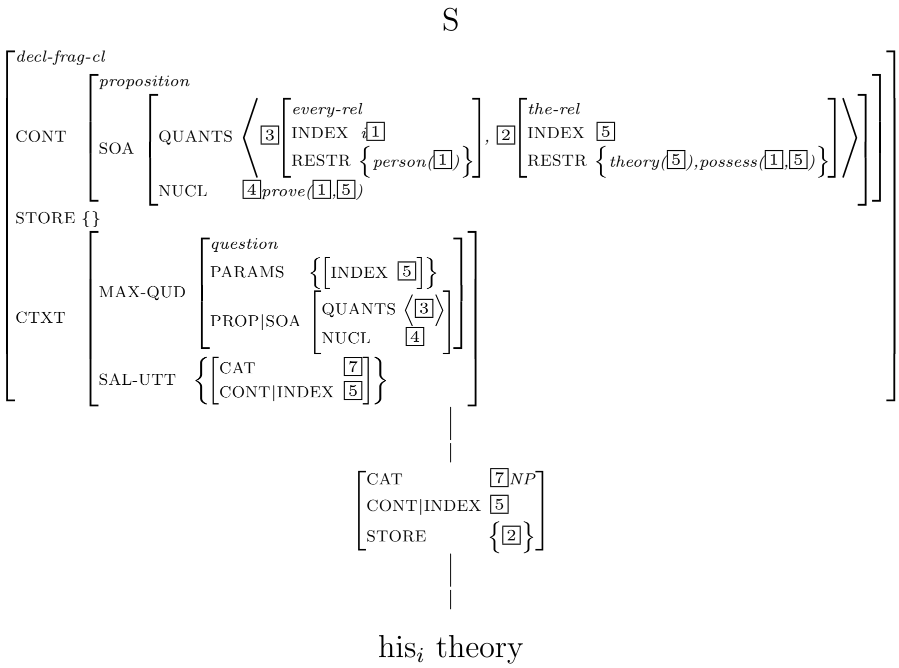
[14] Ginzburg and Sag (2000) use the following constraint for WH-value inheritance (later the Non-LOCAL Amalgamation Constraint):

(i) WH-Amalgamation Constraint

$$\textit{word} \Rightarrow / \begin{bmatrix} \text{SS}|\text{WH} & \boxed{\Sigma_1} \cup \ldots \cup \boxed{\Sigma_n} \\ \text{ARG-ST} & \left\langle \left[\text{WH}\boxed{\Sigma_1}\right], \ldots, \left[\text{WH}\boxed{\Sigma_n}\right] \right\rangle \end{bmatrix}$$

[15] Respectively [PC –], but this renaming, which Yoo recommends, does not make any difference.

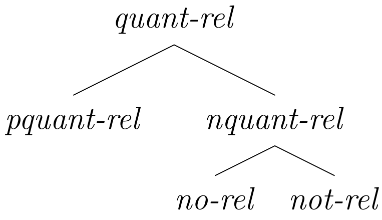
(237)



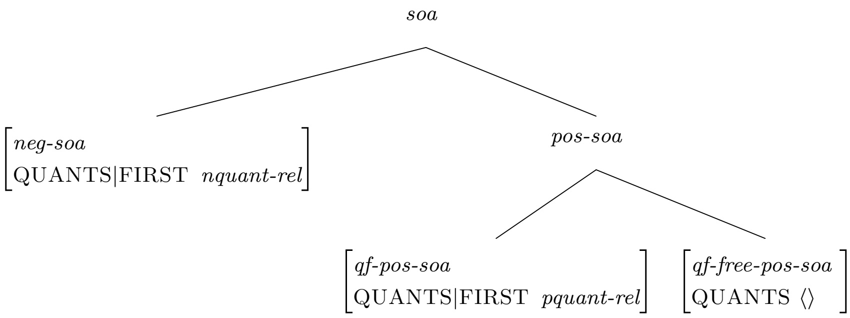
Here we have bound variable connectivity because the quantifier *every* outscopes the second quantifier on the QUANTS-list.
As for NPI-connectivity, Yoo assumes that *any* is an indefinite which is required to appear within the scope of a downward entailing operator in its interpretation. This idea is implemented in the HPSG-fragment in the following way.[16] First, it is assumed that quantifier relations come in two varieties: positive quantifier relations and negative quantifier relations. This is shown in (238). Second, it is assumed that the type *soa* also has a positive and a negative subtype. This is shown in (239). These subtypes only differ in their polarity. A *neg(ative)-soa*-object must have a QUANTS-list which is headed by a negative quantifier relation. A *pos(itive)-soa*-object has a QUANTS-list that is either headed by a positive quantifier relation or empty.[17]

[16] See Ginzburg and Sag (2000, p. 333ff).
[17] Ginzburg and Sag (2000, p. 335).

(238)

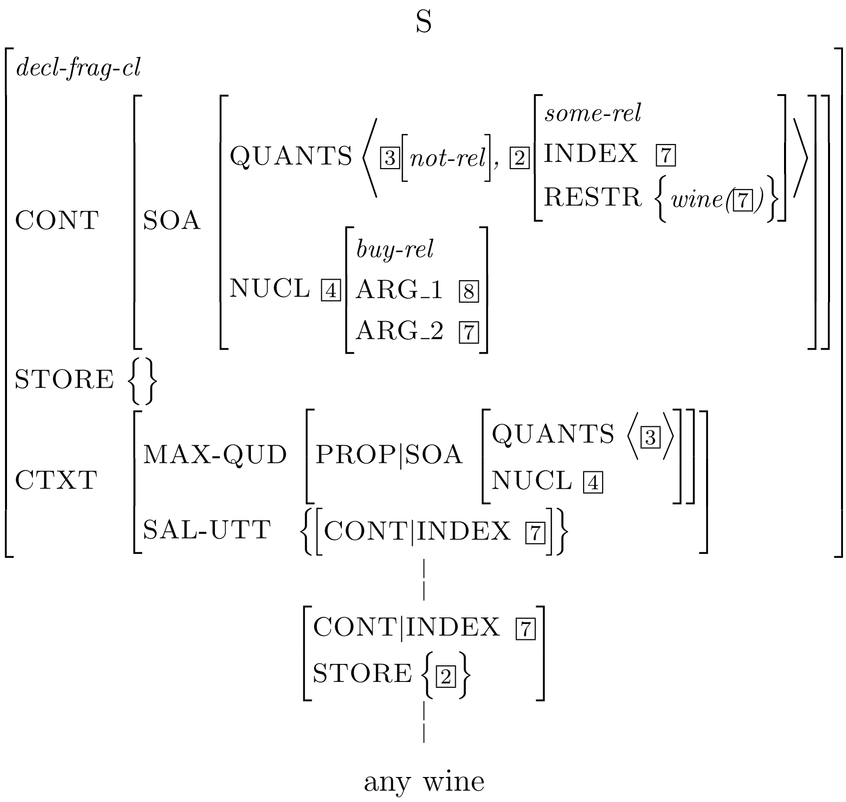


(239)



To account for the distribution of NPIs, one must simply constrain the NPIs to appear, i.e. to be retrieved, in *neg-soas* only. Example (240) shows the post-copular constituent of a sentence like *What he didn't buy was any wine* using the negative quantifier (the *not-relation*) to represent negation.

(240)



Here the indefinite quantifier (the *some-rel*) has its origin in the word *any* and is retrieved at the *decl-frag-cl*, where it is put in the scope of the negative quantifier.

Going back to the constraint on *decl-frag-cl* in (228) again, note the following. In the Ginzburg and Sag's version of the constraint on *decl-frag-cl* $\boxed{\Sigma_3}$ precedes $\boxed{A}$ and *append* is used instead of *shuffle*.[18] However, neither version of this constraint can account for the breakdown of connectivity. This breakdown is illustrated again in the example below.

(241) a. What every student admires is some teacher. $\forall\exists/\exists\forall$

b. What does every student admire? Some teacher. $\forall\exists/\exists\forall$

c. What some student admires is every teacher. $*\forall\exists/\exists\forall$

d. What does some student admire? Every teacher. $*\forall\exists/\exists\forall$

We see that if there is an existential quantifier preceding a universal quantifier in a pseudocleft or question-answer pair, the universal quantifier must not take scope over the existential one.

So what does the constraint in (228) do in detail? The *order*-function in (228) puts the elements of the set $\boxed{\Sigma_3}$ in an arbitrary order. Then they can be appended to the quantifier list without changing the relative order of the elements already on the list. However, to account for the connectivity breakdown, one has to ensure that $\boxed{\Sigma_3}$ is not put before $\boxed{A}$ if it is a universal quantifier. In this case, $\boxed{\Sigma_3}$ can only be appended. Hence, the specification of the proposition should rather look like a mixture of Yoo's and Ginzburg and Sag's formulation as given in (242).

[18] Ginzburg and Sag's version of the constraint looks like this (Ginzburg and Sag (2000, p. 369)):

(i) *decl-frag-cl:*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix}\text{IC} & +\end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \textit{proposition} & \\ \text{SOA} & \begin{bmatrix} \text{QUANTS} & \textit{order}(\boxed{\Sigma_3}) \oplus \boxed{A} \\ \text{NUCL} & \boxed{5} \end{bmatrix} \end{bmatrix} \\ \text{STORE} & \boxed{\Sigma_1} \\ \text{MAX-QUD} & \begin{bmatrix} \textit{question} & \\ \text{PARAMS} & \textit{neset} \\ \text{PROP} & \begin{bmatrix} \textit{proposition} & \\ \text{SOA} & \begin{bmatrix} \text{QUANTS} & \boxed{A} \\ \text{NUCL} & \boxed{5} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix} \rightarrow \text{H}\begin{bmatrix}\text{STORE} & \boxed{\Sigma_1} \cup \boxed{\Sigma_3}\end{bmatrix}$$

(242) *decl-frag-cl:*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix}\text{IC} & +\end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \textit{proposition} & \\ \text{SOA} & \begin{bmatrix}\text{QUANTS} & \boxed{A} \oplus \textit{order}(\boxed{\Sigma_3}) \\ \text{NUCL} & \boxed{5}\end{bmatrix}\end{bmatrix} \\ \text{STORE} & \boxed{\Sigma_1} \\ \text{MAX-QUD} & \begin{bmatrix} \textit{question} & \\ \text{PARAMS} & \textit{neset} \\ \text{PROP} & \begin{bmatrix}\textit{proposition} & \\ \text{SOA} & \begin{bmatrix}\text{QUANTS} & \boxed{A} \\ \text{NUCL} & \boxed{5}\end{bmatrix}\end{bmatrix}\end{bmatrix}\end{bmatrix} \rightarrow \text{H}\begin{bmatrix}\text{STORE} & \boxed{\Sigma_1} \cup \boxed{\Sigma_3}\end{bmatrix}$$

Using this constraint ensures that a universal quantifier from the answer never gets scope over an existential quantifier from the question. Although it might seem like this constraint also rules out the scope of an existential quantifier from the answer over a universal quantifier from the question, this is not the case. The ∃∀-scope for a sentence that superficially shows ∀∃ is just a special case of the ∀∃-scope. Hence, ensuring that we get the ∀∃-scope is sufficient. Note that this argumentation does not use logical deduction to achieve a second reading for (241a) and (241b). It is not that we wanted to say that we can deduce from the truth of case A (=∀∃) the truth of case B (=∃∀). Although logically correct, the case B-reading would be a restricted one, which is only true under exactly one variable assignment. This means that the existentially bound variable must always be instantiated by the same value. For the sentences in (241c) and (241d), this means the following. If case A (=∃∀) is true, then there is also a true reading ∀∃. This is the reading in which the variable assignment instantiates the value for the existentially bound variable by the same value. However, we lose the possibility to have different values assigned to the existentially bound variable that we have in (241a) and (241b). Therefore, it is sufficient for (241a) and (241b) to account for the reading ∀∃. It is the more general reading which subsumes the ∃∀-reading. On the other hand, a ∀∃-reading is too general for (241c) and (241d). Here we want to restrict the possible readings to exactly one case: the one in which ∃∀ is true.

4.1.4 Recapitulation

This section showed how the QDT can be implemented in HPSG, i.e. to the fragment of Ginzburg and Sag (2000). Pseudoclefts were analyzed as self-answering questions. The basic assumptions were that questions can be coerced to express propositions and that 'fragments', i.e. single phrases like e.g. NPs, can have the meaning of entire clauses. In the next sections, I will make use of the transferable insights from this implementation by combining them with the analysis of pseudoclefts according to Chapter 3. This means that cleft clauses will not be analyzed as interrogatives, and therefore pseudoclefts will not be analyzed as self-answering questions.

4.2 The new approach: free relative clause subjects

As was shown in Chapter 3, there are good reasons to assume that the cleft clause of a pseudocleft is not a wh-interrogative clause, but a relative clause. Therefore, the following analysis will give the cleft clauses of pseudoclefts the structure of relative clauses.

4.2.1 The basic inventory of new types

The underlying idea behind this approach is to use the same syntactic pieces (apart from the top node) for the sentences *What I like is this muffin* and *This muffin is what I like*. In both cases one has to come up with an analysis of the free relative clause. As soon as this is accomplished, the rest should follow automatically from the analysis of *be*, i.e. of the copula. For the inverted pseudocleft, one might use some standard form of *be* which should look something like the simplified one below.

(243) $$\left\langle \textit{be}, \begin{bmatrix} \textit{auxv-lx} & \\ \text{CAT} & \ldots \\ \text{CONT} & \ldots \\ \text{ARG-ST} & \left\langle \boxed{1}, \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix}\text{PRED} & +\end{bmatrix} \\ \text{SUBJ} & \left\langle \boxed{1} \right\rangle \\ \text{COMPS} & \langle\rangle \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle$$

To derive the wh-pseudocleft, one should merely swap the arguments of *be*. For the *be* above, the result would look like (244).

(244) $$\left\langle \textit{be}, \begin{bmatrix} \textit{auxv-lx} & \\ \text{CAT} & ... \\ \text{CONT} & ... \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{CAT} & \begin{bmatrix}\text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle\rangle\end{bmatrix}\end{bmatrix}, \boxed{1} \right\rangle \end{bmatrix} \right\rangle$$

The semantics of *be* should be identical to the semantics of the predicative argument. Whether it is the first or second argument should not play a role for a generalized *be*. One might try to use the feature PRED to mark the predicative argument. This is a feature of the type *part-of-speech*. It is usually used to distinguish adjectives that can be used predicatively from those which can only be used attributively.[19] Unfortunately, using the PRED-specification would rule out sentences like *What a man needs to be is clever* in the current theory. In the course of development of the analysis, it will be shown that in such a sentence the cleft clause, as well as the post-copular constituent, must be predicative. This means that there will be two arguments specified as [PRED +] on the argument structure of *be*. Therefore, the specification [PRED +] cannot tell us which one is predicate and which one is argument. Fortunately, the intended effect can also be achieved if we make use of the relation between the functor argument of *be* and its argument. This means that instead of defining that one argument must be specified [PRED +], we can also say that one argument must be on the other argument's SUBJ-list. Put differently: one argument is a functor for the other. This is shown in the outlines of a lexical entry for *be* in (244). The apparent difference between the *be* in (243) and the one in (244) is that now the arguments are switched, but there is still an argument-functor relation between them, and we got rid off the PRED-feature.

This leaves us with the following problems to solve. First, we have to find a free relative clause analysis that leaves the subject unsaturated. At the same time, it must be a head-filler construction that realizes *what* clause-initially. Second, we have to find a construction that takes this unsaturated relative clause/phrase as subject. This free relative clause will be different from other free relative clauses

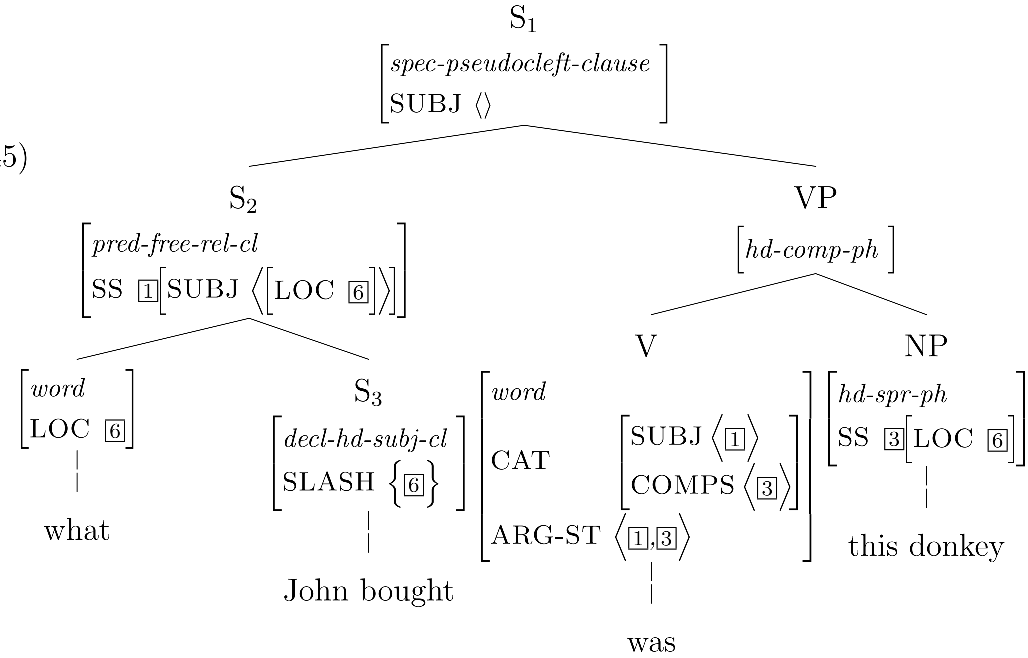
[19] See Pollard and Sag (1994, p. 66f).

since it will have a predicative interpretation, i.e. an interpretation like a VP, and not a referential NP/DP-interpretation. This desideratum goes back to Mikkelsen's analysis of specificational sentences. For specificational sentences, we need a predicate in subject position and the predicate's argument in post-copular position.

Alternatively, one might try to use the regular relative clause analysis. This means that the free relative clauses would be analyzed like modifying relative clauses in Sag (1997). Since the top-node needs to have access to the information about the post-copular constituent, one would have to use the information stored under MOD. The SPR- or SUBJ-sets would be empty. In this case *be* would have to look different, since the lexical entry of *be* as outlined above makes reference to the feature SUBJ not MOD. Having the information stored under SUBJ has, of course, the advantage that this is where we find it in all the other predicates. If the predicative relative clause/phrase stored it somewhere else, this would be undesirable. We would need several *bes* then. To circumvent this problem, one might use a head-only phrase that turns a modifying relative clause into a free relative clause by turning the MOD-value into a SUBJ-value. If one wants to avoid a head-only phrase, this might also be done in the construction hierarchy via inheritance and a new constraint on a new construction type. However, one problem remains with such an approach: cleft clauses look different from modifying relative clauses, e.g. *what* is not allowed in modifying relative clauses. Hence, it would not make sense to derive the *what*-relative clause for the pseudocleft from the other relative clauses. For this reason the following analysis of free relative clauses will not be based on the analysis of modifying relative clauses.

In the end, the analysis should provide us with a tree like the simplified one in (245).

(245)



In (245) we see that there are two items on the argument structure of *was*. The first one is the cleft clause and the second one the post-copular constituent. The cleft clause has an element on the SUBJ-list that shows the same LOC-value as the post-copular constituent. However, the SYNSEM-values of these are not structure shared. The cleft clause is of a new type called *pred(icative)-free-rel(ative)-clause*. We will deal with this construction later. What seems strange at first sight is that the clause has a non-empty SUBJ-list. Actually, it looks complete. Why should the SUBJ-list not be empty then? So one might object that due to the filled SUBJ-list, the construction should not be called a clause. However, since neither the *head-filler-phrase* (as shown in (246)) nor any of its supertypes is constrained to have an empty SUBJ-list, considering this construction to be of type *clause* is still in accordance with the general theory.

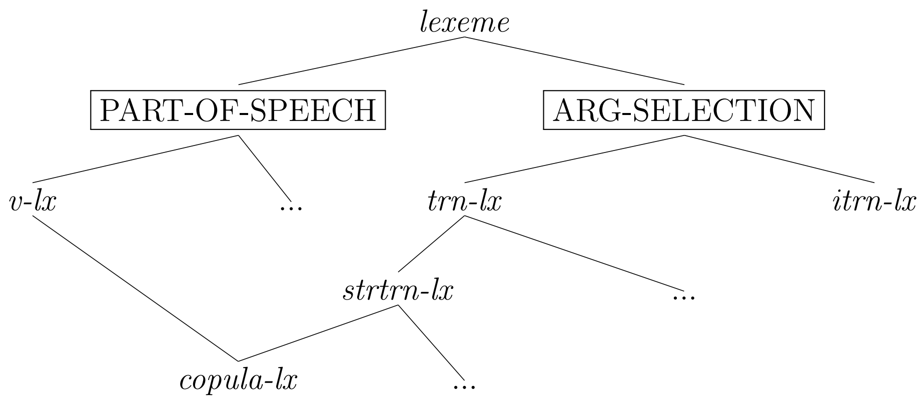
(246) *hd-fill-ph*:[20]

$$\left[\text{SLASH } \boxed{\Sigma_2}\right] \rightarrow \left[\text{LOC } \boxed{1}\right], \mathbf{H}\begin{bmatrix} \textit{phrase} \\ \text{HEAD} \quad v \\ \text{SLASH } \left\{\boxed{1}\right\} \uplus \boxed{\Sigma_2} \end{bmatrix}$$

[20] Ginzburg and Sag (2000, p. 364).

Only the subject valency of the *fin-hd-fill-ph* is constrained to be empty. In general, the subject valency of an item of type *clause* is allowed to be filled with a *noncan-ss*[21] element. Thus, one could say that the element on the SUBJ-list of S_2 is a *gap-ss* element. This would be legitimate because only the local value of the item on the SUBJ-list must be the same as the one of the post-copular constituent. This means that assuming a *gap-ss* element on the SUBJ-list would be in accordance with the constraints on the type *clause*. I will do exactly this and assume that what we find in S_2 is a clause with a 'trace' on the SUBJ-list. It is the very 'trace' that the ARP put into SLASH-set further down in the tree in S_3.[22] What the clause S_2 is lacking is the complement of *bought*.
Being of type *clause*, the cleft clause must show a content of type *message*. The appropriate type in this case is *austinian* because the cleft clause is neither a question, nor an order or wish, nor an exclamation. The cleft clause is a subtype of *decl-cl*. Furthermore, we also have to make sure that the construction type of the cleft clause is not a subtype of the *fin-hd-fill-ph*. As mentioned above, in this case the SUBJ-list would be constrained to be empty. Before we deal with that, we have to take a closer look at the copula.
To arrive at a word *is* as used in (248), we need the constraint in (249) on the new type *copula-lexeme*. The new type *copula-l(e)x(em)* is a subtype of *v-lx* and *strtr-lx*, as is shown in (247). This means it is a verb that takes exactly two arguments.

(247)



[21] In Sag (1997) only *pro-ss* is allowed.
[22] Technically, this is not quite accurate because there are only *local*-objects in the SLASH-set. However, on the SUBJ-list we find a *syssem*-object with the same LOC-value.

(248)
$$\begin{bmatrix}
\textit{word} & \\
\text{PHON} & \left\langle \textit{is} \right\rangle \\
\text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{AUX} & + \\ \text{AGR} & \boxed{0} \end{bmatrix} \\ \text{SUBJ} & \left\langle \boxed{1}\begin{bmatrix}\text{AGR} & \boxed{0}\end{bmatrix} \right\rangle \\ \text{SPR} & \langle\rangle \\ \text{COMPS} & \left\langle \boxed{4}\begin{bmatrix}\text{LOC} & \boxed{3}\end{bmatrix}\right\rangle \end{bmatrix} \\
\text{CONT} & \boxed{2} \\
\text{ARG-ST} & \left\langle \boxed{1}\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix}\text{PRED} & +\end{bmatrix} \\ \text{SUBJ} & \left\langle \begin{bmatrix}\text{LOC} & \boxed{3}\end{bmatrix}\right\rangle \\ \text{SPR} & \langle\rangle \\ \text{COMPS} & \langle\rangle \end{bmatrix} \\ \text{CONT} & \boxed{2} \end{bmatrix}, \boxed{4}\begin{bmatrix}\text{LOC} & \boxed{3}\end{bmatrix} \right\rangle
\end{bmatrix}$$

(249) Generalized Predicative Argument Principle (GPAP)(provisional version)

$$\textit{copula-lx} \Rightarrow \begin{bmatrix}
\text{SS|LOC|CONT } \texttt{soa_of}(\boxed{1}) \\
\text{ARG-ST} \left\langle \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD|PRED} & + \\ \text{SUBJ} & \left\langle \begin{bmatrix}\text{LOC} & \boxed{4}\end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT} & \boxed{1} \end{bmatrix}, \begin{bmatrix}\text{LOC} & \boxed{4}\end{bmatrix} \right\rangle \\
\vee \left\langle \begin{bmatrix}\text{LOC} & \boxed{4}\end{bmatrix}, \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD|PRED} & + \\ \text{SUBJ} & \left\langle \begin{bmatrix}\text{LOC} & \boxed{4}\end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT} & \boxed{1} \end{bmatrix} \right\rangle
\end{bmatrix}$$

The GPAP requires that one of the copula's arguments is a functor that takes the other argument as its argument. It is the functor argument from which the copula gets its content, more specifically its soa. Since we can have clauses, i.e. cleft clauses, as functor arguments and since clauses have their soa under a different path than other predicates, the GPAP uses the function `soa_of`. This function simply takes an argument of type *sem-obj* and returns the underlying soa. That there can only be two arguments follows from the fact that the copula is a two-place verb.[23] Hence,

[23] Technically one could use the type *str-trn-lx* (strictly transitive lexeme) of the fragment, if there are no other constraints on that type than the one given (Ginzburg and Sag (2000, p. 22)).

the functor argument can either be the head of the list of arguments or the tail.
It is very important that the non-functor argument and the functor argument's subject only share their LOC-value. If the entire SYNSEM-values were shared, we would not be able to identify the post-copular constituent and the wh-pronoun in the cleft clause. For a specificational pseudocleft, we need a *gap-ss* element on the argument structure of the cleft clause's verb. This *gap-ss* element will end up in the SUBJ-list of the cleft clause. Since there is a constraint on the type *clause*[24], which only allows elements of type *non-canon* on the SUBJ-list, there can only be a *gap-ss* element on the SUBJ-list of the cleft clause. This 'subject' shares the LOC-value with the post-copular constituent. On the other hand, we need a *canon-ss* element on the argument structure of *be* in the matrix clause to realize the post-copular constituent. Hence, by requiring that only the LOC-value must be identical, we can realize the post-copular constituent as a complement in the matrix clause and the wh-pronoun as a filler in the cleft clause. Note that the other non-canonical type *pro-ss* cannot be the 'missing' subject of the cleft clause due to its reflexivity. Consider the type constraint below.[25]

(250) $$\textit{pro-ss} \Rightarrow \begin{bmatrix} \text{HEAD}|\text{CASE} & \textit{acc} \\ \text{CONT} & \begin{bmatrix} \textit{reflexive} \\ \text{INDEX} \ \textit{ref} \end{bmatrix} \end{bmatrix}$$

Since *pro-ss* elements are always reflexive, they could only be used for sentences with reflexive pronouns in post-copular position. The type *gap-ss* is not constrained in such a way. Hence, it is what we need on the SUBJ-list of the cleft clause.
The impossibility of VPs like *was go* or *is snore* is ensured by the specification [PRED +] of the functor argument. Verbs with [VFROM *base*] cannot be [PRED +] and can therefore not be the functor arguments of the copula. Note also that the copula cannot simply be of type *s-rsg-lx* (*subject-raising-lexeme*) which is proposed in Ginzburg and Sag (2000). This lexeme has a fixed argument order as is shown in (251), which is what we want to avoid for the copula.[26]

(251) $$\textit{s-rsg-lx} \Rightarrow \left[\text{ARG-ST} \left\langle \left[\text{LOC} \ \boxed{1}\right], \left[\text{SUBJ} \left\langle \left[\text{LOC} \ \boxed{1}\right] \right\rangle\right] \right\rangle\right]$$

[24] See Chapter 2.2.

[25] From Ginzburg and Sag (2000, p. 56).

[26] See Ginzburg and Sag (2000, p. 22).

While the other auxiliaries specify what kind of arguments they take, the constraint on *copula-lxm* only states that there must be two arguments. Hence, the argument specification of regular auxiliaries will ensure that the predicative argument, i.e. the functor argument, is always the second one, while the lexical entry of the copula in (252) leaves this matter open.

(252) $\left\langle \textit{be}, \begin{bmatrix} \textit{copula-lx} \\ \text{CAT|HEAD|AUX} \quad + \end{bmatrix} \right\rangle$

We can now see that the word *be* in (248) is a result of the GPAP, the Argument Realisation Principle (repeated in (253)), and the lexical entry of the copula *be*. Most of the information that we see in the description of the word comes from the GPAP. The lexical entry of *be* itself is rather uninformative. For this reason, some might say that the information from the GPAP could just as well be put into the lexical entry. There is one advantage to the constraint, though. Having a disjunction in a lexical entry is basically the same thing as having two different lexical entries, but one desideratum stemming from Mikkelsen's analysis was having one *be*, not two.

(253) Argument Realization Principle

$$\textit{word} \Rightarrow \begin{bmatrix} \text{SS|LOC|CAT} & \begin{bmatrix} \text{SUBJ} & \boxed{\text{A}} \\ \text{SPR} & \boxed{\text{B}} \\ \text{COMPS} & \boxed{\text{C}} \ominus \ \textit{list(gap-ss)} \end{bmatrix} \\ \text{ARG-ST} \ \boxed{\text{A}} \oplus \boxed{\text{B}} \oplus \boxed{\text{C}} & \end{bmatrix}$$

What we see in (248) is the specificational copula. Of course the lexical entry of the copula *be* also allows for a predicative copula because we left open which of the arguments is the functor. The predicative copula below looks exactly like the specificational one except for the swapped argument structure and valences.

(254)
$$
\begin{bmatrix}
\textit{word} & \\
\text{PHON} & \langle \textit{is} \rangle \\
\text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{AUX} & + \\ \text{AGR} & \boxed{0} \end{bmatrix} \\ \text{SUBJ} & \left\langle \boxed{4}\begin{bmatrix}\text{LOC } \boxed{3}\begin{bmatrix}\text{AGR } \boxed{0}\end{bmatrix}\end{bmatrix}\right\rangle \\ \text{SPR} & \langle\rangle \\ \text{COMPS} & \langle \boxed{1} \rangle \end{bmatrix} \\
\text{CONT|SOA} & \boxed{2} \\
\text{ARG-ST} & \left\langle \boxed{4}\begin{bmatrix}\text{LOC } \boxed{3}\end{bmatrix}, \boxed{1}\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix}\text{PRED } +\end{bmatrix} \\ \text{SUBJ} & \left\langle\begin{bmatrix}\text{LOC } \boxed{3}\end{bmatrix}\right\rangle \\ \text{SPR} & \langle\rangle \\ \text{COMPS} & \langle\rangle\end{bmatrix} \\ \text{CONT|SOA} & \boxed{2}\end{bmatrix}\right\rangle
\end{bmatrix}
$$

This is the 'standard' copula that is needed in every theory. It allows for all kinds of predicative elements in post-copular position. As mentioned above, certain verb forms like *past* or *non-finite* are blocked as complements by their [PRED –] specification. The same goes for adjectives like *mere* or *former* etc.

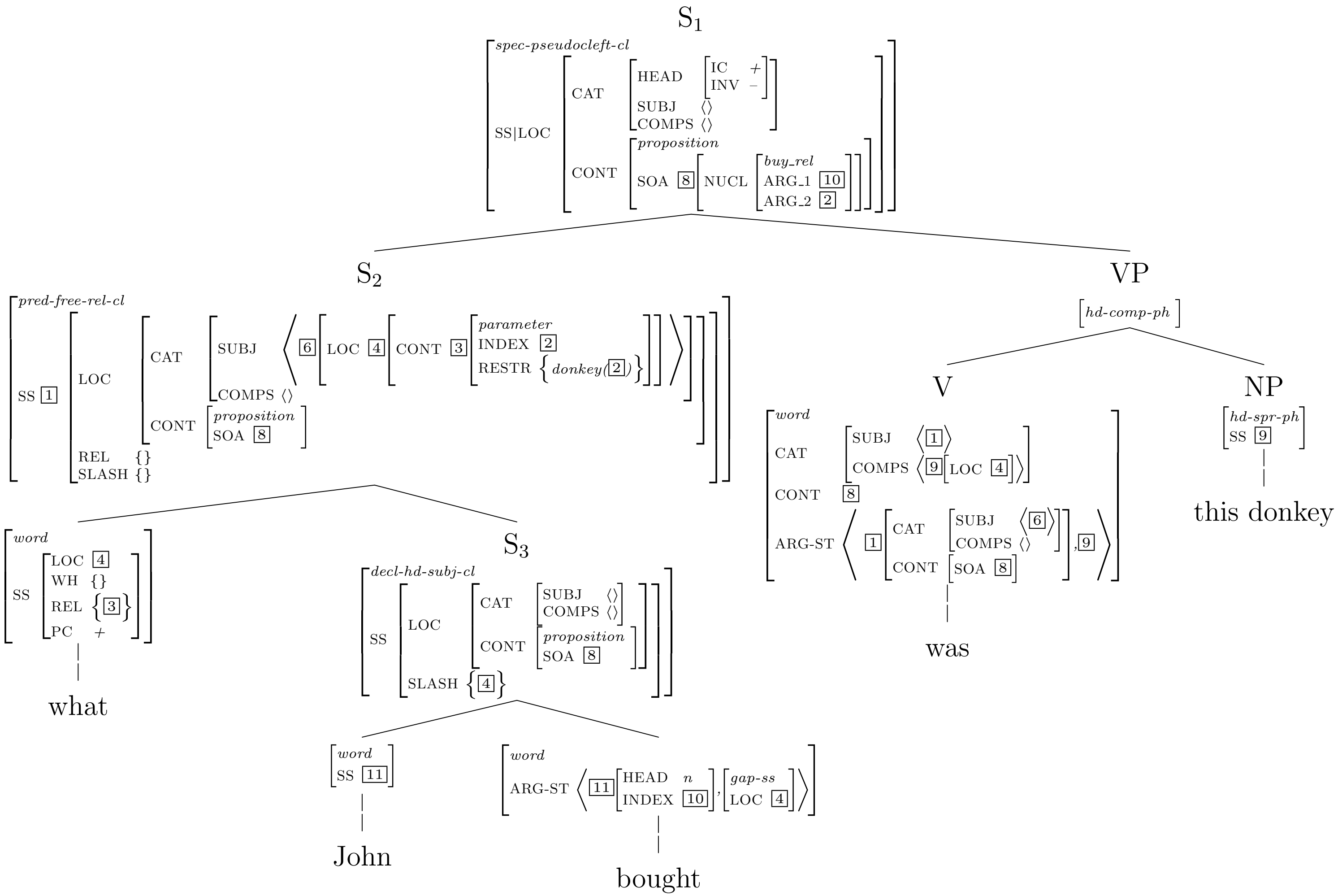
4.2.2 Putting the copula into action

Using the new *be* and its constraints, we can now describe the tree in (245) in more detail in (255). Note in this respect that we have not said anything about quantifiers yet. This means that in (255) the quantified NP *this donkey* is still treated as if there were no quantifier present. How quantifier scope is handled will be shown later on.

The following can be said about the structure in (255). First, note that the *what* in this tree is slightly different from the analysis of relative pronouns in Ginzburg and Sag (2000) and in Sag (1997). The difference lies in the lexical entry that I assume for this instance of the relative pronoun *what.* Sag (1997) uses singleton sets of indices as REL-values. Ginzburg and Sag (2000) use elements of type *cont-obj* as REL-values.[27] I follow the latter in assuming *cont-obj* as values for

[27] This is only shown once in the lexical entry for relative *who*. See Ginzburg and Sag (2000, p. 188).

(255)


S1
spec-pseudocleft-cl
SS|LOC
CAT
HEAD
IC +
INV −
SUBJ ⟨⟩
COMPS ⟨⟩
CONT
proposition
SOA 8
NUCL
buy_rel
ARG_1 10
ARG_2 2
S2
pred-free-rel-cl
SS 1
LOC
CAT
SUBJ ⟨6 LOC 4 CONT 3 parameter INDEX 2 RESTR {donkey(2)}⟩
COMPS ⟨⟩
CONT
proposition
SOA 8
REL {}
SLASH {}
word
SS
LOC 4
WH {}
REL {3}
PC +
what
S3
decl-hd-subj-cl
SS
LOC
CAT
SUBJ ⟨⟩
COMPS ⟨⟩
CONT
proposition
SOA 8
SLASH {4}
word
SS 11
John
word
ARG-ST ⟨11 HEAD n INDEX 10, gap-ss LOC 4⟩
bought
VP
hd-comp-ph
V
word
CAT
SUBJ ⟨1⟩
COMPS ⟨9 LOC 4⟩
CONT 8
ARG-ST ⟨1 CAT SUBJ ⟨6⟩ COMPS ⟨⟩ CONT SOA 8, 9⟩
was
NP
hd-spr-ph
SS 9
this donkey

REL, though assuming singleton sets of indices would not make much of a difference. What is more important is the new feature PC (PseudoCleft) that I assume. Consider the preliminary lexical entry below.

(256)
$$\begin{bmatrix} \textit{word} & \\ \text{PHON} & \left\langle \textit{what} \right\rangle \\ \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CONT} & \boxed{1} \end{bmatrix} \\ \text{WH} & \{\} \\ \text{REL} & \left\{ \boxed{1} \right\} \\ \text{PC} & + \end{bmatrix} \end{bmatrix}$$

The feature PC takes a value of type *bool* and is supposed to tell apart those wh-words which can introduce specificational pseudoclefts from those that cannot. This is the same mechanism Yoo (2003) used, even though she assigned this feature to question pronouns of course. How this feature affects the type of cleft clause will be shown below. Note that relative pronouns usually have an empty STORE-set.[28] They do not contribute to the meaning of a phrase in the same way as wh-interrogative pronouns. "Their contribution will entirely come from constraints on the various types of relative clause identifying the index of the [REL-value] with that of the nominal being modified", as Ginzburg and Sag note.[29] This means that relative pronouns add restrictions to/over an index, but the index is bound by the quantifier of the head noun of the *hd-rel-ph*. With the *what* from above, things are a bit different because it is not meant to be used in a *hd-rel-ph*. The item in the REL-set and the CONT-value is a *sem-object*. This way *what* can be used for VPs and APs (which have a content of type *soa*), for NPs (which have a content of type *parameter*), and for clauses (which have a content of type *message*). There are no restrictions specified in the content of *what*. Such restrictions would spoil the current analysis. If, for instance, we put a thing-relation in the restriction list of the

[28] One could also constrain all wh-words that cannot appear in specificational pseudoclefts to have empty STORE-sets. The appropriate constraint is given below.

(i) $\begin{bmatrix} \text{PC} & - \end{bmatrix} \Rightarrow \begin{bmatrix} \text{STORE} & \{\} \end{bmatrix}$

[29] Ginzburg and Sag (2000, p. 188). Note there is a typo in the original. In the original passage they said "WH-value", where they must have meant REL-value.

sem-obj[30], we could not use *what* for any sentence with a post-copular constituent that does not introduce such a relation and only such a relation. Since the relative pronoun is the filler whose LOC-value is put in the subject slot of the *pred-free-rel-cl*, it is also identified with the LOC-value of the post-copular constituent. This is achieved because the *pred-free-rel-cl* appears again on the argument structure of the copula, and it is there that the LOC-value of the *pred-free-rel-cl*'s subject is identified with the LOC-value of the second argument of the copula. The latter then becomes the post-copular constituent via the ARP. Only in this way can the local object description $\boxed{4}$ in (255) be part of a relative pronoun on the 'left end of the sentence' and of *this donkey* 'on the right end of the sentence'. If *what* introduced a thing-relation analogously to *who*, which introduces a person-relation, it could not be used for pseudoclefts that have a post-copular constituent which is not compatible with such a description, e.g. pseudoclefts with post-copular APs.
Leaving the *what* in (256) unspecified for category is supposed to give *what* the appropriate category. This underspecification allows us to use *what* for specificational pseudoclefts with PPs, NPs, APs, or VPs in post-copular position. Note that this aspect will be slightly modified later on. Furthermore, note that although Collins (1991) does not list any examples with APs, examples like (257a) show that APs should not be ruled out in general.

(257) a. What I haven't been in years is drunk.
b. What Mike wants to become is mayor of New York.

Example (257b) also shows again that Mikkelsen's (2004) restriction on specificational sentences, i.e. in this case the ban of NPs (determinerless noun phrases in her terminology), is too strong. This means that at least in pseudoclefts, NPs can be post-copular constituents.
Since we also find *who* in specificational pseudoclefts, we also need a new version of the relative pronoun *who*. The lexical entry is given below.

[30] Note that although only the index is mentioned, it is of course a complete *sem-obj*.

(258)
$$\begin{bmatrix} \textit{word} & \\ \text{PHON} & \left\langle \textit{who} \right\rangle \\ \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CONT} & \boxed{2} \begin{bmatrix} \text{INDEX} & \boxed{1} \\ \text{RESTR} & \left\{ \textit{...,human(}\boxed{1}\textit{),...} \right\} \end{bmatrix} \end{bmatrix} \\ \text{WH} & \{\} \\ \text{REL} & \left\{ \boxed{2} \right\} \\ \text{PC} & + \end{bmatrix} \end{bmatrix}$$

Instead of restrictions, *who* could as well introduce background assumptions, i.e. BACKGROUND-values, like *human* or *human_group*. This might be needed for sentences like *Who elected the chairman was the committee.*

4.2.3 The cleft clause in detail

At this point we should once again go back to the representation in (255). If we move further up the tree from the relative pronoun, we arrive at a second new item. This is the *pred-free-rel-cl* (S_2). As was mentioned before, there is an odd fact about this clause. It shows a subject valency that is not shared with the head-daughter. Besides, this subject does not get realized (at least not where we expect it). This is unexpected since here the default valence inheritance between mother and daughter is overridden in an unusual direction. We usually find the default only overridden for the purpose of emptying a valency, e.g. the complement valency in a *hd-comp-ph*. In contrast to this, the *pred-free-rel-cl* overrides the default to add a valent, namely the subject.

The setup of the two daughters of *pred-free-rel-cl* is straightforward. The filler-daughter is a relative pronoun as mentioned above. The other daughter is a slashed declarative clause. This is simply a clause that is still 'looking for' one of its (non-subject)[31] arguments. The new type *pred-free-rel-cl* itself is, as was mentioned above, a subtype of the *hd-fill-ph*. Besides, it is a subtype of *decl-cl*. Therefore, its content is of type *austinian* as mentioned before. The new construction type is subject to the following constraint.

[31] For wh-words as subjects see section 4.2.6.

(259) *pred-free-rel-cl:*

$$\left[\text{SS|LOC|CAT}\ \left[\begin{array}{ll}\text{HEAD} & \left[\begin{array}{ll}\text{VFORM} & \textit{fin}\\ \text{IC} & -\end{array}\right]\\ \text{SUBJ} & \left\langle\left[\text{LOC|CONT}\ \boxed{1}\right]\right\rangle\end{array}\right]\right] \rightarrow \left[\begin{array}{ll}\textit{word} & \\ \text{LOC|CONT} & \boxed{1}\\ \text{PC} & +\end{array}\right], \textbf{H}\left[\text{SS|LOC|CONT}\ \textit{proposition}\right]$$

Since the *pred-free-rel-cl* is a subtype of *decl-cl*, it will inherit the property that the underlying *soa* of the head daughter is the *soa* of the mother. Hence, this need not be mentioned in this constraint. It only has to be mentioned that the content of the head daughter is of type *proposition*, which is a subtype of *austinian*. The GHFP will ensure that this information is shared by the mother, i.e. the *pred-free-rel-cl*. Due to the fact that the *pred-free-rel-cl* is a subtype of *decl-cl*, it cannot have a CONT-value of type *fact* or *question*. As was shown before, a pseudocleft's cleft clause should not be considered a question, and there is also good reason not to allow it to express a fact. If we assumed a content value of type *fact*, the cleft clause of a sentence like *Sue is not sure whether (what Mike bought) was this donkey* would always express that it is true that Mike bought this donkey, which is obviously inappropriate. Specifying the *pred-free-rel-cl* as [IC –] ensures that this construction is not used as a stand-alone utterance.

The non-empty SUBJ-list in (259) serves two purposes. First, it gives the *pred-free-rel-cl* exactly the form that can also be used for reverse pseudoclefts. Remember that for reverse pseudoclefts, we need a predicate in post-copular position, and having a non-empty SUBJ-list means that this clause is a predicate. Second, it makes the information of the post-copular constituent available to the top node, which will be very useful, as we will see later on. The empty SLASH-set need not be mentioned in the constraint on *pred-free-rel-cl* because the constraint on *hd-fill-ph* takes care of that. The other empty local and non-local sets and lists are a result of the GHFP. The specification [VFORM *fin*] is needed to ensure that the cleft clause is finite and headed by a verb. This cannot be handled via inheritance from other finite types because that would go hand in hand with a specification for an empty SUBJ-list due to the constraints that already exist for the type *fin-cl*. Furthermore, the constraint in (259) identifies the relative pronoun's CONT-value with the CONT-value of the item on the *pred-free-rel-clause*'s SUBJ-list. This is the most important difference from the representations before. Note that before it looked as if we wanted, and needed, to identify the entire LOC-value. This is not the case anymore. Identifying only the CONT-values rather than the entire LOC-value has the following reason. The former analysis with full LOC-value sharing allowed for sentences like those below, which are all ungrammatical.

(260) a. *What Mike met was Sue.
b. *What Mike gave the book (to) was to Sue.
c. *What Mike behaved was rudely.
d. *What Mike looked was at the tower.

First, note that although (260a) is ungrammatical, this cannot be due to a general ban on person-denoting NPs in post-copular position. After all, sentences like *What Mike likes is Sue* are grammatical.[32] To rule out sentences like (260c) and (260d), we have to change the lexical entry of *what*. Consider the new lexical entry below.

(261)
$$\left[\begin{array}{ll} \textit{word} & \\ \text{PHON} & \left\langle \textit{what} \right\rangle \\ \text{SS} & \left[\begin{array}{ll} \text{LOC} & \left[\begin{array}{ll}\text{CAT|HEAD} & n \\ \text{CONT} & \boxed{1}\end{array}\right] \\ \text{WH} & \{\} \\ \text{REL} & \left\{\boxed{1}\right\} \\ \text{PC} & + \end{array}\right]\end{array}\right]$$

In contrast to the *what* in (256), this one is specified for a HEAD-value. It is a noun. The content of this noun will always be identified with the content of the post-copular constituent. This is done via the detour over the SUBJ-list of the *pred-free-rel-cl*, as can be seen in the constraint in (259). The underlying idea behind this approach is best explained when we consider examples like those below.

(262) a. Mike bought this donkey.
b. Sue bought that, too.

(263) a. Mike wants to become mayor of London.
b. Sue wants to become that, too.

[32] This sentence is also interesting because some authors claim that pseudoclefts are more natural with action verbs than with states. See e.g. Cann (1993, p. 257).

(264) a. One day Mike will be bald.

b. One day Sue will be that, too.

(265) a. Mike said that he will leave.

b. Sue said that, too.

(266) a. Mike snores at night.

b. Sue does that, too.

We see that in all sentence pairs the *that* in the second sentence functions as a substitute for an expression in the first sentence. The CONT-values of these expressions are of various semantic types: in (262) it is a *parameter*; in (263) it is an *soa* of a noun; in (264) it is an *soa* of an adjective; in (265) it is *message*; in (266) it is an *soa* of a VP. This instance of *that* is obviously semantically polymorphic, as Mikkelsen (2004b) already showed.[33] Now the idea is to consider the pseudocleft *what* as a (moved) wh-version of the polymorphic *that*. Apparently, all the subcategorizing/selecting expressions in the examples above can subcategorize for this *that*. This means that they can all subcategorize for a noun as long as that noun fits their selectional restrictions.

Here we should go back to the sentences in (260). As is shown in the examples below, the semantically polymorphic *that* cannot appear in those sentences.

(267) a. *Mike met that.

b. *Mike gave the book to that.

c. *Mike behaved that.

d. *Mike looked that.

First, note that (267d) might of course be grammatical with a different version of *look*.[34] Yet, this is not the *look* used in (260d). Comparing (260) and (267), we can say

[33] According to Mikkelsen (2004b, p. 101), this *that* can refer to inanimate entities, propositions, and "various abstract objects". Also see Webelhuth's *Sentence Trace Universal*: "[The *Sentence Trace Universal*] requires that a sentence behaves like a sentence when unmoved, but like a nominal phrase when moved", Webelhuth (1992, p. 95).

[34] E.g. *look tired/angry/young*.

that the *what* in pseudoclefts behaves analoguously to *that*. The ungrammaticality in (267c) and (267d) can now be accounted for if we assume that neither *look* nor *behave* allows for nominal complements. An explanation for (267a) and (267b) is more difficult because these two definitely allow for nominals, as was shown above. To capture the difference between the grammaticality of *What Mike liked was Sue* and the ungrammaticality of *What Mike met was Sue*, we must assume the following about their selectional restrictions: Verbs like *meet* need a complement from the set of animate entities. The *to*-complement of *give* must also come from this set. On the other hand, verbs like *like* need a complement out of the set that includes animate and inanimate entities. The differences between *like* and *meet* follow automatically if we assume types for these sets, e.g. *animate*[35], *inanimate*, and *in_ani* (animate and inanimate). The semantically polymorphic *that* then evokes as possible candidates for its denotation a set of type *all-den*. A verb like *meet* requires that its complement ranges over a set of type *animate*. This way *that* is not a possible complement for *meet* anymore because there is a type mismatch.[36]

Further evidence for the assumption that *what* needs to be restricted to be a noun comes from the examples below.

(268) a. He objected that Sue snores.
b. *He objected that.

(269) a. He objected to her tone.
b. He objected to that.

(270) a. What he objected to was that Sue snores.
b. *What he objected was that Sue snores.

[35] Note that this should also include animals and institutions as shown below.

(i) a. Mary gave food to the dog.
b. Mary gave old clothes to the Salvation Army.

[36] To prevent proliferation of set types one should limit the types of sets to specific properties. The most useful are probably those properties advocated in Chomsky (1965), like e.g. animate, human, abstract. Properties like liquid, expensive, or round are obviously syntactically irrelevant.

The comparision of (268) and (269) shows that only the verb *object* that takes a prepositional complement can appear with NPs. We can substitute the NP complement of the preposition in (269) for *that*, but we cannot substitute the sentential complement in (268). The pseudoclefts in (270) follow the same pattern. The version of *object* that needs a sentential complement cannot be used in a pseudocleft, while the one with a PP complement can. This follows automatically if we assume that *what* is a noun and has been moved from the complement position of *object* in (270b) and from the PP in (270a).

Another issue that must be addressed is the relation between cleft clause verbforms and matrix clause verbforms. Some authors claim that in specificational pseudoclefts, the cleft clause and matrix clause must show aspectual agreement.[37] The observation that aspectual agreement occurs in specificational pseudoclefts is indeed correct. However, this is not a pseudocleft-specific phenomenon. Rather, it should be related to the *do* which is present in the relevant sentences. Consider the examples below.[38]

(271) a. What he was doing was working in the garden.
b. *What he was doing was work in the garden.
c. *What he did was working in the garden.

In (271) it seems like the matrix clause must reflect the aspect of the cleft clause or vice versa. Only (271a), in which both show the same aspect, is grammatical. Compare this to the sentence pairs below.

(272) a. Mike was working in the garden.
b. Sue was doing that, too.
c. #Sue did that, too.

(273) a. Mike worked in the garden.

[37] Declerck (1988, p. 52).

[38] Taken from Declerck (1988, p. 52). Note that (271b) might also get a predicational interpretation, which would be grammatical. In this case the cleft clause would be a free relative clause with an NP-interpretation and the post-copular constituent a predicative NP, not a VP.

b. Sue did that, too.

c. #Sue was doing that, too.

In these sentence pairs, we see the same aspect agreement requirement that we saw in the pseudoclefts in (271). A feliticious follow-up sentence to the first sentence must show the same aspect as the initial sentence. However, these sentences are obviously not pseudoclefts in any sense. The only thing they have in common with the sentences in (271) is the presence of *do*. Therefore, we should conclude that it is *do* which requires the aspectual agreement. This *do* seems to constrain its complement to show the same aspect as itself. We have already seen that the *that* in these examples is semantically polymorphic. This means that if it refers to a VP, it will of course also have the same aspect as that VP. In (272) and (273), *that* might get the information about the VP to which it refers from the feature QUD, i.e. from the context.[39] In contrast to (272) and (273), we have sentence internal identification of the CONT-values in the sentences in (271). Put differently: in these examples *do* requires that the *gap-ss* element on its argument structure agrees in aspect with itself. Here aspect should not be thought of as a morphological head feature. It rather refers to the aspect operators that we find on the QUANTS-lists of the soas, i.e. to semantic aspect.[40] Summarizing the observations from above, we can say that the putative aspectual agreement requirement in (271) has nothing to do with pseudoclefts per se. The aspectual agreement requirement is related to the *do* which is used in these sentences. Therefore, I have only sketched how (272) and (273) might be analyzed.

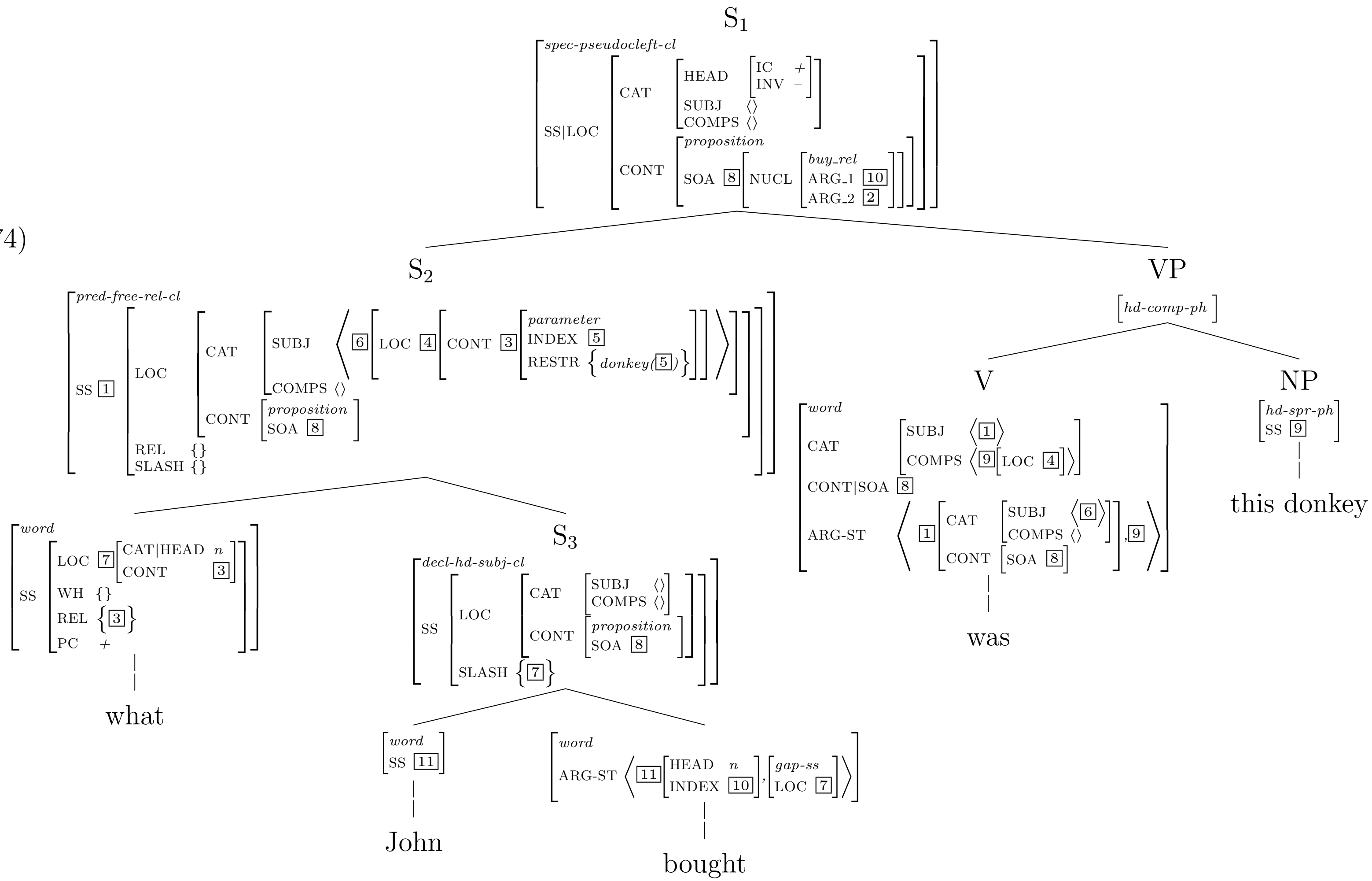
Now we can use the new *what* and the constraint on *pred-free-rel-cl*. The tree for a sentence like *What Mike bought was this donkey* will now look as given in (274).

In (274) we see that *what* does not share its entire LOC-value with the post-copular constituent anymore. The two only share the same CONT-value. From this it follows that clause S_3 is not slashed for the LOC-value of the post-copular constituent as was the case in (255). The *pred-free-rel-cl* is still a subtype of *hd-fill-ph*, which means the filler *what* must have the same LOC-value as the item that gets ‘bound

[39] Note that this is only a suggestion for a possible analysis for such sentence pairs.

[40] We will come to such operators later when it is shown that the finite copula, e.g. *is*, introduces a tense-operator.

(274)


S1
spec-pseudocleft-cl
SS|LOC
CAT
HEAD
IC +
INV −
SUBJ ⟨⟩
COMPS ⟨⟩
CONT
proposition
SOA 8
NUCL
buy_rel
ARG_1 10
ARG_2 2
S2
pred-free-rel-cl
SS 1
LOC
CAT
SUBJ ⟨6 [LOC 4 [CONT 3 [parameter INDEX 5 RESTR {donkey(5)}]]]⟩
COMPS ⟨⟩
CONT
proposition
SOA 8
REL {}
SLASH {}
VP
hd-comp-ph
V
word
CAT
SUBJ ⟨1⟩
COMPS ⟨9[LOC 4]⟩
CONT|SOA 8
ARG-ST ⟨1 [CAT [SUBJ ⟨6⟩ COMPS ⟨⟩] CONT [SOA 8]], 9⟩
was
NP
hd-spr-ph
SS 9
this donkey
word
SS
LOC 7
CAT|HEAD n
CONT 3
WH {}
REL {3}
PC +
what
S3
decl-hd-subj-cl
SS
LOC
CAT
SUBJ ⟨⟩
COMPS ⟨⟩
CONT
proposition
SOA 8
SLASH {7}
word
SS 11
John
word
ARG-ST ⟨11 [HEAD n INDEX 10], [gap-ss LOC 7]⟩
bought

off' from the SLASH-set. We see that *bought* is slashed for $\boxed{7}$ and the LOC-value $\boxed{7}$ is the LOC-value of *what*. In contrast to this, the LOC-value of *this donkey* is $\boxed{4}$.

Another issue that has to be addressed is pied-piping. First, note that wh-determiners are not found in pseudoclefts. This means that we need to find a way to rule out sentences like *Whose mother I met was Mikes's*. Second, we need a way to rule out sentences like *In whom I put my trust was Mike*. This issue is solved in (259) by specifying the filler daughter to be a word. Put simply: No pied-piping can occur where no phrases are allowed. Furthermore, the specification of the filler daughter as [PC +] ensures that only *what* or *who* can appear in this position. At the same time, the relative pronouns *who* and *what* as proposed above can still be used for all other relative clause constructions because the other constructions simply ignore the PC-specification.

Now we can turn to the issue of quantifier interpretation. Here the following problem occurs. While the copula will collect a post-copular quantifier via the Store Amalgamation Constraint, such a quantifier is not accessible in the cleft clause. Since *what* in the cleft clause only shares its CONT-value with the post-copular constituent, quantifiers from a post-copular constituent are not present in the cleft clause. After all, STORE is a LOCAL-feature, not a CONT-feature. This is not what we want. What we want is a full interpretation of the cleft clause (including the post-copular constituent) that can be shared with the copula. Therefore, quantifiers from the post-copular constituent must be reconstructed within the cleft clause. For this purpose we can use the same path that was used for the semantic information. This means we can identify the STORE-value of *what* with the STORE-value of the item on the SUBJ-list of the *pred-free-rel-clause*. This STORE-value will then be reconstructed in the *gap-ss* element on the argument structure of the cleft clause's head verb, via structure sharing between *what* and the local object in SLASH. The new constraint on *pred-free-rel-clause* that realizes this is given in (275).

(275) *pred-free-rel-cl: (final version)*

$$\begin{bmatrix} \text{SS|LOC|CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix}\text{VFORM} & \textit{fin}\\ \text{IC} & -\end{bmatrix} \\ \text{SUBJ} & \left\langle \begin{bmatrix}\text{LOC} & \begin{bmatrix}\text{CONT} & \boxed{1}\\ \text{STORE} & \boxed{2}\end{bmatrix}\end{bmatrix}\right\rangle \end{bmatrix}\end{bmatrix} \rightarrow \begin{bmatrix} \textit{word} & \\ \text{LOC} & \begin{bmatrix}\text{CONT} & \boxed{1}\\ \text{STORE} & \boxed{2}\end{bmatrix}\\ \text{PC} & + \end{bmatrix}, \mathbf{H}\begin{bmatrix}\text{SS|LOC|CONT} & \textit{proposition}\end{bmatrix}$$

As a next step, we have to prevent the copula from collecting any quantifiers coming from the post-copular position. Otherwise, such quantifiers would be interpreted twice: once in the cleft clause and once in the matrix clause. This is also noticed by Ginzburg and Sag (2000), who comment on the issue as follows:

(276) "One could, following Przepiorkowski (1998), formulate a constraint requiring that quantifiers be amalgamated from all but the 'raised' argument of the verb (the one not assigned a semantic role by the raising predicate). In this way, quantifiers in the STORE of a raised argument would be amalgamated by the lowest predicate in a raising construction and could be scoped there or higher. The raising verb, because it does not amalgamate the stored quantifiers of the raised argument, could never 'reintroduce' such quantifiers into the semantic analysis."[41]

Since the copula is a raising verb, too, it will also be subject to such a constraint. However, if we consider the possibility that with the specificational copula, the picture from the quotation above changes a bit. In specificational clauses, the functor argument (usually the only predicate) gets raised. Hence, what such a constraint should say instead is that the quantifiers from the non-functor argument are ignored, not those of the raised argument. In principle, we find such a constraint in the Well-formedness Principle of Pollard and Yoo (1996).[42] The copula is a prototypical example of a "semantically vacuous" lexical head and should therefore share the STORE-value of its "sponsor". The sponsor is what here is called the functor argument. Note that technically, the copula does not fall under the exact definition of semantically vacuous. To be entirely compatible with the fragment in Ginzburg and Sag (2000), semantically vacuous lexical heads must be defined as those heads which share a soa with one of their arguments, not a CONT-value. We see the relevant part of the Well-formedness Principle turned into a constraint below.

(277)
$$\begin{bmatrix} \textit{word} \\ \text{SS|LOC|CONT|SOA } \boxed{1} \\ \text{ARG-ST } \left\langle ..., \boxed{2}\left[\text{SS|LOC|CONT|SOA } \boxed{1}\right], ... \right\rangle \end{bmatrix} \Rightarrow \begin{bmatrix} \text{SS|LOC|STORE } \boxed{B} \\ \text{ARG-ST } \left\langle ..., \boxed{2}\left[\text{SS|LOC|STORE } \boxed{A}\right], ... \right\rangle \end{bmatrix}$$
$$\textbf{and } \left(\boxed{B} = \left(\boxed{A} \uplus \left\{\textit{tense-rel}\right\}\right) \vee \boxed{A}\right)$$

Note that this constraint must be formulated on the type *word* so that it can

41 Ginzburg and Sag (2000, p. 208, footnote 33).

42 See section 2.2.4.

override the Store Amalgamation Constraint[43], which is a default on *word*. As required, it states that if a word shares a soa with one of its arguments, then it must also share a STORE-value with that argument. With this constraint, the copula always shows exactly the same quantifiers as its functor argument. Quantifiers from the other argument are ignored. This is all we need because the quantifiers from the post-copular constituent are now already part of the functor argument due to the constraint in (275). With respect to the STORE-set of the copula, two issues must be mentioned. First, note that the tensed copula will introduce a tense-operator to its STORE-set. This is my suggestion for how finiteness could be introduced to the fragment. Therefore, the STORE-set is either the same as that of the functor argument (for the untensed copula), or it is that set plus an additional tense operator (for tensed copula). Second, note that when we are dealing with cleft clauses on the argument structure of the copula, the STORE-set will be empty. However, this does not mean that we should generally constrain the copula lexeme to have an empty STORE-set. For predicative copular clauses, which allow embedding the copula under other auxliaries and modals, we still leave open the possibility that the order of quantifiers is handled within the main clause. As an example consider a sentence like *A student might have been in every class.* Here we allow for retrieval of the every-relation from post-copular position at every lexical head along the head path, as was predicted in Section 2.2.4.

Another slight change is made to the GPAP. Consider the new version below.

(278) Generalized Predicative Argument Principle (GPAP)

$$\textit{copula-lx} \Rightarrow \begin{bmatrix} \text{SS|LOC} & \begin{bmatrix} \text{CONT} & \textit{soa\_of}(\boxed{1}) \end{bmatrix} \\ \text{ARG-ST} & \left\langle \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{PRED} & + \end{bmatrix} \\ \text{SUBJ} & \left\langle \begin{bmatrix} \text{LOC} & \boxed{4} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT} & \boxed{1} \end{bmatrix}, \begin{bmatrix} \text{LOC} & \boxed{4} \\ \text{SLASH} & \{\} \end{bmatrix} \right\rangle \\ & \vee \left\langle \begin{bmatrix} \text{LOC} & \boxed{4} \end{bmatrix}, \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{PRED} & + \end{bmatrix} \\ \text{SUBJ} & \left\langle \begin{bmatrix} \text{LOC} & \boxed{4} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix}$$

Note that now in the final version of the GPAP, the non-functor argument of

[43] See section 2.2.4.

the specificational variant of the copula is required to be [SLASH {}]. This accounts for what we saw in (130) in Chapter 3. It is neither possible to extract out of the post-copular constituent in specificational sentences nor to extract the post-copular constituent itself.

Besides, via an addition to the constraint on the type *sai-phrase*, we can account for the fact that it is impossible to have specificational sentences with subject-aux-inversion.[44]

(279) *sai-ph:*

$$\left[\text{SUBJ}\ \langle\rangle\right] \rightarrow \mathbf{H}\begin{bmatrix} \textit{word} & \\ \text{INV} & + \\ \text{AUX} & + \\ \text{SUBJ} & \left\langle \boxed{0} \right\rangle \\ \text{COMPS} & \left\langle \boxed{1} \right\rangle \end{bmatrix}, \boxed{0}, \boxed{1}\left[\text{SUBJ}\ \left\langle \boxed{0} \right\rangle\right]$$

The new requirement here is that the subject must be the argument of a complement. Since we only find the copula's functor argument in subject position in specificational clauses, this constraint on the construction *sai-phrase* will ensure that the construction is never used with a specificational copula.

4.2.4 The matrix clause in detail

The final piece in this analysis of pseudoclefts is the new construction type *spec-p(seudo)c(left)-cl(ause)*, which is used for the matrix clause. Its non-head daughter in specificational pseudoclefts is the *pred-free-rel-cl*, and its head daughter is the VP headed by *be*. It is a subtype of *hd-subj-ph* and *decl-cl*. Hence, its SUBJ-list is

[44] The constraint as used in Ginzburg and Sag (2000, p. 364) is given below.

(i) *sai-ph:*

$$\left[\text{SUBJ}\ \langle\rangle\right] \rightarrow \mathbf{H}\begin{bmatrix} \textit{word} & \\ \text{INV} & + \\ \text{AUX} & + \\ \text{SUBJ} & \left\langle \boxed{0} \right\rangle \\ \text{COMPS} & \boxed{A} \end{bmatrix}, \boxed{0}, \boxed{A}$$

Note that instead of changing this constraint, one might use a constraint on a copula with specificational argument order, which constrains the copula to be [INV –].

empty (a property inherited from *hd-subj-ph*), and its content is of type *message* (a property inherited from *decl-cl*). It is subject to the following constraint.

(280) *spec-pc-cl:*[45]

$$\left[\text{SS|LOC}\left[\begin{array}{ll}\text{CAT|HEAD} & \left[\begin{array}{ll}\text{IC} & +\\ \text{AGR} & \textit{3rd\_sg}\end{array}\right]\\ \text{CONT|SOA} & \left[\begin{array}{ll}\text{QUANTS} & \boxed{A}\\ \text{NUCL} & \boxed{3}\end{array}\right]\end{array}\right]\right] \rightarrow \left[\text{SS|LOC}\left[\begin{array}{ll}\text{CAT|SUBJ} & \left\langle\left[\text{LOC|STORE }\boxed{B}\right]\right\rangle\\ \text{CONT|SOA} & \left[\begin{array}{ll}\text{QUANTS} & \boxed{C}\left(\textit{list} \oplus \textit{order}(\boxed{B})\right)\\ \text{NUCL} & \boxed{3}\end{array}\right]\end{array}\right]\right], \mathbf{H}$$

$$\textbf{and } \boxed{A} \ominus \boxed{C} = \left\{\textit{tense\_rel}\right\}$$

The *spec-pc-cl* is an independent clause and shows third person singular agreement as in all sentences in which a clausal subject gets clausal interpretation and not an NP-interpretation.[46] The non-head daughter, i.e. the subject, is constrained to show a non-empty subject valency. This way it is ensured that there is a predicate in subject position. This predicate does not necessarily have to be a *pred-free-rel-cl.* It could also be a predicative NP, as will be shown in detail in Section 4.3.4. Before we deal with the remaining part of this constraint, let us take a look at another restriction. A second constraint on *spec-pc-cl* takes care of tense harmony effects as they were presented in (161).[47]

(281)

$$\left[\begin{array}{l}\textit{spec-pc-cl}\\ \text{DTRS}\left\langle\left[\text{SS|LOC|CONT|SIT } s\right], \ldots\right\rangle\end{array}\right] \Rightarrow \left[\begin{array}{ll}\text{SS} & \left[\begin{array}{ll}\text{LOC|CONT|SIT} & \boxed{2}\\ \text{BACKGROUND} & \left\{\begin{array}{l}\textit{now} \subseteq \textit{Timespan}(\boxed{2}) \vee\\ (\textit{Timespan}(\boxed{2}) < \textit{now} \wedge \textit{Anterior}(\boxed{1}, \boxed{2}))\end{array}\right\}\end{array}\right]\\ \text{DTRS} & \left\langle\left[\text{SS|LOC|CONT|SIT } \boxed{1}\right], \ldots\right\rangle\end{array}\right]$$

Note that what the constraint in (281) says cannot be part of the constraint in (280). The constraint in (281) only applies to specificational pseudoclefts, i.e. to specificational sentences with a clausal subject. Only a cleft clause shows specification for SIT because its CONT-value is of type *proposition.* The constraint in (280) on the other hand will be used for all kinds of specificational sentences, i.e. it also applies to pseudoclefts in the broader sense with definite description subjects. The constraint in (281) says that if the situation described by the matrix clause is

---

[45] Note that the feature AGR(EEMENT) is not used in Ginzburg and Sag (2000). However, the introduction of such a feature and its appropriate values along the lines of Pollard and Sag (1994) is trivial.

[46] Note that predicative copular clauses could show plural agreement, although this is rarely used. See Huddleston and Pullum (2002, p. 1068ff).

[47] See Ginzburg and Sag (2000, p. 391) for the description of the predicates *Timespan* and *Anterior.*

situated at the speaking time, then the cleft clause can show present tense, past tense, or future tense; or if the matrix clause is situated before the speaking time, then the cleft clause can only show past tense. This is all there is to ruling out a matrix clause that temporally precedes the cleft clause, which means that tense harmony/connectivity is accounted for. There is no need for two different copulas, as in Sharvit (2003). Note that while this constraint makes reference to the situations in the propositions, one might as well directly constrain the VFORM-values to achieve this effect.

Another issue that needs to be taken care of is the restricted order of quantifiers in specificational pseudoclefts. As was shown in the paradigm in (241), we must make sure that quantifiers from the cleft clause always out-scope quantifiers from the post-copular position. Since the quantifiers in post-copular position, i.e. of the non-functor argument, are ignored (these quantifiers take a detour via the functor argument), we cannot simply use the constraint on quantifier order from Chapter 4.1. Instead, we must make use of the subject valency of the *pred-free-rel-cl*. It is under this path that we find the information about the item in post-copular position, i.e. the *spec-pseudocleft-clause* has access to all information about quantifiers in the post-copular position. Therefore, the constraint in (280) can restrict the quantifiers from the post-copular position to not head the QUANTS-list of *spec-pc-cl*. This is ensured by appending any quantifiers from the post-copular constituent (i.e. from the 'trace' on the SUBJ-list) to the QUANTS-list of the non-head daughter.[48] Furthermore, the constraint in (280) ensures that the nuclei of the *spec-pc-cl* and of the its subject are the same. This means that the matrix clause and its subject have the same meaning except for one tense-relation. This is expressed by the condition below the AVM. This tense-relation is introduced by the finite matrix clause copula. Note that via this 'semi-identifying' of CONT-values, we can account for the fact that specificational clauses neither allow for (post-copula) modification nor for matrix clause negation.[49] Any matrix clause modification below the top node would

[48] Note that these quantifiers are actually not appended at this node. It is just a constraint on how the QUANTS-list must be set up.

[49] See Chapter 3.

alter the *spec-pc-clause*'s CONT-value in a forbidden way.[50] The same goes for matrix clause negation, which would add another operator, namely a neg-relation, to the QUANTS-list, such that the QUANTS-list of the top node and its predicative subject would differ in more than just a tense-relation.

Using the new constraints and types, we arrive at the structures (282) and (283). Here we see the set-up of the quantifiers for the sentence *What the man bought was this donkey.* Note that here we have the finite verb in the cleft clause introduce a tense-relation ($\boxed{14}$), too. This is a detail that has been and will be left out in the other representations because it is irrelevant to the present purpose.

Note that in (282) and (283) the top node's soa is not identified with that of the cleft clause. The two soas cannot be identified because the tensed copula introduces a tense-relation which must appear on its QUANTS-list. This is also the reason why the copula's STORE-set is not the same as that of the cleft clause. However, it is still in accordance with the constraint in (277), which considers this case, too. Note that the QUANTS-list of the matrix clause is in accordance with the constraint on *spec-pc-cl* in (280). That constraint requires the QUANTS-list to consist of a list that is not headed by the quantifier(s) from the post-copular constituent. We see that this is fulfilled here. The quantifier from the post-copular constituent is at the end of this QUANTS-list. Furthermore, we see that both quantifiers come from the argument structure of *bought*. The quantifier from the post-copular constitutent gets to *bought* in the following way. The GPAP requires that the functor argument, i.e. cleft clause, and the non-functor argument, i.e. the post-copular constituent, share a LOC-value. Now, since *what* shares a STORE-value with the 'missing' subject of the cleft clause (the non-functor argument), *what* also shows a quantifier in its STORE-set. Since

[50] An example of such a case is sentence (i). Note that sentences like (ii) are better because here we seem to be dealing with an extraction from the cleft clause. The extracted element is at the right periphery and would most probably have to be attached above the *spec-pc-cl*.

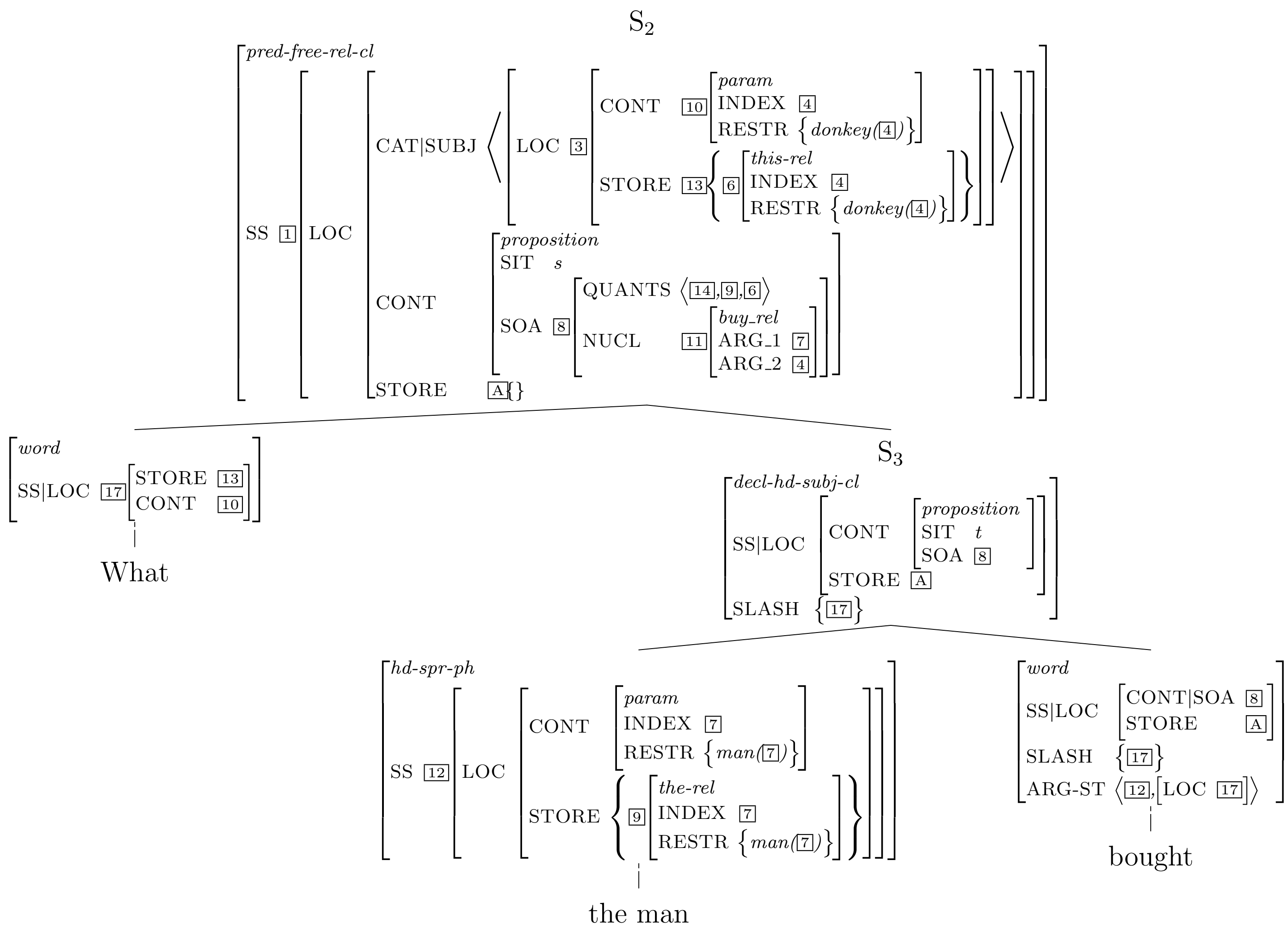
(i) *What the man bought was this donkey yesterday.

(ii) ?What the man bought was this donkey for a good price.

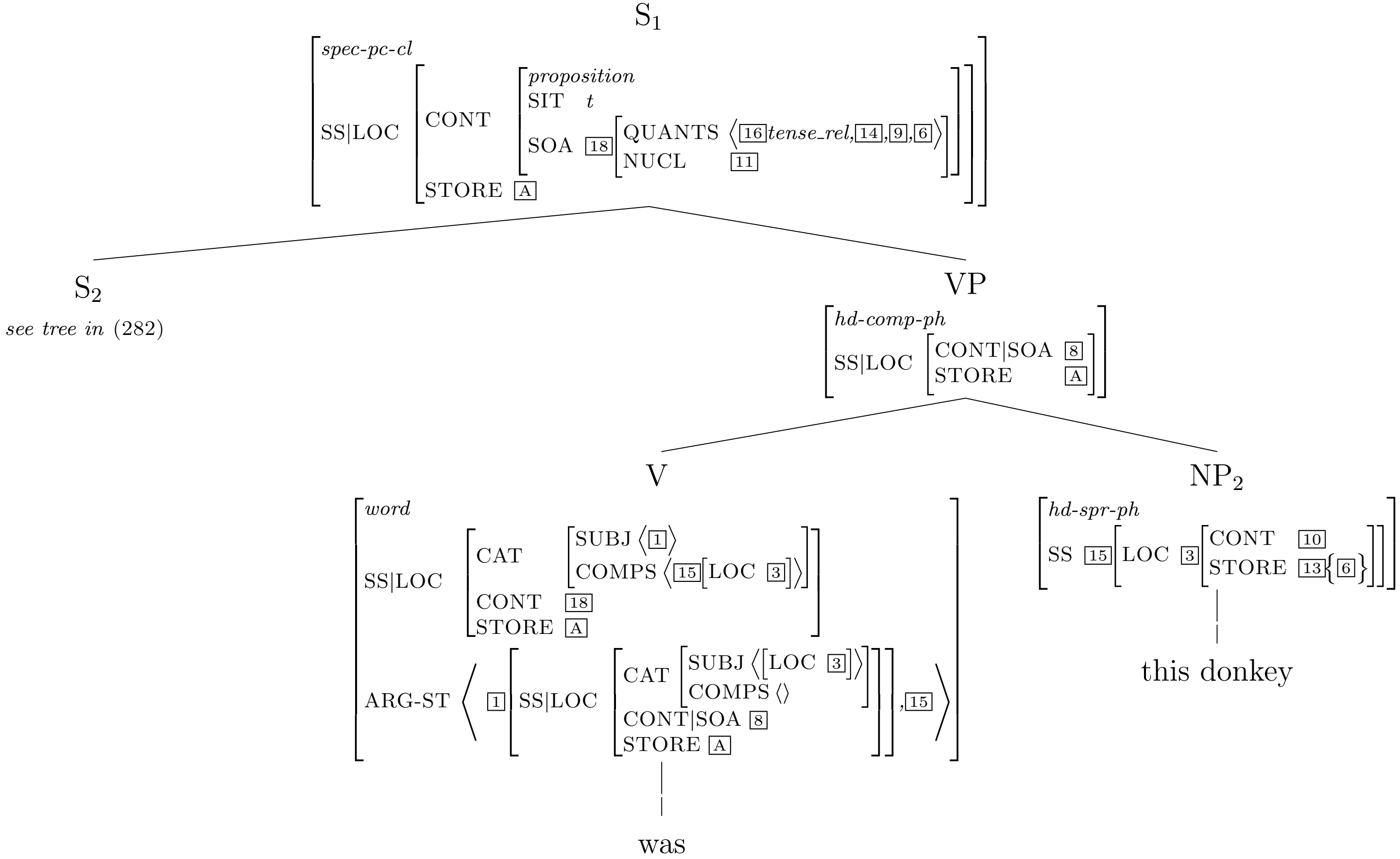
(iii) ?What the man bought was this donkey in Brazil.

Of course (iii) is fully grammatical in a reading in which *in Brazil* functions as a modifier for donkey, but this reading is not at issue here.

(282)


S2
pred-free-rel-cl
SS 1 LOC
CAT|SUBJ ⟨ LOC 3 [CONT 10 [param INDEX 4 RESTR {donkey(4)}] STORE 13 { 6 [this-rel INDEX 4 RESTR {donkey(4)}] }] ⟩
CONT [proposition SIT s SOA 8 [QUANTS ⟨14, 9, 6⟩ NUCL 11 [buy_rel ARG_1 7 ARG_2 4]]]
STORE A{}
word
SS|LOC 17 [STORE 13 CONT 10]
What
S3
decl-hd-subj-cl
SS|LOC [CONT [proposition SIT t SOA 8] STORE A]
SLASH {17}
hd-spr-ph
SS 12 LOC
CONT [param INDEX 7 RESTR {man(7)}]
STORE { 9 [the-rel INDEX 7 RESTR {man(7)}] }
the man
word
SS|LOC [CONT|SOA 8 STORE A]
SLASH {17}
ARG-ST ⟨12, [LOC 17]⟩
bought

(283)


S1
spec-pc-cl
SS|LOC
CONT
proposition
SIT t
SOA 18
QUANTS ⟨16 tense_rel, 14, 9, 6⟩
NUCL 11
STORE A
S2
see tree in (282)
VP
hd-comp-ph
SS|LOC
CONT|SOA 8
STORE A
V
word
SS|LOC
CAT
SUBJ ⟨1⟩
COMPS ⟨15[LOC 3]⟩
CONT 18
STORE A
ARG-ST ⟨1 [SS|LOC [CAT [SUBJ ⟨[LOC 3]⟩ COMPS ⟨⟩] CONT|SOA 8 STORE A]], 15⟩
was
NP2
hd-spr-ph
SS 15 [LOC 3 [CONT 10 STORE 13{6}]]
this donkey

STORE is a local feature, the STORE-set is 'copied' down the tree via SLASH onto the gap-ss element on the argument structure of *bought*. From there it is put into the STORE-set of *bought*. All quantifiers are retrieved in *bought*, i.e. in the lexicon.[51] The copula 'copies' the cleft clause's soa and adds a tense-relation. Note that this does not violate the GPAP. The GPAP is formulated on *copula-lexeme* and requires soa-sharing between the copula and its functor argument. Here, however, we are dealing with the word, not the lexeme. Therefore, differences in the soas of copula and functor argument are not a problem. In example (283) and (282), no further quantifiers are added to the QUANTS-list on the way to the top node of the matrix clause.

This contrasts with what we see in (284)[52]. Here the QUANTS-list of the cleft clause and the top node of the matrix clause differ in more than just a tense-relation. There is an additional quantifier from the modifier *at the auction*.

In (284) we see a case in which the soa is passed up to node VP_1. In VP_2 another quantifier from the PP is added. This is allowed because it is an *hd-adjunct-phrase*, where the PP is the semantic head. Due to this quantifier, the QUANTS-list of the top node differs in more than just a tense operator from the QUANTS-list of cleft clause. This violates the constraint on *spec-pc-cl* in (280) and renders the sentence ungrammatical. What we see for this post-copular PP goes for all post-copular modifiers. Since such modifiers will always be the semantic head of the matrix clause, such structures will always violate the constraint on *spec-pc-cl*.

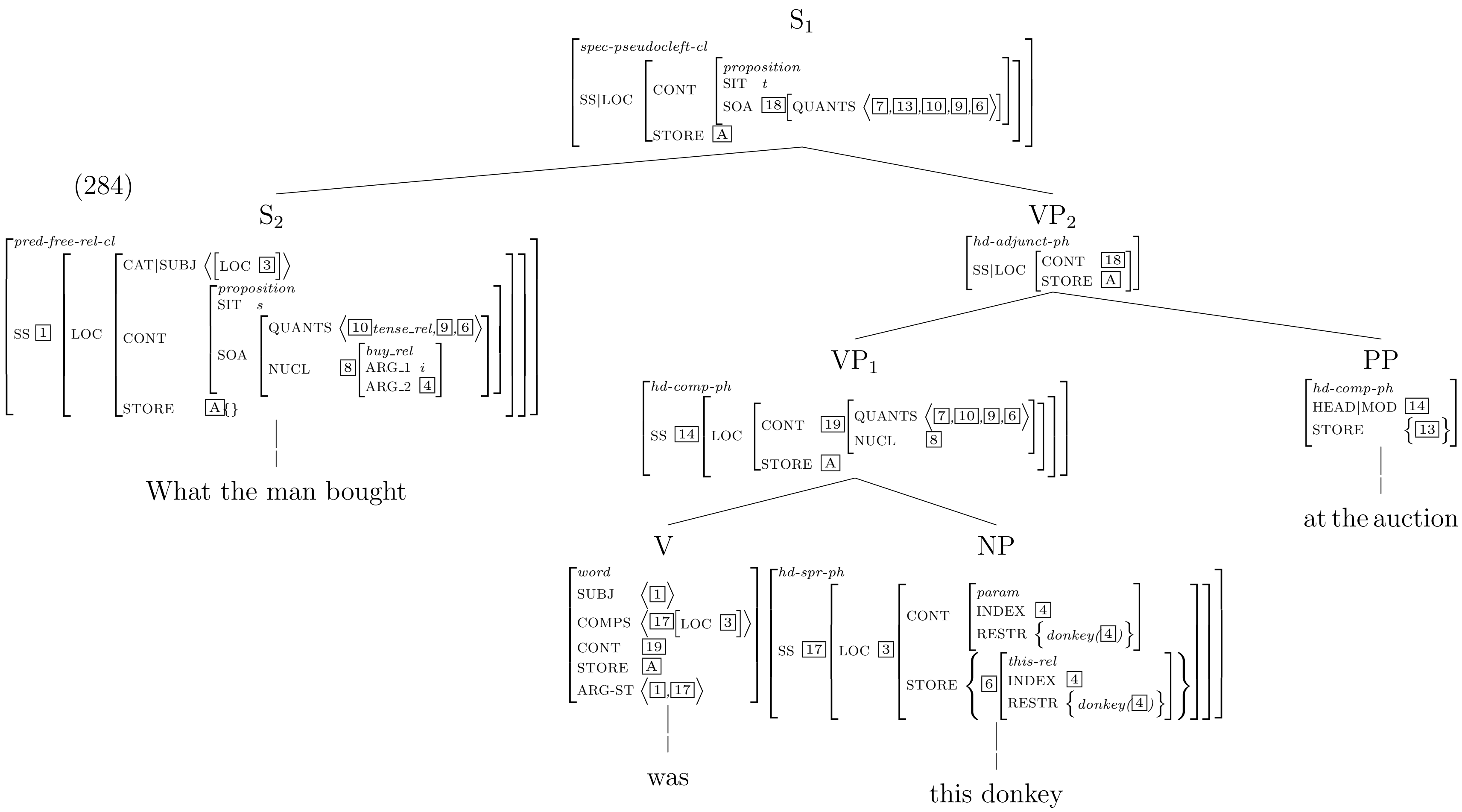
Now that we have all the basic pieces for an analysis at disposal, we should take another look at specificational pseudoclefts with VPs as post-copular constituents. Consider the tree in (285).

In (285) we see that *do* shares its meaning with the 'trace' of *what*. The usual filler/extraction mechanism is responsible for this. *What* shares its meaning with the element in the subject slot of the cleft clause due to a constraint on the *pred-free-rel-cl*. The element in the cleft clause's subject slot shares its LOC-value with the post-copular constituent, which is ensured by the copula. This has the effect that the underlying nucleus of the cleft and of the matrix clause is the same. It is a

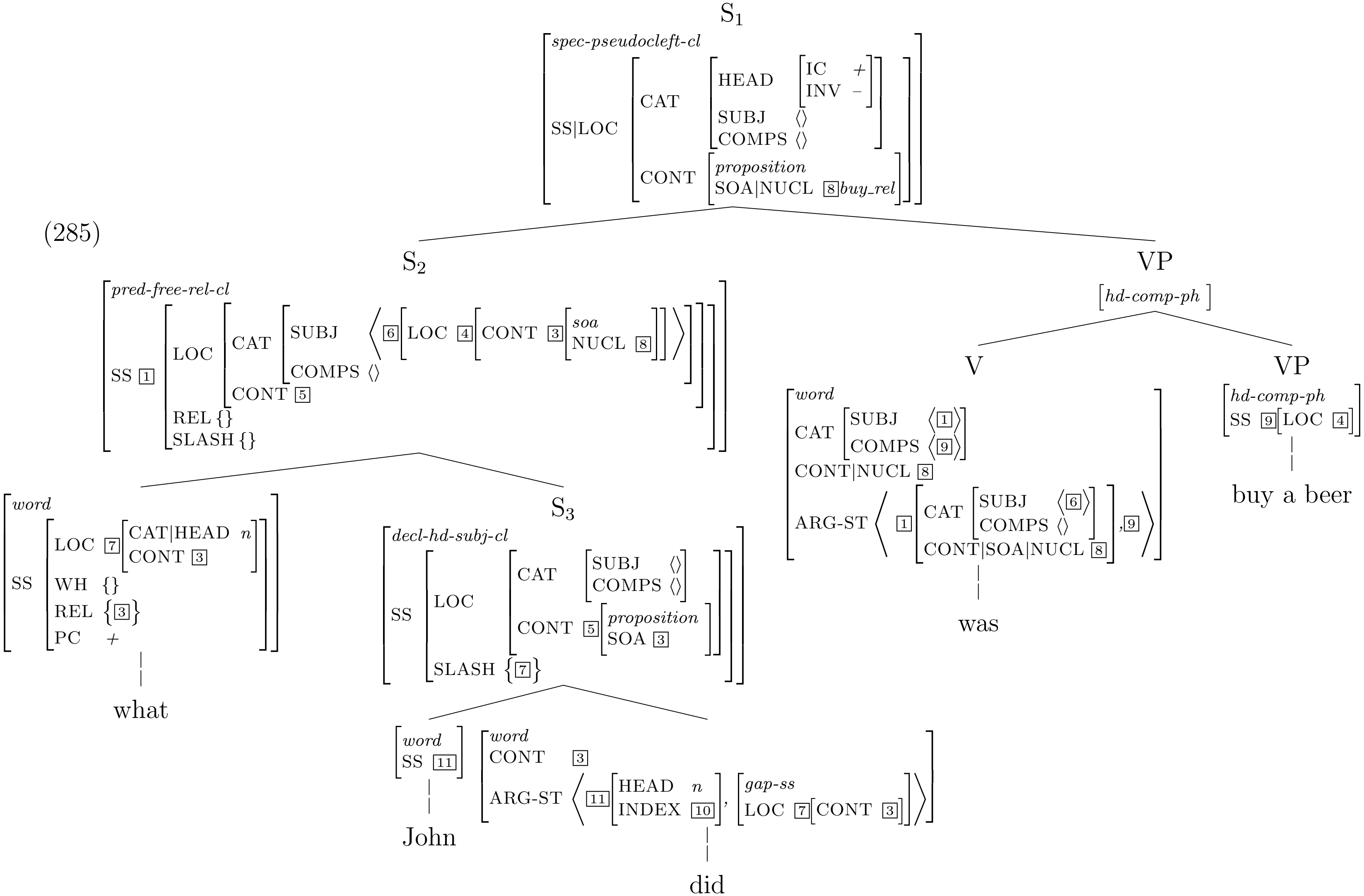
[51] This is the way it is done in Ginzburg and Sag (2000) with the Store Amalgamation Constraint.

[52] Note that for graphical reasons some paths in this tree structure are abbreviated again.

(284)


S1
spec-pseudocleft-cl
SS|LOC
CONT
proposition
SIT t
SOA 18 QUANTS ⟨7, 13, 10, 9, 6⟩
STORE A
S2
pred-free-rel-cl
SS 1
LOC
CAT|SUBJ ⟨[LOC 3]⟩
CONT
proposition
SIT s
SOA
QUANTS ⟨10 tense_rel, 9, 6⟩
NUCL 8
buy_rel
ARG_1 i
ARG_2 4
STORE A{}
What the man bought
VP2
hd-adjunct-ph
SS|LOC
CONT 18
STORE A
VP1
hd-comp-ph
SS 14
LOC
CONT 19
QUANTS ⟨7, 10, 9, 6⟩
NUCL 8
STORE A
PP
hd-comp-ph
HEAD|MOD 14
STORE {13}
at the auction
V
word
SUBJ ⟨1⟩
COMPS ⟨17[LOC 3]⟩
CONT 19
STORE A
ARG-ST ⟨1, 17⟩
was
NP
hd-spr-ph
SS 17
LOC 3
CONT
param
INDEX 4
RESTR {donkey(4)}
STORE
6
this-rel
INDEX 4
RESTR {donkey(4)}
this donkey

(285)


S1
spec-pseudocleft-cl
SS|LOC
CAT
HEAD
IC +
INV –
SUBJ ⟨⟩
COMPS ⟨⟩
CONT
proposition
SOA|NUCL 8 buy_rel
S2
pred-free-rel-cl
SS 1
LOC
CAT
SUBJ ⟨6 [LOC 4 [CONT 3 [soa NUCL 8]]]⟩
COMPS ⟨⟩
CONT 5
REL {}
SLASH {}
word
SS
LOC 7 [CAT|HEAD n, CONT 3]
WH {}
REL {3}
PC +
what
S3
decl-hd-subj-cl
SS
LOC
CAT
SUBJ ⟨⟩
COMPS ⟨⟩
CONT 5 [proposition SOA 3]
SLASH {7}
word
SS 11
John
word
CONT 3
ARG-ST ⟨11 [HEAD n, INDEX 10], [gap-ss LOC 7 [CONT 3]]⟩
did
VP
hd-comp-ph
V
word
CAT
SUBJ ⟨1⟩
COMPS ⟨9⟩
CONT|NUCL 8
ARG-ST ⟨1 [CAT [SUBJ ⟨6⟩, COMPS ⟨⟩], CONT|SOA|NUCL 8], 9⟩
was
VP
hd-comp-ph
SS 9 [LOC 4]
buy a beer

buy-relation.

This approach is based on the following observations. The *do* that is used in such sentences shows some peculiar properties. We cannot simply use the auxiliary *do* that takes a VP as its complement because the 'trace' of *what* (which here is on the argument structure of *do*) is [HEAD *n*]. On the other, hand we cannot simply say that the complement of *do* must be a semantic predicate, i.e. [CONT *soa*], because adjectives and predicative nouns also have such a CONT-value, but we must not use them in these cases as is shown below.

(286) a. *What Mike did was green.

b. *What Mike did was a teacher.

To sum it up: we need a *do* that takes a nominal complement with which it shares the meaning of a predicate. However, this nominal complement can only be the semantically polymorphic *that* or the relative pronoun *what*. It is the same *do* that we find in sentences like (272b) and (273b) above. In those examples we have seen that *do* must share its aspect with the sponsor of its meaning. This is a property that we can capitalize on. If we assume that the *do* in question takes a nominal complement with which its shares its aspect, it is ensured that the sponsor of the nominal complement's meaning is a VP, because VPs can show aspect but neither adjectives nor predicative nouns can. Furthmore, this *do* seems to check whether there is a semantic role Actor involved in the soa expressed by the verb. This could explain why most stative verbs are not allowed in post-copular position as is shown below.

(287) a. ?What he did was hate his parents.

b. *What he did was want a new job.

c. *What he did was need a new car.

I leave out a representation of *do* here because it is highly dependent on the implementation of aspect into the fragment.

At this point we can turn to some remaining issues. First, note that the constraint in (280) also accounts for the impossibility of raising verbs in specificational sentences. An example from (131) in Chapter 3 was **What he is appears to be important to himself*. What happens here is the following. The raising verb between the copula and the *spec-pc-clause* alters the CONT-value in such a way that the content of the *spec-pc-clause* and the content of the cleft clause differ in more than a mere tense operator. The soa of the *spec-pc-clause* will not be the soa of the cleft clause anymore. Its nucleus will be an appear-relation and not the nucleus of the cleft clause. This is a clear violation of the constraint in (280).

In Chapter 3 it was also shown that ECM verbs cannot take specificational pseudo-cleft-like constructions as a complement. This is easily accounted for if we assume that ECM verbs require that their first complement be an argument of their second complement. Since specificational sentences show the opposite order, they cannot be subcategorized by ECM verbs.

Note that another peculiarity of the specificational copula that we saw in Chapter 3 was the gapping restriction. This means it is impossible to gap a specificational copula. The source of this restriction is probably not to be found in the specificational copula or any constructions used in pseudoclefts. It is an issue that must be dealt with in a general analysis of ellipsis. This cannot be done here. Hence, I will not try to propose an account for this phenomenon.

4.2.5 More on connectivity and other phenomena

Once again we have to go back to the constraint in (280). It can both account for quantifier scope and help explain bound variable connectivity. The constraint requires that for a sentence like *What every Englishman$_i$ hates is his$_i$ beer gut*, the pronoun in post-copular position is always in the scope of the quantifier from the cleft clause. In practice, this means that the every-relation will always precede the the-relation (stemming from *his*) on the QUANTS-list of the matrix clause.

What about other connectivity phenomena like binding effects? To deal with Principle A-, B-, C-effects, we need to introduce two new types first. These are needed because the HPSG binding theory as formulated in Pollard and Sag (1994) is not used in the fragment of Ginzburg and Sag (2000). This means that we have to extend the fragment slightly. I will assume that the type *parameter* has three subtypes *n(on)pro(oun)*, *p(ersonal)pro(oun)*, and *ana(phor)*[53]. These types are needed

[53] A division of this type into the subtypes *reciprocal* and *reflexive* would be trivially simple but is not needed for the current purpose.

to distinguish anaphoric expressions from non-anaphoric ones.[54] Apart from the new types no new constraints are needed to account for binding effects in pseudoclefts. Pollard and Sag's (1994) binding theory covers these cases already. Consider the principles and definitions below.[55]

(288) Principle A: A locally o-commanded anaphor must be locally o-bound.
Principle B: A personal pronoun must be locally o-free.
Principle C: A nonpronoun must be o-free.

Being (locally) o-commanded is defined as follows (where obliqueness refers to the relative order of elements on the list of arguments):

(289) One referential *synsem* object locally o-commands another provided they have distinct LOCAL values and either (1) the second is more oblique than the first, or (2) the second is a member of the SUBCAT [here ARG-ST][56] list of a *synsem* object that is more oblique than the first.
One referential *synsem* object o-commands another provided they have distinct LOCAL values and either (1) the second is more oblique than the first, or (2) the second is a member of the SUBCAT [here ARG-ST] list of a *synsem* object that is more oblique than the first, or (3) the second has the same LOCAL|CATEGORY|HEAD value as a *synsem* object that is o-commanded by the first.

O-binding is defined as follows:

(290) One referential *synsem* object (locally) o-binds another provided it (locally) o-commands and is coindexed with the other. A referential *synsem* object is (locally) o-free provided it is not (locally) o-bound. Two *synsem* objects

[54] These types correspond to the types used in Pollard and Sag (1994) for the CONTENT-value of nouns. A new feature like MODE could do the same. However, since MODE is already used in Sag et al. (2003) slightly differently, three new types seem to be the best way to introduce anaphors into the fragment of Ginzburg and Sag (2000).

[55] From Pollard and Sag (1994, p. 401).

[56] Note that the feature ARG-ST cannot fully substitute the feature SUBCAT as it is used in Pollard and Sag (1994). There are two ways to deal with this. Either we assume that the feature ARG-ST is also a feature of phrases or the feature SUBCAT has to be introduced.

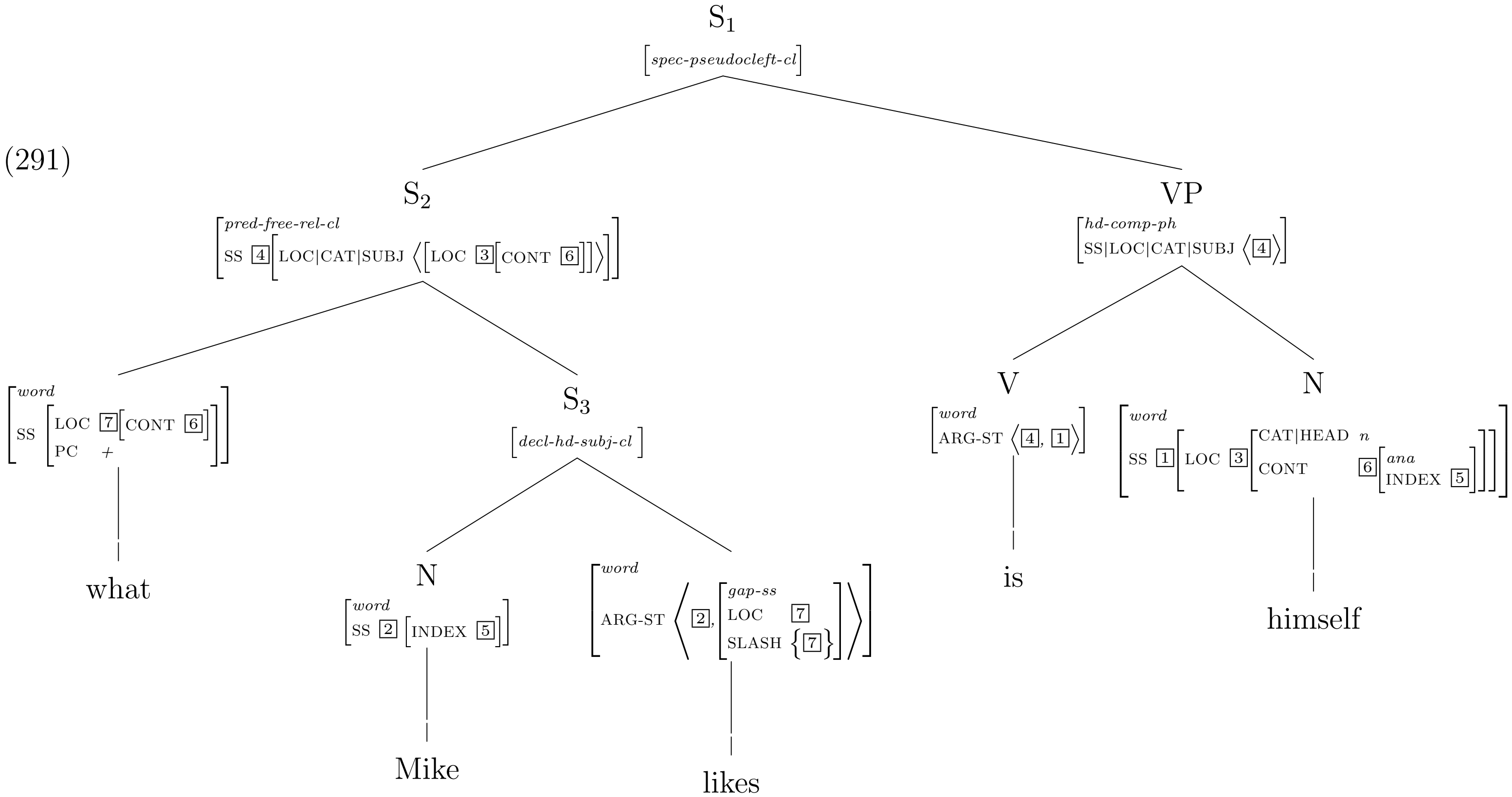
are coindexed provided their LOCAL|CONTENT|INDEX values are token-identical.[57]

Now we should take a closer look at the argument structure of the cleft clause's verb in sentences like *What Mike likes is himself* in (291).

The crucial point here is that *himself* on the argument structure of *is* is exempt from Principle A. This is because the less oblique co-argument, the cleft clause, is not a referential expression. Hence, the conditions for Principle A are not met: there is no o-command relationship. The cleft clause cannot be a referential expression because verbal projections do not have indices in Ginzburg and Sag (2000). More specifically for the present case: *messages* do not have indices. Note that although Yoo (2003) uses indices for verbal projections, this is not done in Ginzburg and Sag (2000). If one wants to use such indices (which is what I will do here), one must use a subtype of *index* different from *ref* for verbal projections. Again, the result would be that *himself* in (291) above is exempt from Principle A.
The fact that *himself* does not get an arbitrary interpretation (i.e. an interpretation that is not determined by the binding theory but by pragmatic principles), despite the fact that it is exempt, is due to the lexical entry of *be* and the constraint on the type *copula-lxm*. GPAP requires the sharing of the LOC-value between the non-functor argument and the element in the subject slot of the cleft clause. An argument with the same CONT-value appears on the argument structure of *like*. It is a *gap-ss* element. Note that due to the structure sharing of LOC-value with *himself*, the *gap-ss* element has a CONT-value of type *ana*, too. This means that it is an anaphor. The *gap-ss* object is locally o-commanded since it is in the second position of the ARG-ST-list of *likes*. Hence, according to Principle A it must be locally o-commanded. It is o-commanded by the subject of *like*.
Depending on whether one considers arbitrary or accidental identity possible in HPSG, there is another problem. If arbitrary identity is possible, i.e. by chance two signs are allowed to refer to the same entity, one has to rule out sentences like *Sue told himself that Mike likes himself*. Here both instances of *himself* might get the same index. Legitimizing the second one might then spuriously license the first one, too. There are two ways of ruling out these cases. First, one could give the indices certain

[57] Pollard and Sag (1994, p. 401).

(291)


S1
spec-pseudocleft-cl
S2
pred-free-rel-cl
SS 4 LOC|CAT|SUBJ ⟨LOC 3 CONT 6⟩
VP
hd-comp-ph
SS|LOC|CAT|SUBJ ⟨4⟩
word
SS LOC 7 CONT 6
PC +
what
S3
decl-hd-subj-cl
N
word
SS 2 INDEX 5
Mike
word
ARG-ST ⟨2, gap-ss LOC 7 SLASH {7}⟩
likes
V
word
ARG-ST ⟨4, 1⟩
is
N
word
SS 1 LOC 3 CAT|HEAD n
CONT 6 ana INDEX 5
himself

features for person, number, and gender. Then the obligatory coindexation of *Sue* and the first *himself* would lead to a coindexation error because the indices' values for these features do not match. This is the way things are done in Pollard and Sag (1994). Second, one could constrain the heads of coindexed elements to share such agreement features. Then one would constrain coindexed elements to share these head features. This is the solution adopted in Sag et al. (2003). Whichever way one chooses, this has no repercussions for the analysis of pseudoclefts.

Another issue with connectivity effects is Principle B-effects. Principle B-effects can be accounted for the same way as Principle A-effects. A sentence like (292a) is ungrammatical, although the pronoun in post-copular position is o-free as required by Principle B. This is so because the *gap-ss* element on the argument structure of *like* (see (293)), with which the pronoun shares its CONT-value, is o-bound by *Mike*. This is what renders the sentence ungrammatical.

(292) a. *What Mike$_i$ likes is him$_i$.

b. *What Mike$_i$ is is a nuissance to him$_i$.

We see basically the same thing in (292b) that we see in (292a). The only difference from (292a) is that the argument structure on which the pronoun is bound in (292b) is now the one of a predicate (*nuissance*) in post-copular position.

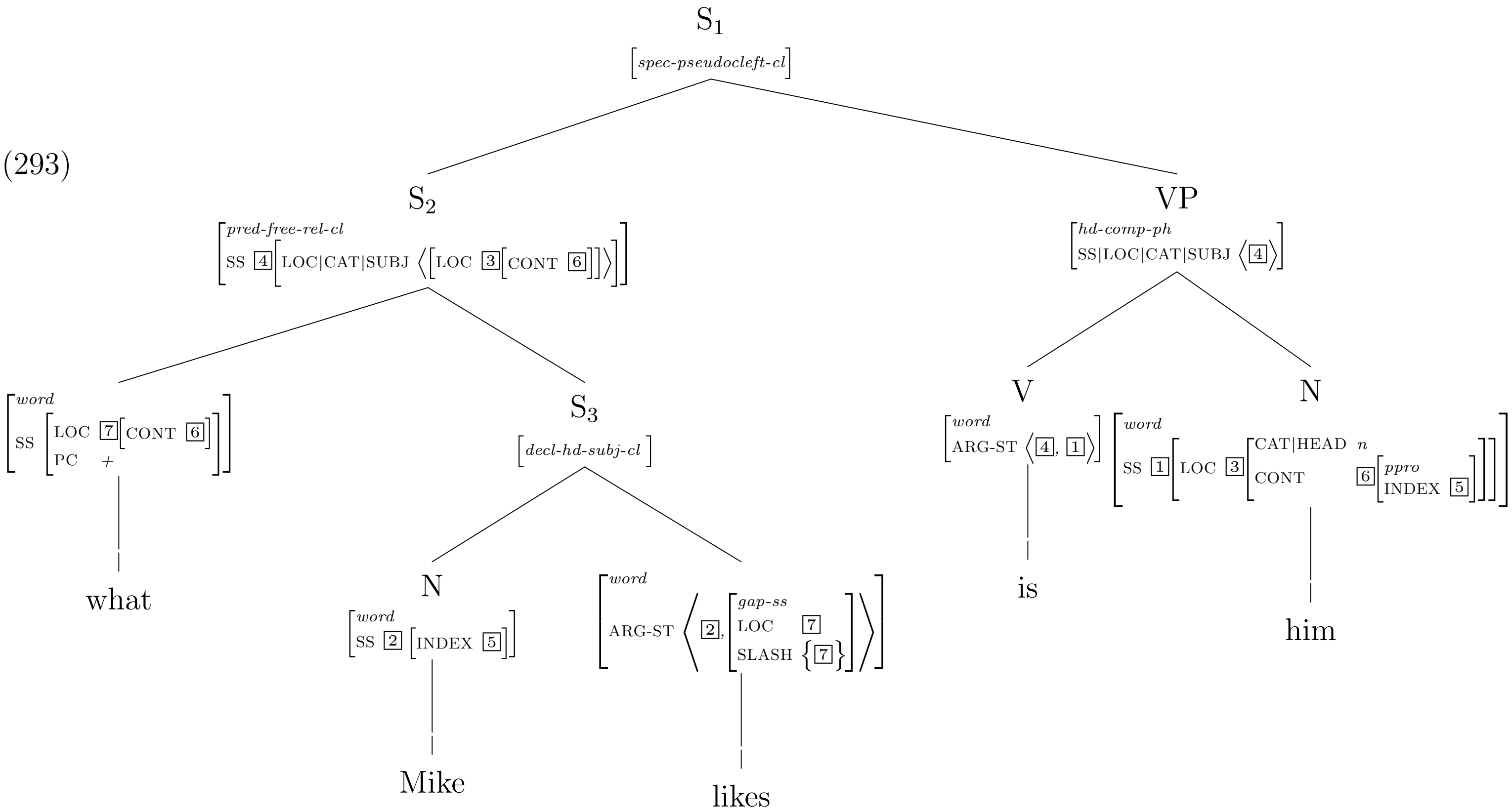
In a way what we see in pseudoclefts with respect to the binding theory is similar to what Richter (2000) (or rather Carl Pollard) proposed for raising constructions.

(294) "As Carl Pollard pointed out to me, the theory of argument raising might suggest a slightly different formulation of the Binding Theory. In argument raising constructions, the same anaphor might occur on the SUBCAT lists of two or more syntactic constituents. The question arises whether an o-commanded anaphor must be o-bound on the SUBCAT list of each word on which it appears, or whether it suffices if it is o-bound on one of the SUBCAT lists."[58]

I will follow Richter's, i.e. Pollard's, proposal and assume that an index needs only be bound once. Furthermore, I will assume that indices have features for gender, person, and number as in Pollard and Sag (1994). In addition to this, I will follow

[58] Richter (2000, p. 257, footnote 5). See also Manning and Sag (1998) and Manning et al. (1999) who use lists within the ARG-ST-list to account for binding of long distance anaphors.

(293)


S1
[spec-pseudocleft-cl]
S2
[pred-free-rel-cl SS 4 [LOC|CAT|SUBJ ⟨[LOC 3 [CONT 6]]⟩]]
VP
[hd-comp-ph SS|LOC|CAT|SUBJ ⟨4⟩]
[word SS [LOC 7 [CONT 6] PC +]]
what
S3
[decl-hd-subj-cl]
N
[word SS 2 [INDEX 5]]
Mike
[word ARG-ST ⟨2, [gap-ss LOC 7 SLASH {7}]⟩]
likes
V
[word ARG-ST ⟨4, 1⟩]
is
N
[word SS 1 [LOC 3 [CAT|HEAD n CONT 6 [ppro INDEX 5]]]]
him

Yoo (2003) in assuming that verbal projections have indices. These will be of a non-referential type. Binding effects then follow automatically from the reconstruction mechanism that the interaction of the copula and the new constructions constitute.

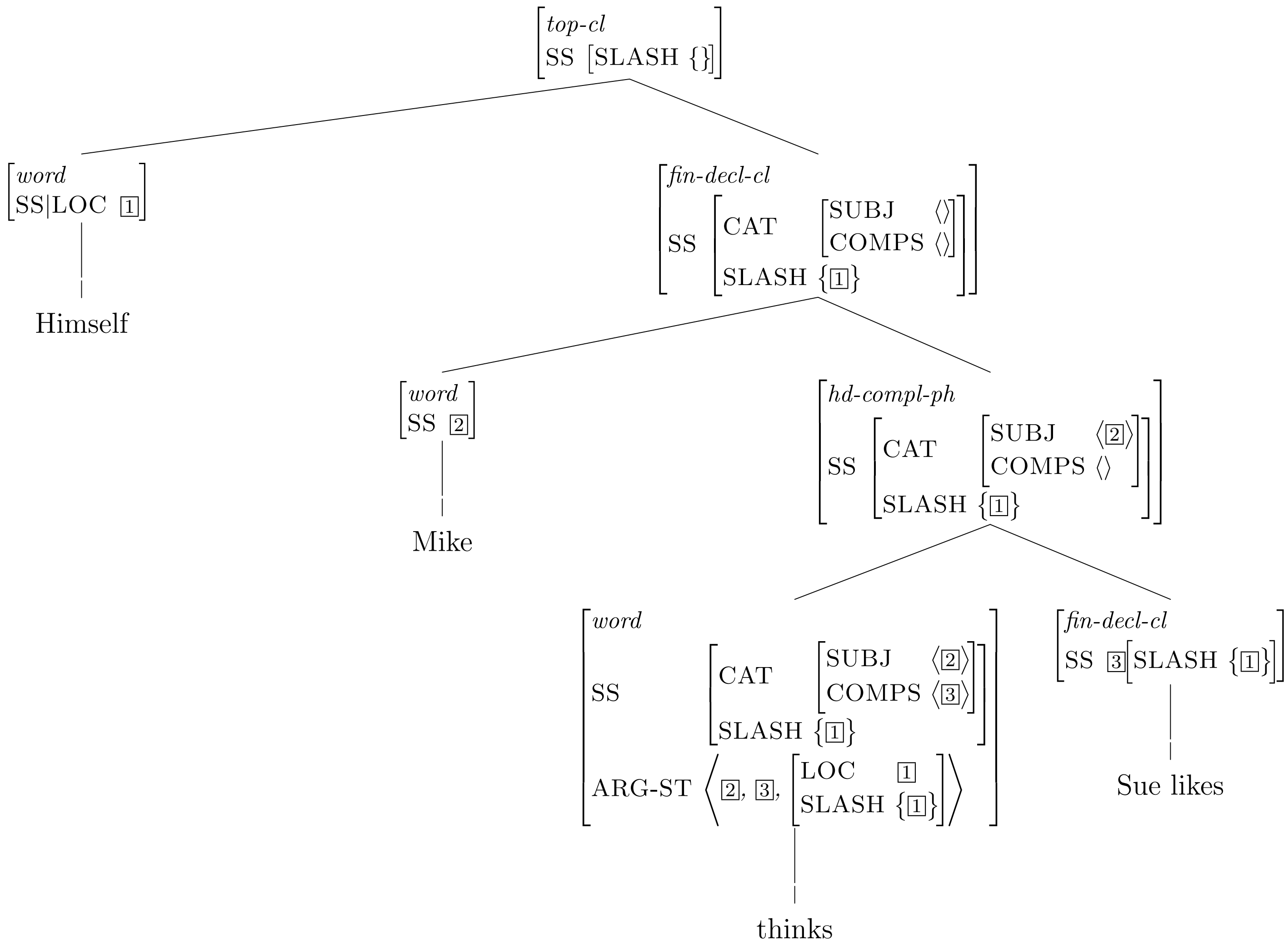
One phenomenon that could not be accounted for so far is the one in (179) from Chapter 3.3, repeated here partly in (295).

(295) a. What Mike thinks Sue likes is himself/herself.
b. *Mike thinks that Sue likes himself.
c. Himself/Herself Mike thinks Sue likes.

The theory as developed here predicts that the pseudocleft (295a) should be as ungrammatical as the canonical sentence (295b). This is so because the *what* in the pseudocleft is interpreted as if it were in the position after *likes*. Since *Sue* o-commands the *gap-ss* element on the argument structure of *likes*, the *gap-ss* element must actually be co-indexed with *Sue*. This is not allowed because under the present analysis the *gap-ss* element has the CONT-values of *himself* and is therefore incompatible with *Sue*. The index features for gender do not match. Nevertheless, (295a) is grammatical. It seems like what happens in the pseudocleft can be traced back to the phenomenon that we see in (295c). Here the same problem occurs, i.e. the 'trace' of *himself* is o-commanded by *Sue*, but the two cannot be coindexed. This means that as long as the HPSG binding theory cannot account for (295c), it cannot account for (295a). As soon as we have found an explanation for the grammaticality of (295c), this explanation will automatically also apply to (295a).
A solution to this problem might be to assume that a slashed clause on an argument structure always requires that its SLASH-value is also put on that argument structure. For sentence (295c), this will work as shown in (296).

Note that due to the SLASH-Amalgamation Constraint and the Non-LOCAL-Amalgamation Constraint, we will collect the LOC-value of *himself* twice at the node of *think*. Once the SLASH-value comes from the second argument, i.e. the slashed clause, and once it comes from the extra *gap-ss* element at the end of the argument structure. However, since the SLASH-value is a set, this does not matter because the same element can only appear once in a set. The new argument does not influence the COMPS-list of *think* because the additional argument – being a *gap-ss* element – will be removed from the COMPS-list by the ARP. The constraint that

(296)


top-cl
SS [SLASH {}]
word
SS|LOC 1
Himself
fin-decl-cl
SS CAT SUBJ ⟨⟩ COMPS ⟨⟩
SLASH {1}
word
SS 2
Mike
hd-compl-ph
SS CAT SUBJ ⟨2⟩ COMPS ⟨⟩
SLASH {1}
word
SS CAT SUBJ ⟨2⟩ COMPS ⟨3⟩
SLASH {1}
ARG-ST ⟨2, 3, [LOC 1 SLASH {1}]⟩
thinks
fin-decl-cl
SS 3 [SLASH {1}]
Sue likes

adds the extracted element to the argument structure of the bridge verb is given below.

(297) $\begin{bmatrix} \textit{word} \\ \text{ARG-ST} \left\langle \ldots, \boxed{3}\begin{bmatrix} \textit{clause} \\ \text{SLASH } \left\{\boxed{1}\right\} \end{bmatrix} \right\rangle \end{bmatrix} \Longrightarrow_{LR} \begin{bmatrix} \text{ARG-ST} \left\langle \ldots,\boxed{3}, \begin{bmatrix} \text{LOC} & \boxed{1} \\ \text{SLASH} & \left\{\boxed{1}\right\} \end{bmatrix} \right\rangle \end{bmatrix}$

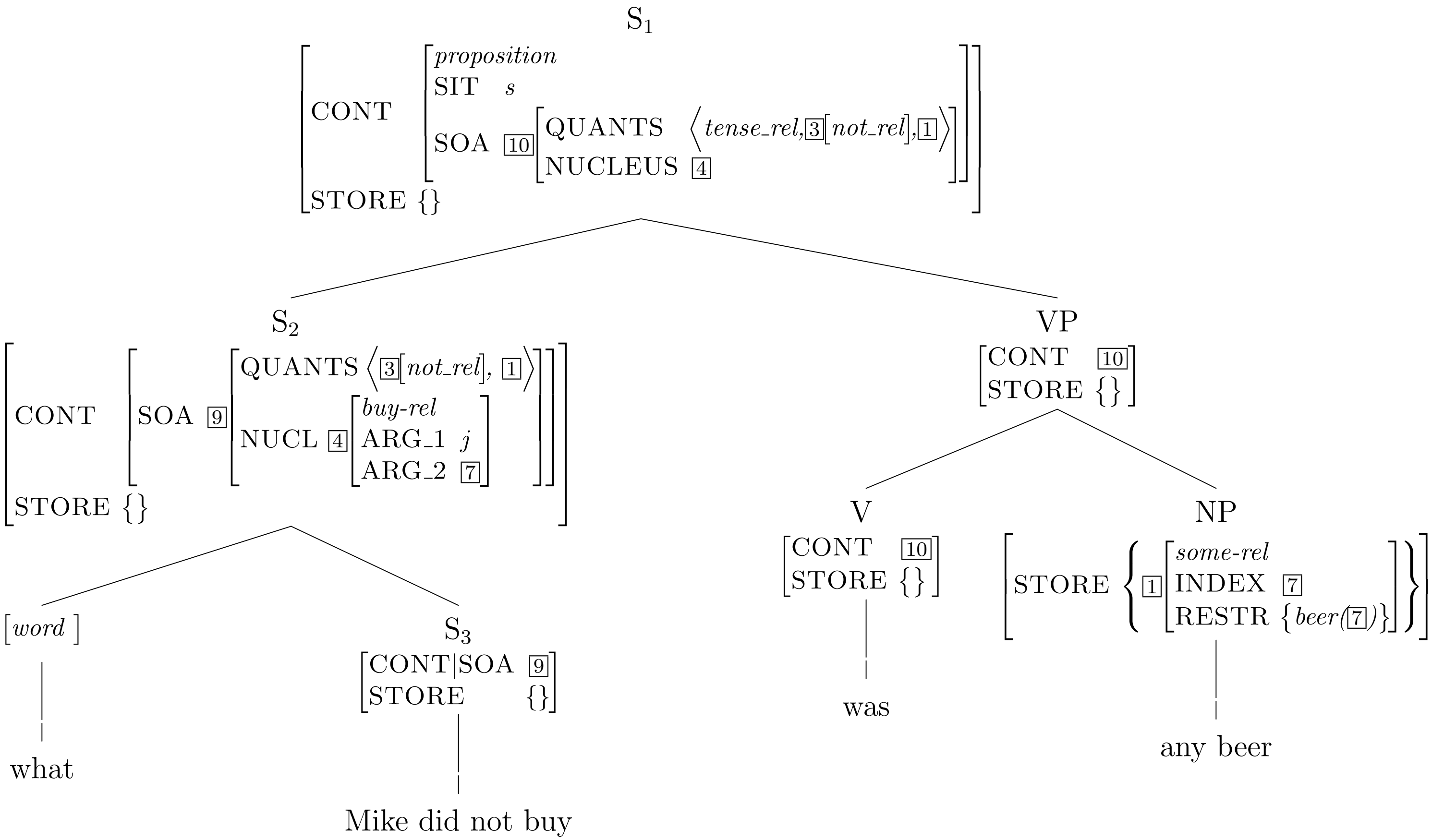
This constraint applies to all words with arguments from which something has been extracted. It adds a 'trace' of the extracted element to the argument structure. Since the LOC-value on the left-hand side does not correspond to the item on the SLASH-set, it is ensured that this constraint does not simply append 'traces to traces' (a 'trace' has its own LOC-value in SLASH).

Together with the assumption from (294) – that an index needs only be bound once – this new constraint accounts for the case of topicalized anaphors as in (295c) as well as for the pseudocleft (295a). The index of *himself* and that of *what* will now be bound on the argument structure of the bridge verb.

Finally, we must look at the issue of NPI-connectivity effects. Here we can use the same mechanism as Yoo (2003). This means negative polarity items and their licensers are treated like quantifiers and are put on the QUANTS-list. Then an NPI is only licensed if it is preceded by a licenser on the QUANTS-list, which is the same as saying that it may only be retrieved in a negative soa. The only difference from Yoo's account is that here the licenser is now actually visible because we do not make use of the *decl-frag-cl*. The example in (298) shows the quantifier structure of a pseudocleft with an NPI in post-copular position. Note that tense-relations are left out to simplify the representation.

In (298) we see the following. As was the case in Yoo's example, the not-relation on the QUANTS-list turns the soa into a negative one. This provides for NPI-licensing within the construction to which the soa belongs. Note that further quantifiers could of course precede the negative quantifier higher up in the tree. This would for instance be the case in a sentence like *What a woman does not need is any macho husband*. The quantifier order in such a sentence comes about in the following way. The not-relation as well as the some-relation from *any* and the some-relation from *a* are all members of the initial STORE-set of the copula. This is ensured by the GPAP. Then the constraints on *spec-pc-cl* require that the any-relation is not

(298)


S1
CONT [proposition SIT s SOA 10 [QUANTS ⟨tense_rel, 3[not_rel], 1⟩ NUCLEUS 4]]
STORE {}
S2
CONT [SOA 9 [QUANTS ⟨3[not_rel], 1⟩ NUCL 4 [buy-rel ARG_1 j ARG_2 7]]]
STORE {}
VP
CONT 10
STORE {}
[word]
S3
CONT|SOA 9
STORE {}
V
CONT 10
STORE {}
NP
STORE {1 [some-rel INDEX 7 RESTR {beer(7)}]}
what
Mike did not buy
was
any beer

retrieved the last. At the same time, constraints on NPIs require the any-relation to be retrieved in a negative soa. Therefore, the some-relation from *a* will be retrieved second and the not-relation last.[59] The retrieval of the not-relation will turn the soa into a negative one and we get an interpretation as sketched below.

(299) $\neg$ [$\exists x$ woman(x) $\wedge$ $\exists y$ macho(y) $\wedge$ need (x, y)]

One of the things that have not been addressed so far is how to deal with VPs in post-copular position. An analysis will have to explain what we see in the following paradigm.

(300) a. *What Mike has is bought a beer.
b. What Mike has done is buy a beer.
c. *What Mike must is buy a beer.
d. What Mike must do is buy a beer.
e. What Mike did was buy a beer.

Post-copular VPs obviously require the presence of *do* in the cleft clause. What is crucial here is that this *do* is not an auxliary but a full verb. It is this *do* that can also appear with the semantically polymorphic *that*, which we saw before. Consider the example below.

(301) a. *Mike has done.
b. Mike has done that.
c. *Mike must that.
d. Mike must do that.
e. Mike did that.

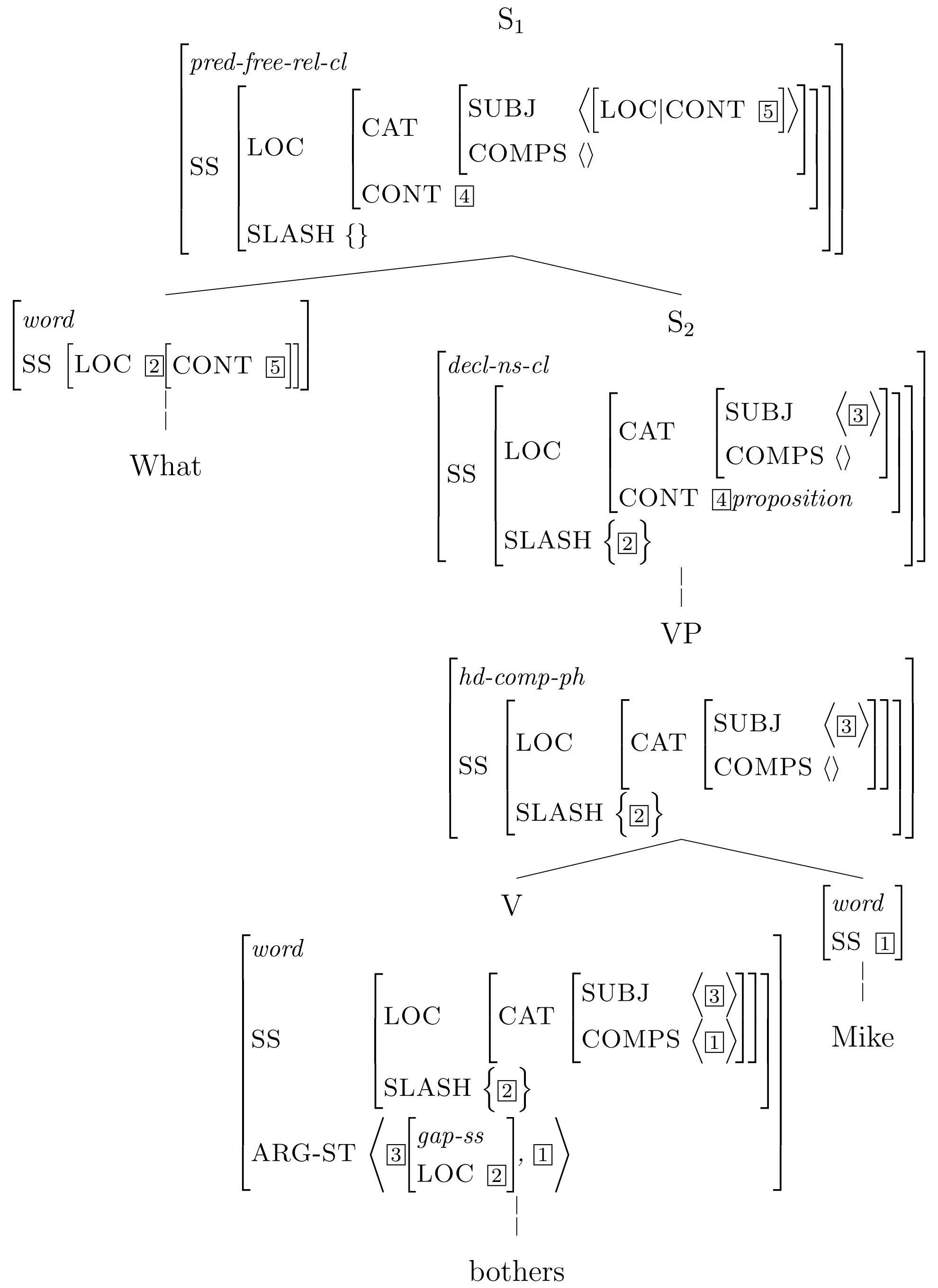
The ungrammaticality of the examples in (300) and (301) can be traced back to the fact that auxiliaries do not allow for nominal complements. However, the *what* in cleft clauses and *that* are constrained to be [HEAD *n*] and therefore cannot be combined with auxiliaries directly. The required presence of *do* in (300) is then a result of the incapability of auxiliaries to appear with *what*.

[59] Technically, this all happens in one step in the lexicon of course.

4.2.6 Cleft clauses with wh-words as subjects

At this point there remains one technical detail that has not been shown yet. So far, all sentences had cleft clauses in which the wh-word functioned as an object. Now, we should look at cleft clauses with wh-words that function as the subject. Of course this will not change anything about the top node, i.e. the *spec-pc-cl*, but we need a different set-up in the *pred-free-rel-cl*. How the *pred-free-rel-cl* must be set-up when the wh-word functions as the subject is shown in (302).

(302)

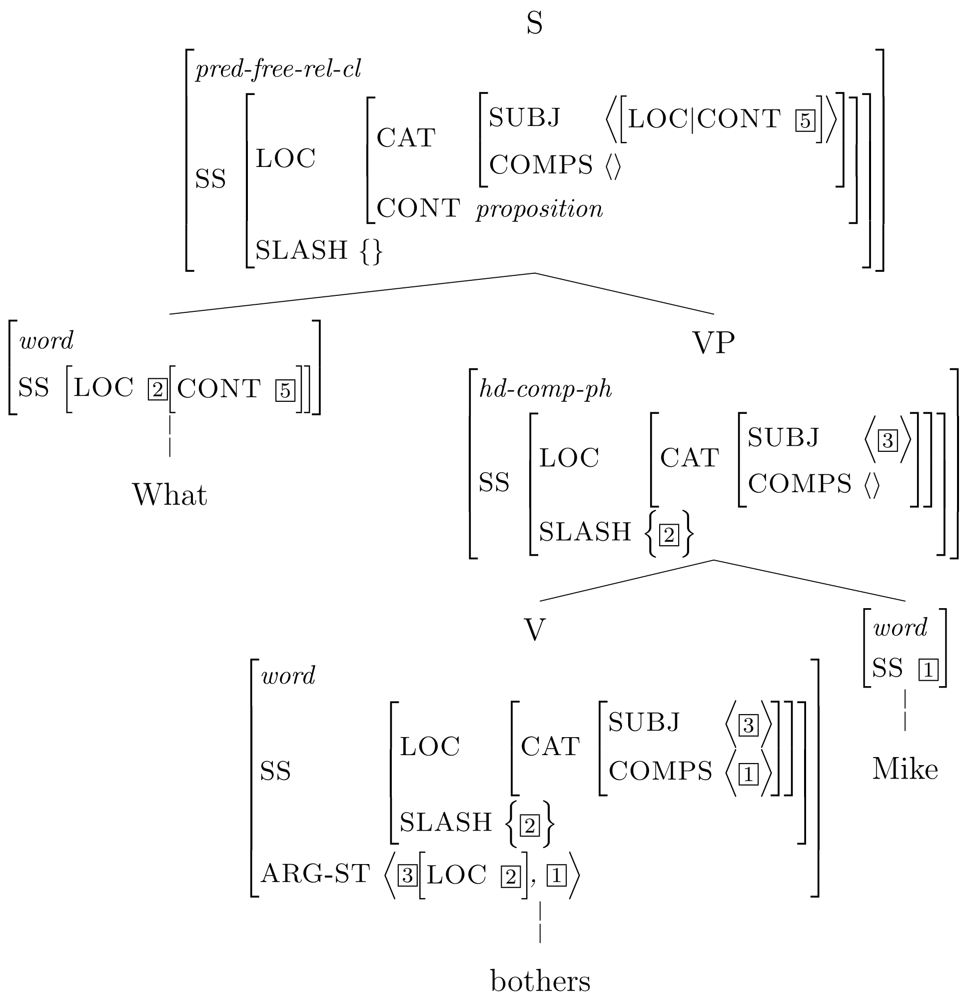


Note that in (302) the GHFP is overridden in the step from S_2 to S_1. The SUBJ-value of the *decl-ns-cl*[60] is not passed up to the top node. The top node's SUBJ-value

[60] See Ginzburg and Sag (2000, p. 369) for the constraints on this type. It is a subtype of *decl-cl* and *hd-only-ph*.

is a result of the type constraint on the *pred-free-rel-cl* in (259). The top node shows an empty SLASH-value because the *pred-free-rel-cl* is a subtype of *hd-fill-ph*. That we have a subject in S_2 as well as an item in the SLASH-set with the same local values seems odd, but is not a problem. It is the result of an interaction between ARP and the constraint on *pred-free-rel-cl*. The ARP puts the first argument of *bother* on the SUBJ-list. The constraint on *pred-free-rel-cl* requires that we are dealing with a filler construction. This means we need an item in the SLASH-set. This is the *gap-ss* argument of *bother*, too. The CONT-specification *proposition* in S_2 is a requirement of the type constraint on *pred-free-rel-cl*. It is this requirement that avoids spurious ambiguity. If we did not have the requirement that the head daughter of the *pred-free-rel-cl* must express a proposition, the constraint on *pred-free-rel-cl* would also allow for the structure in (303).

(303)



In (303) the head daughter of the *pred-free-rel-cl* is realized as a slashed VP. If the constraint in (259) only constrained the *pred-free-rel-cl* itself to express a proposition, then (302) and (303) would be legitimate structures for this example sentence. Now, by constraining the head daughter of the *pred-free-rel-cl* to have CONT-value of type *proposition* we achieve two things at once. On the one hand, the over-generation is blocked, and on the other, it is ensured that the top node expresses a proposition (due to the GHFP). However, basically only the over-generation had to be blocked because the type *decl-ns-cl* was already part of the fragment.

4.2.7 Summary

In this section it was shown how an analysis of specificational pseudoclefts that considers the cleft clause to be a predicative relative clause can be implemented in HPSG. As was shown in previous chapters, an analysis along these lines is empirically more adequate. The basic pieces needed for this venture are a copula and two constructional types: one for the matrix clause and one for the cleft clause. These new types are not specific to the specificational pseudocleft. The copula lexeme as presented here can be used for all kinds of copula verbs. The construction type proposed for the matrix clause can also be used for other specificational constructions, as will be shown later on. Furthermore, the construction for the cleft clause will come in handy in the analysis of cleft constructions like the reverse pseudocleft. This will be shown in the following section.
It was also shown in this section that several phenomena connected to the specificational pseudocleft can be accounted for by a small set of type constraints on these new types. For other phenomena it was shown that they could already be accounted for by the existing theory if reconstruction is used along the lines presented here. The following section will show how other pseudoclefts and specificational constructions can be implemented into the fragment.

4.3 Other pseudoclefts and specificational constructions

In this section it will be shown how the other types of pseudoclefts and specificational constructions fit in with the new analysis. It will be shown that the basic items of the analysis of specificational pseudoclefts can be 'reused'. In particular the analysis will be extended to reverse pseudoclefts, predicative pseudoclefts, equative pseudoclefts, wh-amalgam clefts, and specificational clauses with definite description subjects.

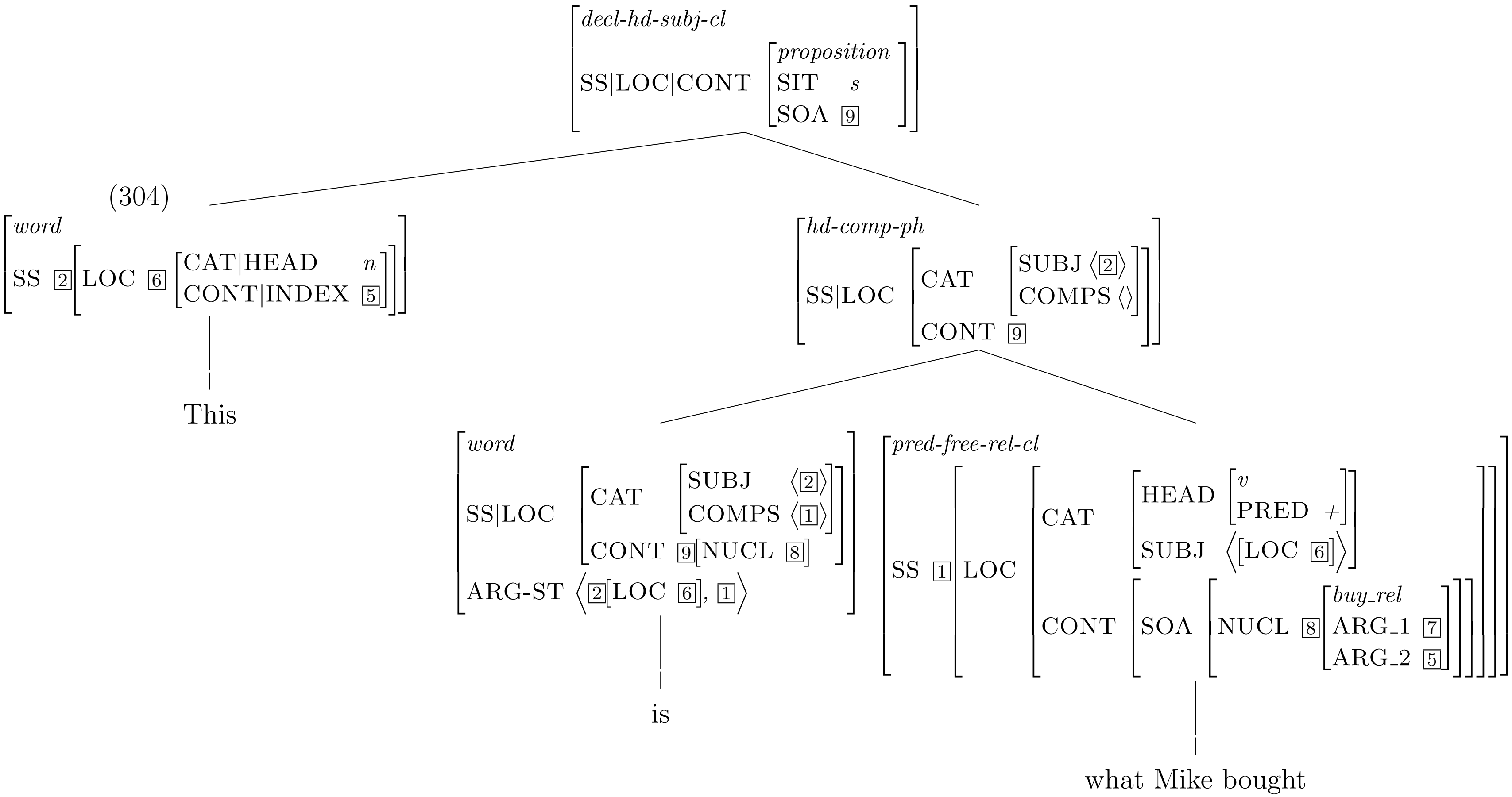
4.3.1 Reverse pseudoclefts

In this section it will be shown that the insights from the analysis of pseudoclefts from the previous section can be used to analyze reverse pseudoclefts as well. The starting point is again the copula. As is shown in (304), it is the mediator between the cleft clause and its argument. However, this time no new construction types are needed since the top node is simply a *decl-hd-subj-cl*, the phrase type of canonical declarative sentences.

In (304) we see the following. In contrast to what we saw in the specificational pseudocleft, the functor argument of the copula now appears in complement position. The copula's soa is the one of the functor argument. This is required by the GPAP. The *soa* of this argument is the underlying *soa* of the proposition expressed by the matrix clause in the top node. Here we see that a reverse pseudocleft is in principle not different from other predicative copula sentences like *This is expensive* or *This is under the table.* They just differ in the category of their complements. While the latter two make use of adjectives and predicative prepositions, the reverse pseudocleft uses a predicative clause.

The constraints on the new constructions that are used for the standard specificational pseudoclefts have only partial relevance for reverse pseudoclefts. Most importantly, they do not cause any over-generation. The constraints on *spec-pc-cl* do not play a role since that construction is not used. The constraint on *pred-free-rel-cl* ensures that the cleft clause in post-copular position has the same structure as in the non-reverse sentence, which means the standard specificational pseudocleft here. Furthermore, the constraint on *pred-free-rel-cl* 'reconstructs' the subject of

(304)


decl-hd-subj-cl
SS|LOC|CONT
proposition
SIT s
SOA 9
word
SS 2 LOC 6 CAT|HEAD n
CONT|INDEX 5
This
hd-comp-ph
SS|LOC CAT SUBJ ⟨2⟩
COMPS ⟨⟩
CONT 9
word
SS|LOC CAT SUBJ ⟨2⟩
COMPS ⟨1⟩
CONT 9 [NUCL 8]
ARG-ST ⟨2 [LOC 6], 1⟩
is
pred-free-rel-cl
SS 1 LOC CAT HEAD v
PRED +
SUBJ ⟨[LOC 6]⟩
CONT SOA NUCL 8
buy_rel
ARG_1 7
ARG_2 5
what Mike bought

the matrix clause in the cleft clause (and vice versa). By this 'reconstruction', it is ensured that inverted pseudoclefts can show connectivity effects just like standard pseudoclefts. This explains why sentences like those below are grammatical.[61]

(305) a. Himself$_i$ is who John$_i$ saw.

b. Her$_i$ oatcakes is what no Scottish woman$_i$ can live without.

In (305a) the anaphor *himself* is licensed because it shares its CONT-values with *who*, and the 'trace' of *who* fulfills Principle A of the HPSG binding theory on the argument structure of *saw*. In (305b) the subject NP shares its local values with *what*, and the 'trace' of *what* can appear in the scope of the quantified phrase *no Scottish woman*. Hence, we can get a bound variable reading.
As was shown in Chapter 3.5 connectivity effects are only found in reverse pseudoclefts that show the same information structure as the non-reverse pseudocleft. Put simply, this means connectivity effects as in standard pseudoclefts are only found if the cleft clause is the theme. This will be shown in detail in Section 4.5. However, there is one connectivity effect that does not appear in reverse pseudoclefts and is unrelated to information structure: NPI connectivity. Consider the example from Chapter 3.5 repeated here in (306).

(306) a. *Any novels was/were what he didn't buy.

b. *Any wine was what nobody bought.

Obviously a simple reconstruction of the subject in the cleft clause should actually render a grammatical result because in the cleft clause the NPI *any* would be in a negative soa due to the negatives *nobody* and *didn't*.
Here we should reconsider the following facts. We find bound variable connectivity and binding connectivity in reverse pseudoclefts and in standard pseudoclefts, and we find NPI connectivity in standard pseudoclefts. This means 'reconstruction' in the cleft clause seems to work for all cases but NPIs in reverse pseudocleft. Since reconstruction works well for the other cases, giving up reconstruction seems an undesirable step to take. Instead, NPIs in reverse pseudoclefts should be ruled out by

[61] Note that although we can now account for such sentences, corpus studies like Collins (1991) show that they are actually never used (see Section 3.5).

a different mechanism. This could be a linearization constraint that requires NPIs to follow their licensers. Such a step would definitely rule out the cases in (306) and might be practicable for other (pseudocleft unrelated) cases, too, in which linear order of licenser and NPI was brought up as an explanation for NPI licensing or the ban of NPIs. One such case is given below.

(307) a. Every student didn't call.
b. *Any student didn't call.

For (307a) we can get a reading in which the negation takes wide scope, i.e. it can outscope the subject. In (307b) wide scope of the negation should actually license *any* in subject position. There is no need for a rule specific to (reverse) pseudoclefts.

4.3.2 Equative and predicative pseudoclefts

In Chapter 3 it was shown that sentences of the shape of pseudoclefts allow for three interpretations. How we can deal with specificational pseudoclefts was shown in the previous section. Now, the analysis will be extended to account for equative and predicative pseudoclefts, too.

The main task in this venture is to give the cleft clause an interpretation of an NP, more specifically a non-predicative NP. This NP should behave like the wh-word of the cleft clause, but it should also show the information of the remaining relative clause. Since the relative pronoun is only a filler, one has to find a way to pass up its content to the dominating node. As discussed (for German) in Müller (1999), there are basically three ways to achieve this. First, one could make use of a non-local dependency. Second, one could access the information which is present in the daughters of the relative clause. Third, one could introduce a new feature for this purpose, which passes up the information along the head projection. Using the first option, one would not bind off the REL- and SLASH-values of the relative clause, when the relative clause gets saturated. Instead, they are projected to the next level and are bound off in the NP projection.[62] Müller discards this option because it is not compatible with his treatment of extraposition as a non-local dependency. This means in case a relative clause gets extraposed the projected SLASH-value cannot

[62] This is similar to what is happening in the *free-pred-rel-cl* with the SUBJ-value.

be bound off if it is a daughter of a verbal projection.[63] The second option is to be discarded because it violates locality.[64]

For his own analysis, Müller utilizes a special head feature RP-HEAD. This feature takes as a value the head information of the relative phrase. Müller's Relative Clause Projection Schema then gives the NP-relative clause the syntactic feature of the relative phrase. This schema is a unary phrase structure rule. The mother node is an NP and the daughter is the relative clause. The schema simply copies the CONTENT-value and the RP-HEAD-value of the relative clause daughter to the NP-mother. Note that the RESTR-values that the relative phrase brings with it are not copied up the tree. Nevertheless, they are present in the top node (the NP node) because Müller assumes that the NP-relative clause modifies an empty head. A full free relative clause for *was Fritz kauft* ('what Fritz buys') constructed along these lines is shown in (308)[65]. Note that it is of course based on a slightly different inventory of signs and features because it belongs to a fragment for German.[66]

[63] See Müller (1999, p. 93).

[64] Locality is here understood as a relation between a mother node and its daughters and means that the mother has no access to any information about the daughters' daughter(s). This is not a restriction of HPSG formalism, but a desideratum.

[65] This example corrsponds to the one in Müller (1999, p. 95).

[66] The function `free_rc_head` handles case concordance and is not of interest here. Note furthermore that the RESTR-set of the modified head is empty in Müller's examples.

$$\begin{bmatrix} \textit{phrasal-sign} & \\ \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CAT|HEAD} & \textit{free\_rc\_head}(\boxed{3}) \\ \text{CONT} & \boxed{6} \end{bmatrix} \\ \text{REL} & \langle\rangle \\ \text{SLASH} & \langle\rangle \end{bmatrix} \end{bmatrix}$$

(308)

$$\begin{bmatrix} \textit{phrasal-sign} & \\ \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CAT|HEAD} & \begin{bmatrix} \textit{relativizer} & \\ \text{MOD} & \overline{N}\begin{bmatrix} \text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{A} \end{bmatrix} \\ \text{RP-HEAD} & \boxed{3} \end{bmatrix} \\ \text{CONT} & \boxed{6}\begin{bmatrix} \textit{nom-obj} & \\ \text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{A} \cup \left\{\boxed{4}\right\} \end{bmatrix} \end{bmatrix} \\ \text{REL} & \langle\rangle \\ \text{SLASH} & \langle\rangle \end{bmatrix} \end{bmatrix}$$

$$\begin{bmatrix} \textit{word} & \\ \text{SS} & \begin{bmatrix} \text{LOC} & \boxed{5}\begin{bmatrix} \text{CAT|HEAD} & \boxed{3} \end{bmatrix} \\ \text{REL} & \left\{\boxed{1}\right\} \\ \text{SLASH} & \langle\rangle \end{bmatrix} \end{bmatrix}$$

Was

$$\begin{bmatrix} \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{INITIAL} & - \\ \text{VFROM} & \textit{fin} \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \boxed{4} \end{bmatrix} \\ \text{REL} & \{\} \\ \text{SLASH} & \left\langle\boxed{5}\right\rangle \end{bmatrix} \end{bmatrix}$$

Fritz kauft

Before we apply Müller's approach to the fragment of Ginzburg and Sag (2000), we need to adjust the constraint on *wh-rel-cl*. Sag (1997) formulates it as shown in (309). Since in Ginzburg and Sag (2000) it is assumed that relative pronouns introduce restrictions[67], we have to make sure that these restrictions are passed up the relative clause. For this reason the constraint on the *wh-rel-cl* must be altered to (310).

(309) *wh-rel-cl: (old)*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix}\text{MOD} & \textit{NP}_{\boxed{2}}\end{bmatrix} \\ \text{NON-HD-DTRS} & \left\langle \begin{bmatrix}\text{REL} & \left\{\boxed{2}\right\} \\ \text{QUE} & \{\}\end{bmatrix} \right\rangle \end{bmatrix}$$

(310) *wh-rel-cl: (new)*

$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix}\text{MOD} & \begin{bmatrix}\text{CAT|HEAD} & n \\ \text{CONT} & \begin{bmatrix}\text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{\Sigma}\end{bmatrix}\end{bmatrix}\end{bmatrix} \\ \text{DTRS} & \left\langle \begin{bmatrix}\text{REL} & \left\{\begin{bmatrix}\text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{A}\end{bmatrix}\right\} \\ \text{QUE} & \{\}\end{bmatrix}, \boldsymbol{H} \right\rangle \end{bmatrix} \textbf{ and } \boxed{\Sigma} \rightarrow \boxed{A}$$

The constraint in (310) requires that the restrictions coming from the relative pronoun are entailed by the restrictions of the modified noun. This means that all

[67] Compare the lexical entries for relative *who* from Sag (1997) and Ginzburg and Sag (2000).

(i) Sag (1997)

$$\begin{bmatrix} \text{CAT} & \textit{NP} \\ \text{CONT} & \begin{bmatrix}\text{INDEX} & \boxed{3}\end{bmatrix} \\ \text{REL} & \left\{\boxed{3}\right\} \\ \text{QUE} & \{\} \end{bmatrix}$$

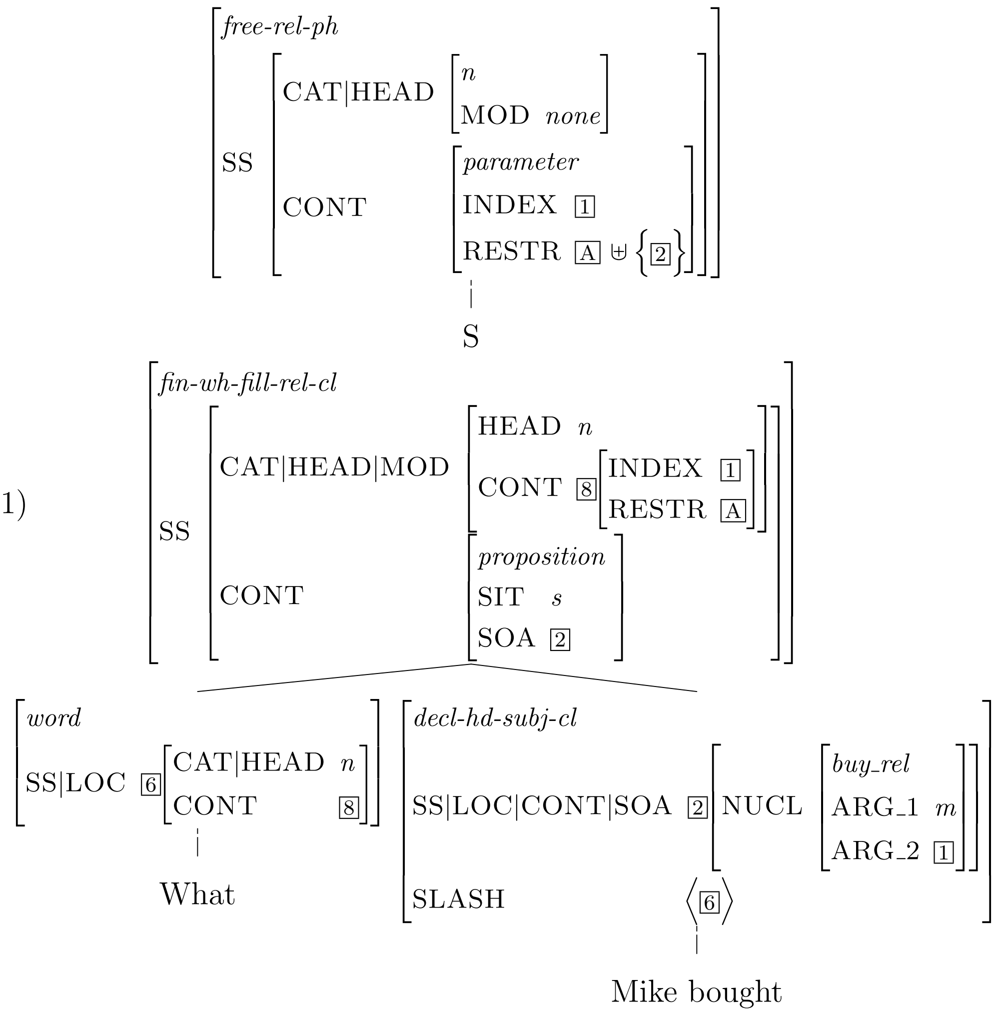
(ii) Ginzburg and Sag (2000)

$$\begin{bmatrix} \text{LOC} & \begin{bmatrix}\text{CAT} & \textit{NP} \\ \text{CONT} & \boxed{1} \\ \text{STORE} & \{\}\end{bmatrix} \\ \text{WH} & \{\} \\ \text{REL} & \left\{ \boxed{1} \begin{bmatrix}\textit{param} & \\ \text{INDEX} & i \\ \text{RESTR} & \left\{\textit{person(i)}\right\}\end{bmatrix} \right\} \end{bmatrix}$$

the restrictions that the relative pronoun introduces must be compatible with the head noun.

Applying Müller's approach to the fragment of Ginzburg and Sag (2000), we arrive at a structure as shown in (311).

(311)



The new construction type *free-rel-ph* takes as a daughter a standard modifying relative clause as proposed in Sag (1997). Note that *free-rel-ph* is a subtype of *non-hd-ph*. It is headed by a noun and is therefore an NP, but its (only) daughter – being a clause – is headed by a verb. The *free-rel-ph* takes the index from the daughter's MOD-value and makes it its own index. Furthermore, it collects the restrictions of its daughter and of the modified element.

Whenever a new construction is postulated, we should carefully examine whether there are alternative analyses that could do without a new structure. First, note that the daughter of the *free-rel-ph* cannot be the *pred-free-rel-cl* that was introduced in (259) because the *pred-free-rel-cl* does not allow for all the wh-pronouns found in predicative and equative pseudoclefts.[68] A second alternative would be to use a new subtype of some *rel-clause* type instead of a unary phrase structure rule. This would lead to a semantic problem: being a subtype of *clause* the new construction would be constrained to have content of type *message*. However, here the cleft clause is supposed to behave exactly like an NP, which means its content must be of type *parameter*. Thus, a new type of construction seems to be the neatest solution. The following constraint is needed for the new construction type *free-rel-ph*. This new type is a subtype of *hd-only-ph*.

(312) *free-rel-ph:*

$$\begin{bmatrix} \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CAT|HEAD} & \begin{bmatrix} \textit{n} \\ \text{MOD} & \textit{none} \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{\text{A}} \uplus \left\{ \boxed{2} \right\} \end{bmatrix} \end{bmatrix} \end{bmatrix} \longrightarrow \begin{bmatrix} \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CAT|HEAD} & \begin{bmatrix} \textit{v} \\ \text{MOD} & \begin{bmatrix} \text{CONT} & \begin{bmatrix} \text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{\text{A}} \end{bmatrix} \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \textit{proposition} \\ \text{SOA} & \boxed{2} \end{bmatrix} \end{bmatrix} \\ \text{SLASH} & \{\} \\ \text{REL} & \{\} \end{bmatrix} \end{bmatrix}$$

The *free-rel-ph* is [MOD *none*] since it does not modify anything in contrast to its daughter, the relative clause. Constraining the daughter to have a CONT-value of type *proposition* and to modify something ensures that the daughter must be some relative clause. The index of the modifee becomes the mother's index. The *free-rel-ph*'s restrictions consist of the SOA-value of the daughter plus the restrictions from the relative pronoun. In example (311) this is not of importance because *what* does not introduce any restrictions. Yet, for other cases with *who* or *which* this will matter.

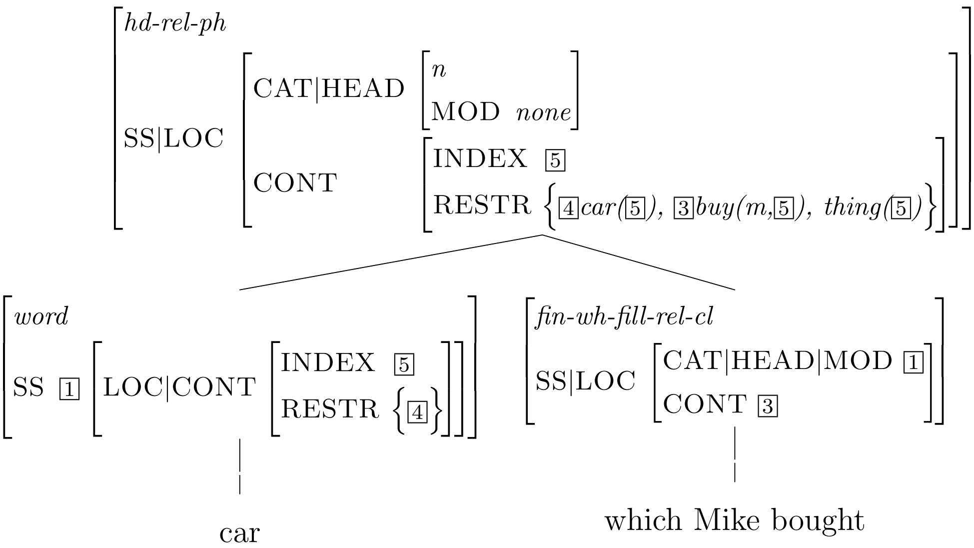
Unfortunately, we do not have any means to ensure that the relative clause is not a reduced one as in the NP *the donkey [Mike bought]*. Müller (1999) does not have that problem since there are no such clauses in German. However, one might use a feature like Müller's RP-HEAD to pass up the information that there must indeed be a relative pronoun in the relative clause. This comes with the disadvantage that

[68] See Chapter 3 where it was shown that specificational pseudoclefts only allow for *what* or *who*.

this feature is not needed anywhere else. An alternative approach could be to let the *free-rel-ph* have access to the daughter's path of its daughter. This is where we would find the information about a relative pronoun. Of course such an approach would be a violation of locality. Therefore, it seems undesirable. However, having constructions at disposal, subcategorizing explicitly for relative clause constructions as a daughter might be another option.

Summarizing the effect of using the unary rule in (312), we can say that what we get as the meaning of the *free-rel-ph* is similar to the meaning of a *hd-rel-ph*, which is the construction that usually dominates a noun and its modifying relative clause. Compare (311) to (313), which shows a noun and its modifying relative clause.

(313)



One difference between (311) and (313) is of course that we find an additional restriction in the *hd-rel-ph*, which stems from the head noun *car*. The thing-relation comes from *which*. The RESTR-value of the *hd-rel-ph* is the union of the restrictions which come from the head daughter and the non-head daughter. This is the result of the constraint below.[69]

[69] From Sag (1997, p. 479).

(314) *hd-rel-ph:*

$$\begin{bmatrix} \text{SS|LOC} & \begin{bmatrix} \text{CAT|HEAD} & n \\ \text{CONT} & \begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{RESTR} & \boxed{A} \cup \left\{\boxed{4}\right\} \end{bmatrix} \end{bmatrix} \\ \text{HD-DTR} & \boxed{1}\begin{bmatrix} \text{INDEX} & \boxed{2} \\ \text{RESTR} & \boxed{A} \end{bmatrix} \\ \text{DTRS} & \left\langle \boxed{1}, \begin{bmatrix} \text{CONT} & \boxed{4}\textit{proposition} \end{bmatrix} \right\rangle \end{bmatrix}$$

Since the *free-rel-ph* has only one daughter, it cannot be subject to this constraint, although it looks very similar to this construction. Hence, we must use the constraint in (312), which basically does the same for the *free-rel-ph* as the one in (314) does for the *hd-rel-ph*.

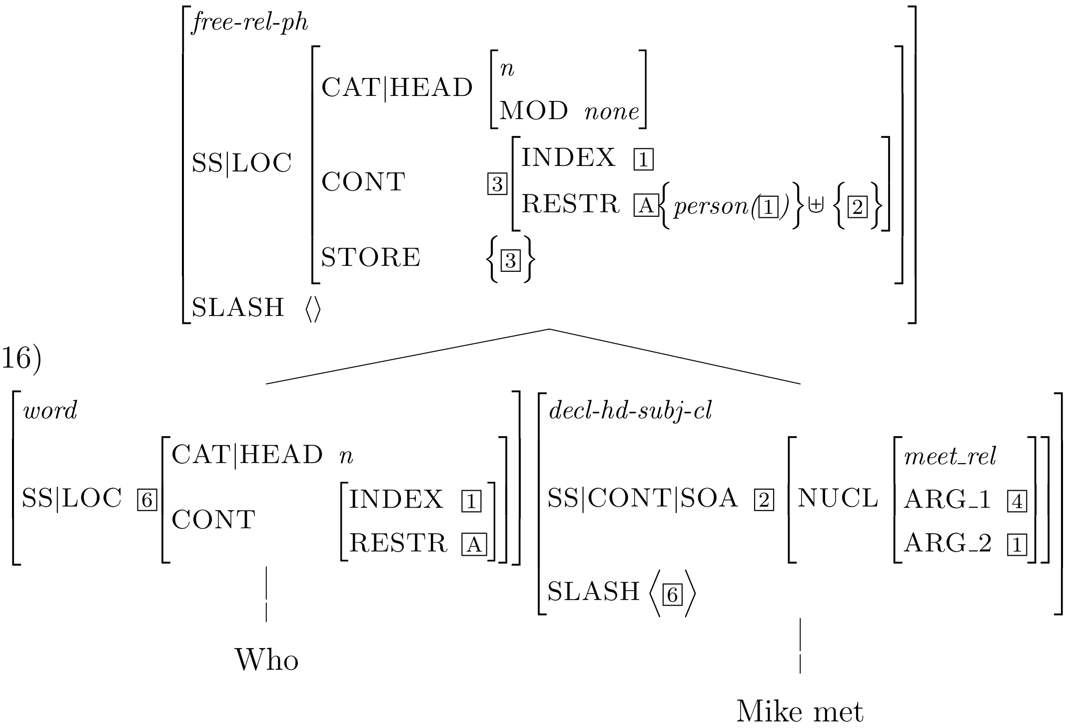
While an approach like this obviously has the advantage that it can draw from the earlier analysis of modifying relative clauses, i.e. it makes use of types that already exist, it might also need a new feature, or it has to violate locality to account for all cases (remember that we find reduced relative clauses in English). Therefore, one might alternatively try to modify the analysis proposed above in such a way that the *free-rel-ph* dominates the relative pronoun immediately. This second option means a reformulation of the constraint on *free-rel-ph*, which combines the effect of the former *free-rel-ph* and the *hd-rel-ph*. The reformulated constraint on the type *free-rel-ph* looks like the one below.

(315) *free-rel-ph (alternative):*

$$\begin{bmatrix} \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} n \\ \text{MOD} & \textit{none} \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \boxed{3}\begin{bmatrix} \textit{the\_rel} \\ \text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{B}\left(\boxed{A} \uplus \left\{\boxed{2}\right\}\right) \end{bmatrix} \\ \text{STORE} & \left\{\boxed{3}\right\} \end{bmatrix} \\ \text{SLASH} & \{\} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \text{REL} & \left\{\begin{bmatrix} \text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{A} \end{bmatrix}\right\} \end{bmatrix}, \begin{bmatrix} \text{CONT} & \begin{bmatrix} \textit{proposition} \\ \text{SOA} & \boxed{2} \end{bmatrix} \end{bmatrix}$$

Note that this *free-rel-ph* is not a subtype of *hd-only-ph* anymore as in (312) but a subtype of *hd-fill-ph*. Since it is a subtype of *hd-fill-ph*, we do not need to mention that the head daughter of the *free-rel-ph* is slashed and that the non-head daughter is the filler. This is part of the type constraint on *hd-fill-ph*. Note furthermore that the meaning of *free-rel-ph* is now the one of quantifier. The idea behind this is the following. If we want all restrictions from the daughters to be interpreted at the top node, we actually need a quantifier. In headed relative clauses such a quantifier comes from the head noun. For free relative clauses, we would have to introduce such a quantifier in the construction. However, instead of introducing a quantifier and then retrieving it in a next step, the rule in (315) turns the entire meaning into the one of a quantified phrase, thus saving one step. Another advantage of this new approach is that the REL-specification of the filler daughter ensures that no reduced relative clauses can be used. A phrase constructed according to this constraint looks like the one in the example below.

(316)



We see that the *free-rel-ph* still shares an index with the filler. Its set of restrictions is now the union of the restrictions of its immediate daughters. If we compare the example in (316) to (311), we see that we basically cut out the modifying relative clause in the middle. Whichever approach one wants to take, the top node will always look the same and will not affect the pseudocleft analysis. However, the latter approach has the advantage that it does not allow for reduced relative clauses. Therefore, the latter approach is preferable to the one in the line of Müller (1999) that was proposed initially.

Having an NP-interpretation for the cleft clause at our disposal, we can now use it for predicative pseudoclefts like *What Mike bought was expensive*. This is shown in (317).

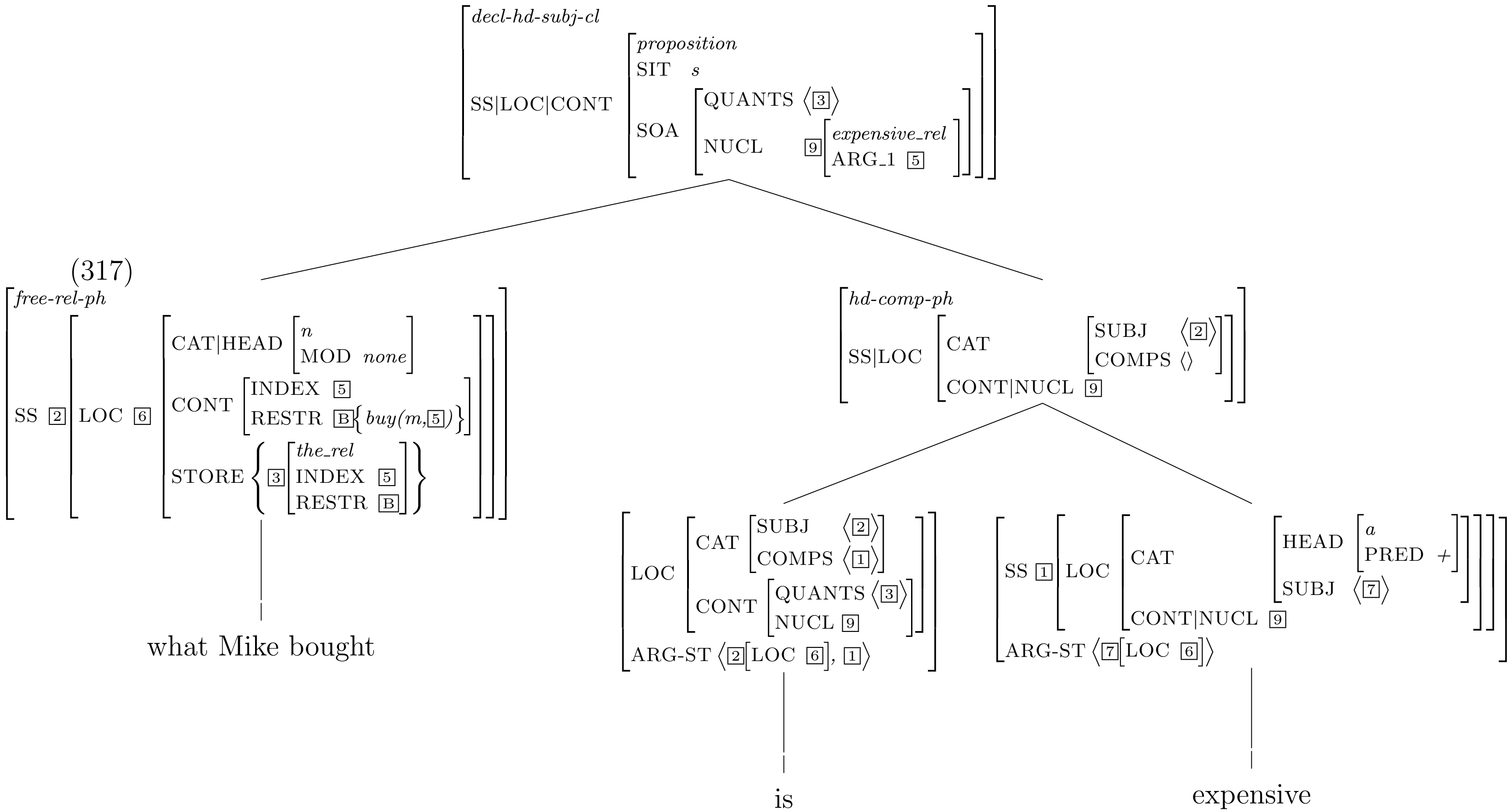
The top node is an ordinary finite clause with canonical word order (subject-verb-complement). Its underlying meaning comes from its head-daughter, i.e. the copula VP. The latter got this meaning from the predicative element on its argument structure, which is ensured by the GPAP.[70]

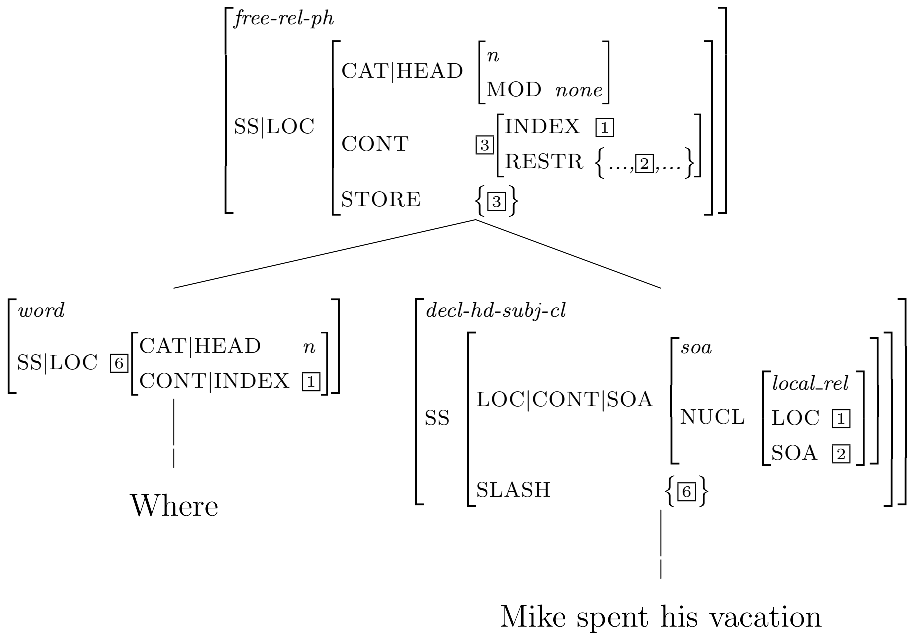
As was mentioned before, having the items in the REL-set introduce restrictions has the effect that in a sentence like *Where Mike spent his vacation was Chester* the relative pronoun now contributes a restriction like *location(i)* to the meaning of the cleft clause NP. Nevertheless, we can use the *free-rel-ph* for such a sentence because it does not matter whether the filler daughter stems from a gap on the argument structure of the predicate or from an head-adjunct structure. Thus, the question of whether adverbial expressions should be put on the argument structure or not need not be answered.[71] The only relevant fact is that the head-daughter of the top node of the cleft clause must somehow be slashed. Since this goes for all adverbials, it goes for all cleft clauses, i.e. free relative clauses, with *how/when/where/why*. Even if some adverbial expressions might have to be put on the argument structure for some reason, this would not change anything about the top node, and the latter is our only concern here.

[70] I only indicate structure sharing between the nuclei to keep the representation simple. This way I can avoid showing the tense-relation introduced by the copula.

[71] One way to realize an analysis in which adjuncts are not on the argument structure could be a unary phrase structure rule that adds an item to the SLASH-list to simulate adjunct traces.

(317)


decl-hd-subj-cl
SS|LOC|CONT
proposition
SIT s
SOA
QUANTS ⟨3⟩
NUCL 9
expensive_rel
ARG_1 5
free-rel-ph
SS 2
LOC 6
CAT|HEAD
n
MOD none
CONT
INDEX 5
RESTR B{buy(m,5)}
STORE
3
the_rel
INDEX 5
RESTR B
what Mike bought
hd-comp-ph
SS|LOC
CAT
SUBJ ⟨2⟩
COMPS ⟨⟩
CONT|NUCL 9
LOC
CAT
SUBJ ⟨2⟩
COMPS ⟨1⟩
CONT
QUANTS ⟨3⟩
NUCL 9
ARG-ST ⟨2[LOC 6], 1⟩
is
SS 1
LOC
CAT
HEAD
a
PRED +
SUBJ ⟨7⟩
CONT|NUCL 9
ARG-ST ⟨7[LOC 6]⟩
expensive

(318) 

However, there is another difference between a sentence like *Where Mike spent his vacation was Chester* and *What Mike bought used to be a car*. As was shown in Chapter 3, the former is an equative and the latter is predicational. This means the equative must make use of the *be* of identity. This is shown in the example (319).

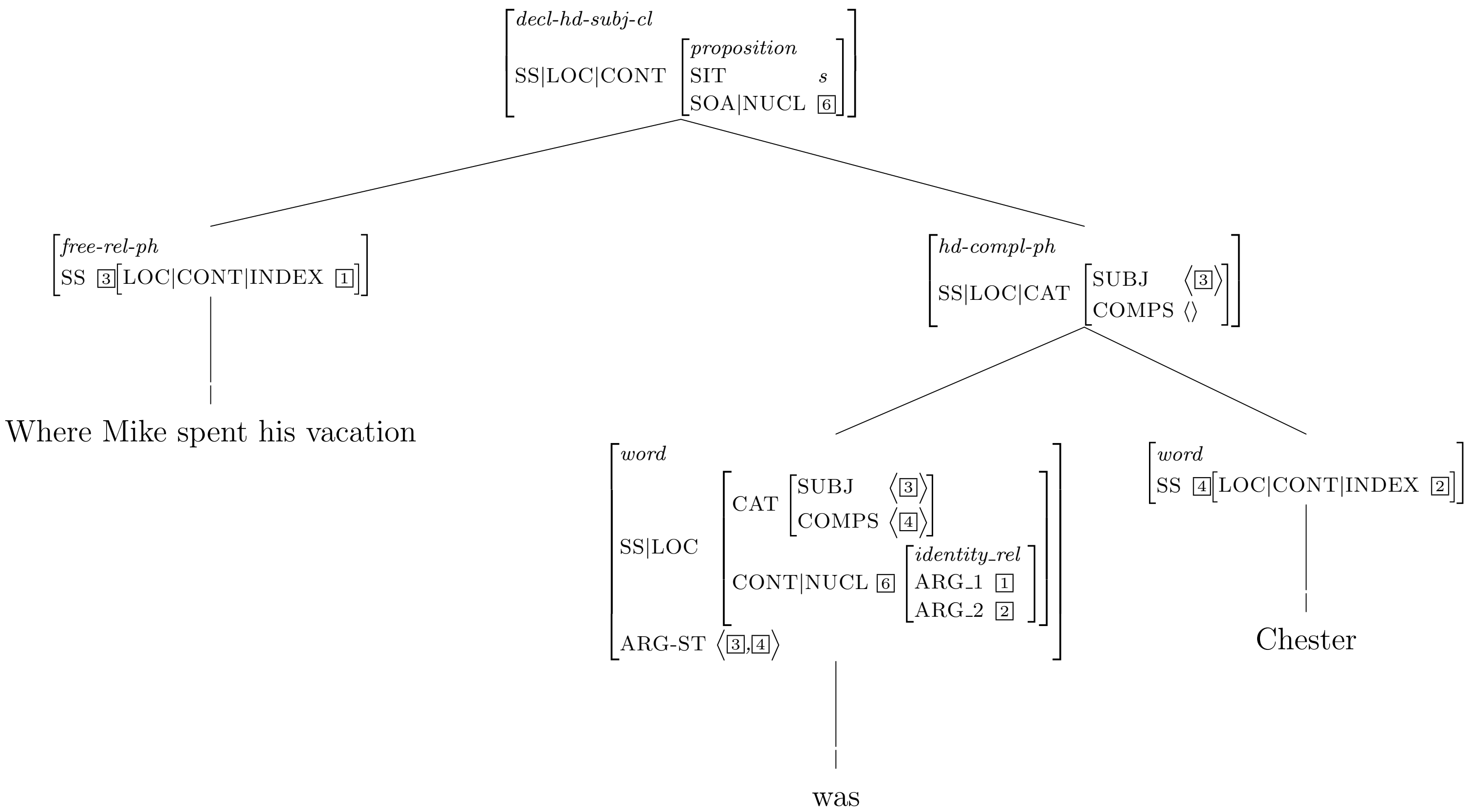
In (319) the *be* of the matrix clause expresses identity of two indices. The first index is the one of the free relative clause. The second index is the one of *Chester*. The matrix clause is again a *decl-hd-subj-clause* as used in predicative sentences because basically the *be* of identity is merely a transitive verb, too.

Another issue that we might look at in the context of equative sentences is what we saw in (90) in Chapter 3 repeated here as (320). Here we see that we can either have an NP/DP in post-copular position or a PP.

(320) a. Where there were no tornadoes reported was Boston.
b. Where there were no tornadoes reported was in Boston.
c. When this report was due was January.
d. When this report was due was in January.

Obviously the shapes of the post-copular constituents indicate different uses of *be*. With an NP/DP in post-copular position, the *be* of identity is used. Here the place and time denoted by the free relative clause (i.e. cleft clause) is identified with

(319)


decl-hd-subj-cl
SS|LOC|CONT
proposition
SIT s
SOA|NUCL 6
free-rel-ph
SS 3 [LOC|CONT|INDEX 1]
Where Mike spent his vacation
hd-compl-ph
SS|LOC|CAT
SUBJ ⟨3⟩
COMPS ⟨⟩
word
SS|LOC
CAT
SUBJ ⟨3⟩
COMPS ⟨4⟩
CONT|NUCL 6
identity_rel
ARG_1 1
ARG_2 2
ARG-ST ⟨3,4⟩
was
word
SS 4 [LOC|CONT|INDEX 2]
Chester

the place and time denoted by the proper name in post-copular position. With a PP in post-copular position the *be* is a predicational copula. In this case the free relative clause is the argument for the predicative PP. For both cases we have seen an analysis in this section. Note, however, that we argued in Chapter 3 that (320b) and (320d) might also get an equative reading. This means (320b) could either mean something like (321a) or (321b), and (320d) could mean something like (321c) or (321d).

(321) a. The one place where no tornadoes were reported is Boston.
b. The place from which no tornadoes were reported is located in Boston.
c. The point of time at which this report was due is January.
d. This report was due some time in January.

For the interpretations (321a) and (321c), the prepositions in post-copular position in (320b) and (320d) need to be interpreted like case-marking prepositions. This means the PPs will get NP-interpretations.

In this section it was shown that for predicative and equative pseudoclefts we need a cleft clause different from the one in specificational pseudoclefts. This cleft clause shows the syntactic and semantic properties of an NP. Different ways to integrate such a new construction type were discussed. It turned out that the preferable way of introducing such a type is a new construction that dominates the relative pronoun immediately. The alternative approach of having a head-only phrase was discarded. The following section will examine the question of to what extent the current analysis can be used to account for wh-amalgam clefts.

4.3.3 Wh-amalgam clefts

Wh-amalgam clefts look a lot like what the QDT proposed for pseudoclefts but without any deletion. This means the post-copular constituents look like a full clause, i.e. like a full answer. There are two things to note about this construction.

(322) "What makes the Amalgam cleft puzzling from the syntactic point of view is that it allows a main clause to occupy a syntactic argument position which can normally be occupied only by finite or non-finite subordinate clauses. From the point of view of information structure, the construction is unusual

> in that its focal portion [...] repeats some of the presupposed material of the WH-clause."[72]

If we consider a sentence like *What Mike bought is Mike bought a donkey*, it is obvious that the *be* from (252) cannot be used. If we assumed a predicative structure, the cleft clause would get a NP-interpretation, i.e. it would have to be a *free-rel-ph*. But the sentence cannot be constructed this way because the post-copular constituent – being a regular finite clause – is not a predicate. The pieces would simply not fit together. Assuming a specificational structure does not help either because the post-copular clause does not have the meaning of an entity that could be bought. The QDT could claim that the cleft clause is a question and the post-copular constituent an answering sentence. However, such an analysis is not available for the theory I have developed so far. Nevertheless, we can use one aspect of the analysis of the QDT: we can make use of the *be* of identity. This way we can analyze the cleft clause as a *pred-free-rel-cl*. Since the *pred-free-rel-cl* expresses a proposition, the *be* of identity simply expresses that the underlying proposition of the cleft clause and that of the post-copular clause are identical. For wh-amalgam clefts this means that the *be* of identity takes two propositions as arguments.[73] This is shown in (323).

Although we can account for wh-amalgam clefts this way, this analysis does not say anything about why the reverse version of such a sentence (*Mike bought a donkey is what Mike bought*) is less acceptable.[74] The explanation will be presented as soon as information structure has been implemented in Chapter 4.5.

What must also be discussed in the context of wh-amalgam clefts is the category mismatch that we saw in (109) in Chapter 3 repeated here in (324).

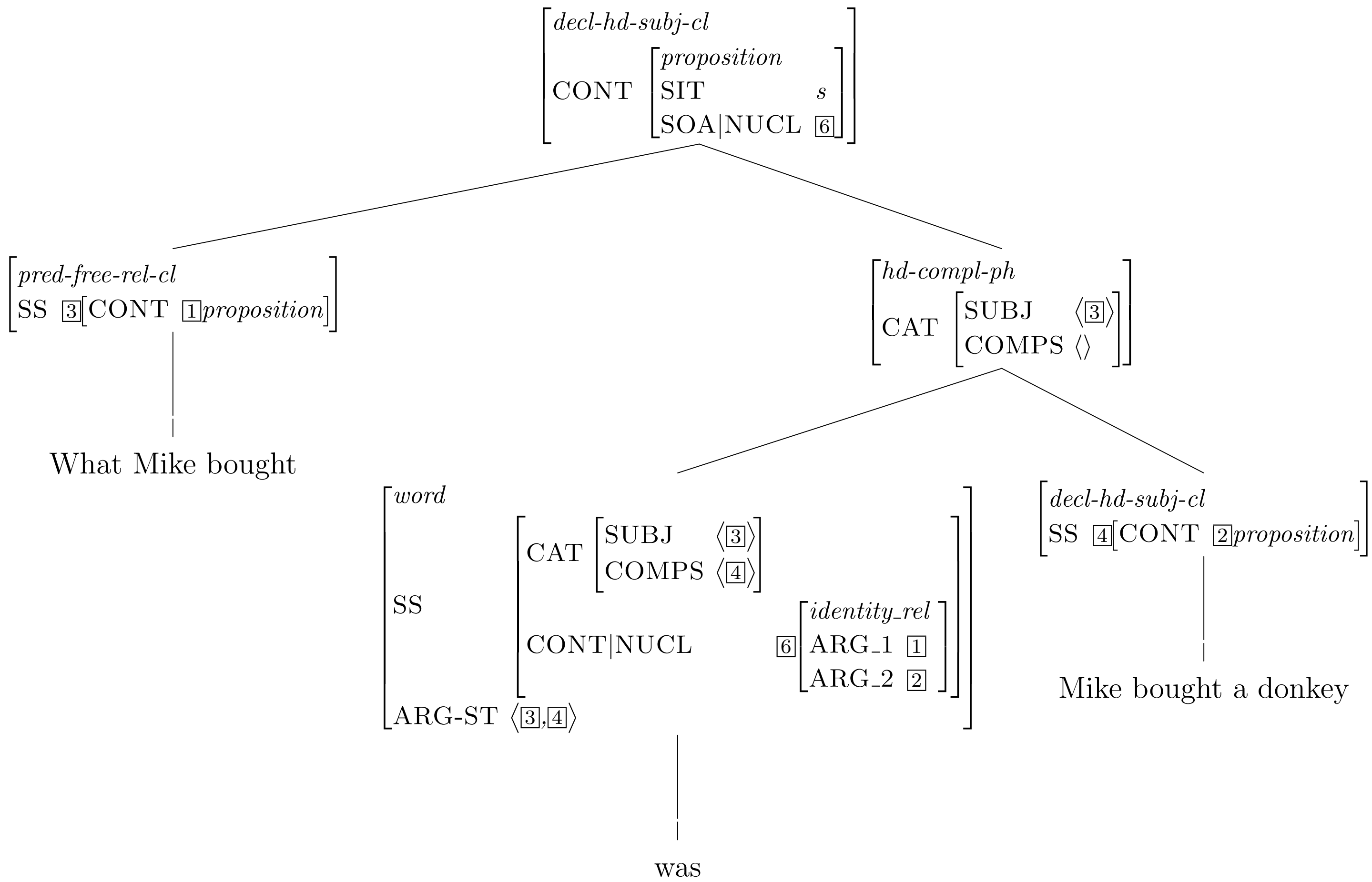
(324) a. What Steven is most eager **for** is **for** Mike to sell his Beatles records.
b. *What Steven is most eager **for** is Mike to sell his Beatles records.
c. *What Steven is most eager is **for** Mike to sell his Beatles records.
d. ?What Steven is most eager **for** is **for** Mike's record sale.
e. What Steven is most eager **for** is Mike's record sale.

72 Lambrecht (2001, p. 30).

73 Note that this improves Yoo's equation of propositions.

74 See Ross (2000, p. 413) for more examples.

(323)


decl-hd-subj-cl
CONT proposition
SIT s
SOA|NUCL 6
pred-free-rel-cl
SS 3 [CONT 1 proposition]
What Mike bought
hd-compl-ph
CAT SUBJ ⟨3⟩
COMPS ⟨⟩
word
SS
CAT SUBJ ⟨3⟩
COMPS ⟨4⟩
CONT|NUCL 6
identity_rel
ARG_1 1
ARG_2 2
ARG-ST ⟨3,4⟩
was
decl-hd-subj-cl
SS 4 [CONT 2 proposition]
Mike bought a donkey

The problem here is that it seems that we cannot interpret (324a) as a specificational sentence. Since complementizers cannot be stranded, the *for* in the cleft clause in (324a) must be a preposition. Prepositions cannot take a complementizer clause as complement, but a complementizer clause is what we find in the post-copular position. However, upon closer inspection things look different. Technically, the first *for* in (324a) does not take the clause as a complement under the current analysis but rather the 'trace' of *what*. Since *what* is a [HEAD *n*], it could well be the complement of the preposition *for*. So, syntactically, *for* takes a nominal complement, and this complement has the meaning of a complementizer clause because *what* always shares a CONT-value with the post-copular constituent under the analysis developed here.

What about the other sentences? They can be interpreted in the following way. Sentence (324b) is ill-formed because there is no clause type for the post-copular constituent. This means there is no construction in which the parts of the post-copular constituent could be combined in the required way.[75] Put differently: There is simply no tree node above the constituents in post-copular position with which *what* could share a meaning. Sentence (324c) is ill-formed because *eager* lacks an appropriate complement. It needs a PP, but there is only a 'trace' of *what*, which is [HEAD *n*]. For sentence (324d) we can assume a specificational structure. The PP in post-copular position is headed by a case-marking preposition. This means that it is semantically a noun. This noun meaning is shared by *what* and is thus reconstructed in the complement position of the *for* behind *eager*. The oddness might be rooted in the fact that the copula constrains the post-copular constituent to share its LOC-value with the 'missing' argument of the cleft clause (the element on the SUBJ-list). However, in this case the HEAD-value does not match (one is *noun*, the other is *preposition*) while the CONT-value does. I would have expected such sentences to be ungrammatical, but to some speakers they seem to be marginally acceptable. Example (324e) is another instance of a specificational pseudocleft. Its set-up is straightforward, as laid out in Chapter 4.2. The filler *what* shares the CONT-value with the post-copular constituent, which is an NP.

[75] See Ginzburg and Sag (2000, p. 50): The *complementizer-clause* that we can use in (324a) has a flat structure, i.e. there is no node that could only dominate *Mike* and the *to*-clause.

Another issue that should be discussed in connection with wh-amalgam cleft is the phenomenon that we see in (325).[76]

(325) a. *What he$_i$ has always claimed is that Cain$_i$ is innocent.

b. *He$_i$ has always claimed that Cain$_i$ is innocent.

c. That Cain$_i$ is innocent is what he$_i$ has always claimed.

Now that we reconstruct the *that*-clause in the cleft clause, the ungrammaticality of (325a) is accounted for by the same 'mechanism' that accounts for the ungrammaticality of (325b). The NP *Cain* is a member of a *synsem* object, namely the *that*-clause, which is more oblique than the NP of *he*. Obliqueness here refers to the argument structure of *claimed*. In this configuration the second case of the definition of o-command applies. Therefore, the referential expression *Cain* is not o-free in (325a) or in (325b). Yet, what is unexpected is the grammaticality of (325c). If we simply reconstruct the *that*-clause into the wh-clause, this sentence should actually be as bad as (325a) and (325b). Since (325c) is grammatical, we should conclude that the grammatical reading of this sentence is not based on reconstruction. This means this sentence should not be analyzed as a predicative structure. What is left as a possible candidate is an equative reading. If we assume an equative structure for (325c), we do not expect any reconstruction effects because the two equated constituents would be independent of each other. This raises the question of what kind of expression could be equated in such a sentence. In wh-amalgam clefts we equated two propositions, as was shown above. For the present case this would mean that the cleft clause is of type *pred-free-rel-cl*. In other cases we equated free relative clauses with an NP-interpretation with NPs. Let us consider the equation of propositions first.

If we equated two propositions in (325c), the first proposition would be based on a soa with an innocent-relation as nucleus. The second proposition would be based on a soa with a claim-relation as nucleus. This shows that these two proposition are not the same. Furthermore, note that it is very different from what we saw in wh-amalgam clefts. In wh-amalgam clefts both propositions had the same nucleus. This renders an equation of NPs the more probable interpretation for (325c). It is

[76] From Heycock and Kroch (2002, p. 104).

further supported by what we see in (326).

(326) a. Proud of John$_i$ was what he$_{*i/j}$ was.

b. Scold John$_i$'s children is what he$_{*i/j}$ will never do.

c. John$_i$'s dog was what he$_{i/j}$ really missed.

Example (326a) and (326b) make use of an AP predicate and a VP, respectively. These sentences show reconstruction effects. We can explain the binding behavior via reconstruction. However, for (326c) we cannot use reconstruction. If we did, *John* and *he* would not be allowed to be coreferential. The difference between the first two sentences in (326) and (326c) is of course that in the latter we are dealing with an NP as subject. Thus, the grammaticality of (326c) can be explained if we assume that this is an equation of the NP-subject with a free relative clause that shows an NP-interpretation. This is the analysis that should carry over to (325c). In (325c) the *that*-clause in subject position should be equated with a free relative clause with an NP-interpretation. The issue of what might be the best way to equate clauses and NPs cannot be settled here. For the time being, the equation of the NP's index and the index of the clause's soa might do, although it seems slightly counter-intuitive to look 'a bit deeper' into the clause's meaning than into the NP's meaning.
We can recapitulate at this point that (325c) should be considered an equative structure. Such an interpretation is not available for the reverse version of this sentence that we see in (325a) because no matter which structure we assume (specificational or equative) the sentence violates Principle C.

In this chapter we have seen how the new type *pred-free-rel-cl* and insights from Yoo (2003) and Heller (2005) add up to an analysis of wh-amalgam clefts. They should be analyzed as equations of propositions. The analysis will be extended to definite description subjects in the following section.

4.3.4 Definite description subjects

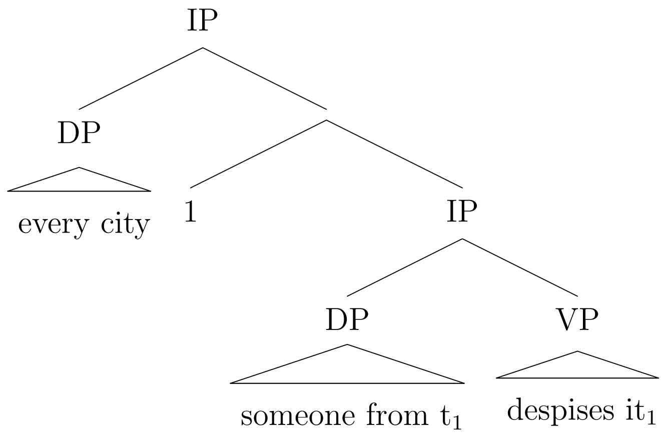
Another construction that is to be analyzed here is specificational sentences with a definite description as subject. Although they are not pseudoclefts in the narrow sense, the results from the analysis above should also be applicable to these sentences. Two varieties of them are shown below.

(327) a. The thing that every Englishman$_i$ likes is his$_i$ beer gut.

b. The tallest girl on the team is Sue(, isn't it).

The more interesting case here is (327a). At first sight the bound variable connectivity seems to be problematic since there is no c-command relation between the phrases *every Englishman* and *his beer gut*. The expression that is supposed to take scope over the pronoun in post-copular position is embedded within a relative clause. Nevertheless, we get a bound variable reading. This phenomenon is similar to the effect that we see in inverse-linking sentences. Consider the example below.[77]

(328) Someone from every city despises it.



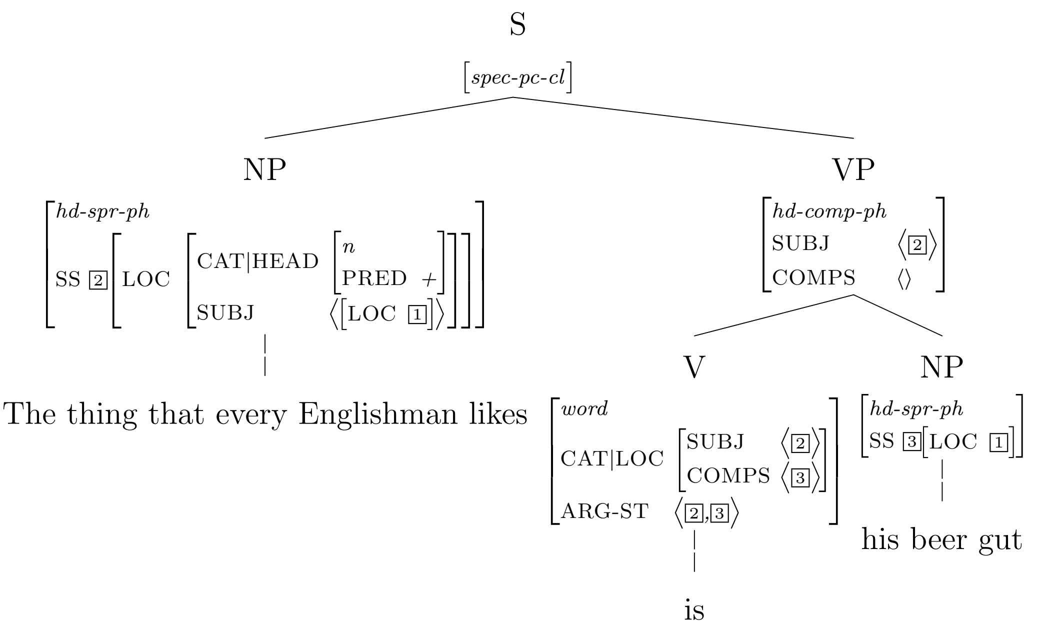
Here the quantifier *every* can bind a pronoun which it does not c-command (at S-structure). Therefore, Heim and Kratzer (1998) propose that *every* should be allowed to scope out of the subject DP as is shown in (328). The core of the problem is the question whether a quantifier is allowed to scope out of the DP (or even relative clause) in which it is contained. This issue is still discussed controversially in the literature and will be discussed in this section, too. First we have to turn to another aspect, though.

Using the copula that was proposed above, we will try to account for the sentences in (327). The crucial property of the copula is that it does not care about the order of its functor argument and its other argument. We can make use of this property by assuming that the subject of such a specificational sentence is simply a

[77] From Heim and Kratzer (1998, p. 235).

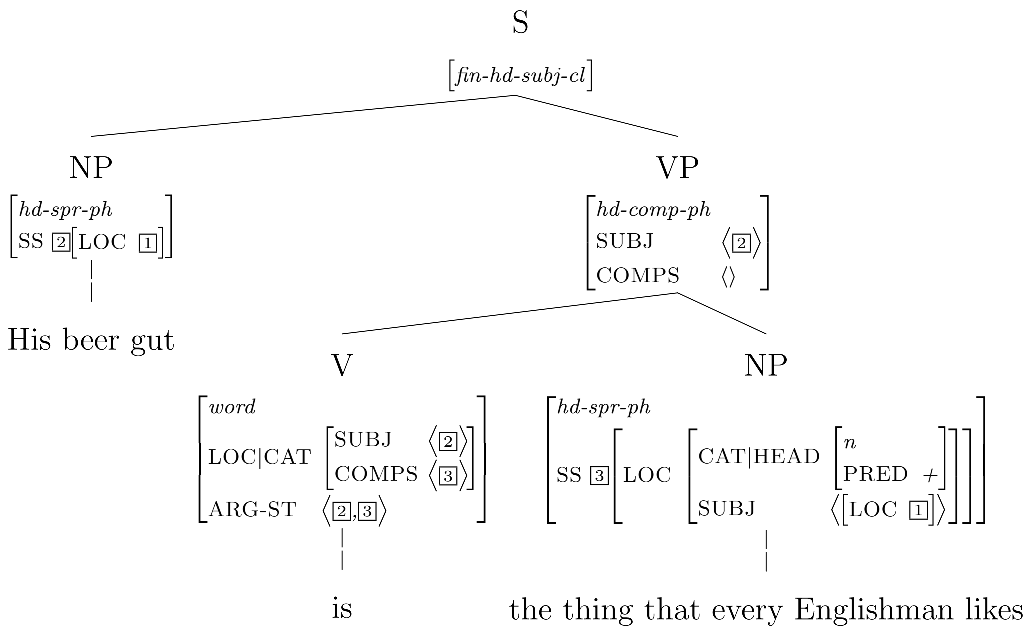
predicative NP just like the ones that we find in post-copular position in predicative sentences. This way no new types are needed. This is basically the same explanation that was proposed for the differences and similarities between specificational pseudoclefts and reverse pseudoclefts. Note that this is again in accordance with findings in e.g. Mikkelsen (2004b) and Schueler (2004). As was shown in Chapter 2.1, it is definite descriptions that allow for an interpretation as a predicate as well as an entity. Hence, nothing compels us to give a sentence like *Sue is the tallest player on the team* an equative interpretation in all cases. If the copula does not 'care about' the order of its arguments, the phrase *the tallest girl on the team* can have a predicative interpretation, no matter where it appears (syntactically).[78] The same goes for sentence (327a) with the relative clause inside the NP. The simplified example in (329) sketches how the same NP can be used in standard predicative sentences and in those with a definite description subject.

(329)



[78] Of course which interpretation a DP gets depends on the context.

(330)



Note that it is once again only the local values that are shared between the subject of the predicative argument of the copula and the copula's own subject in (330) and the complement in (329). The structure of a specificational sentence like (327b) is again simply the predicative version with the arguments swapped. Before we turn to the structure of predicative NPs, we should consider some connectivity effects.

Connectivity effects in sentences likes those in (327) are easily accounted for if we reconstruct the post-copular constituent inside the subject. The top node is again of type *spec-pc-cl* as can be seen in (329). However, the constraint in (281) does not apply this time because the subject of the *spec-pc-clause* is not clausal. Nonetheless, the constraint (280) will apply. Here we see that this constraint does the same job for specificational sentences with definite description subjects as it did for specificational sentences with a predicative free relative clause. This fact accounts for bound variable connectivity and the restricted quantifier scope. For NPI connectivity nothing new has to be stated either. It works the same way as described for the standard pseudoclefts. Furthermore, Principle A-,B-, and C-effects are covered by the binding theory just like they were in specificational pseudoclefts, because the post-copular constituent will be reconstructed inside the subject.

Now, let us turn to the analysis in detail. As a first step we have to deal with the issue of how the predicative NPs actually could be derived. Ginzburg and Sag (2000) use the lexical rule given in (331)[79] to derive predicative NPs.

(331) Singular Predicative Noun Lexical Rule:

$$\begin{bmatrix} \textit{lx} & \\ \text{SS|LOC|CAT|HEAD} & \textit{n} \\ \text{ARG-ST} & \left\langle \boxed{1} \right\rangle \oplus \boxed{\text{A}} \end{bmatrix} \Longrightarrow_{LR} \begin{bmatrix} \textit{word} & \\ \text{SS|LOC|CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{AGR|NUM} & \textit{sg} \\ \text{PRED} & + \end{bmatrix} \\ \text{SPR} & \left\langle \boxed{1} \right\rangle \\ \text{SUBJ} & \left\langle \boxed{2} \right\rangle \end{bmatrix} \\ \text{ARG-ST} & \left\langle \boxed{2},\boxed{1} \right\rangle \oplus \boxed{\text{A}} \end{bmatrix}$$

This rule adds a subject to the argument structure of a noun and puts this subject on the SUBJ-list. Unfortunately, it does not say anything about the semantics, i.e. the CONT-value of the predicative noun. This means it does not explain how we get from a content of type *parameter* to a content of type *soa*, which is the type of other predicates like adjectives and verbs.

Obviously, we need a new rule that can explain this. It does not really matter whether such a rule takes as an input a lexeme, word, or phrase. However, if we use a rule that takes as its input a noun phrase, we gain the advantage that we do not need to find a new way to combine relative clauses and (predicative) nouns. We can still use the mechanisms of combining (non-predicative) nouns and relative clauses that are proposed in Sag (1997). The rule that produces predicative nouns will then take a complex nominal construction as its 'input', i.e. daughter, and turn it into a complex predicative nominal construction. The latter will be the mother phrase. The rule below will do exactly this.

[79] Ginzburg and Sag (2000, p. 409).

$$
(332)\quad \left[\text{SS|LOC}\left[\begin{array}{ll}\text{CAT} & \left[\begin{array}{l}\text{HEAD|PRED} + \\ \text{SUBJ}\left\langle\left[\begin{array}{ll}\text{CONT|INDEX} & \boxed{2}\\ \text{STORE} & \boxed{A}\end{array}\right]\right\rangle\end{array}\right]\\ \text{CONT} & \left[\begin{array}{ll} \textit{soa} & \\ \text{QUANTS} & \boxed{D}\\ \text{NUCL} & \left[\begin{array}{ll}\textit{identity\_relation} & \\ \text{ARG\_1} & \boxed{1}\\ \text{ARG\_2} & \boxed{2}\end{array}\right]\end{array}\right]\\ \text{STORE} & \boxed{C}\end{array}\right]\right] \longrightarrow \left[\begin{array}{ll}\boxed{4} & \\ \text{SS|LOC} & \left[\begin{array}{ll}\text{CAT} & \left[\begin{array}{ll}\text{HEAD} & \left[\begin{array}{l}\textit{noun}\\ \text{PRED} -\end{array}\right]\\ \text{SPR} & \langle\rangle\\ \text{COMPS} & \langle\rangle\end{array}\right]\\ \text{CONT} & \left[\begin{array}{ll}\textit{parameter} & \\ \text{INDEX} & \boxed{1}\\ \text{RESTR} & \boxed{F}\end{array}\right]\\ \text{STORE} & \boxed{B}\end{array}\right]\end{array}\right]
$$

$$
\textbf{and } \forall x \left(\text{MEMBER}(x,\boxed{D}) \leftrightarrow x \in \boxed{E}\right)
$$

$$
\textbf{and } \left(\left[\begin{array}{ll}\textit{weak\_quant\_rel} & \\ \text{INDEX} & \boxed{1}\end{array}\right] \in \boxed{B} \wedge \left(\boxed{A} \cup \boxed{B} = \boxed{C} \cup \boxed{E}\right)\right) \vee \left(\left(\boxed{C} \cup \boxed{E}\right)\backslash\left(\boxed{A} \cup \boxed{B}\right) = \left\{\left[\begin{array}{ll}\textit{exist\_rel} & \\ \text{INDEX} & \boxed{1}\\ \text{RESTR} & \boxed{F}\end{array}\right]\right\}\right)
$$

$$
\textbf{and } \boxed{4} \neq \textit{free-rel-phrase}
$$

What this rule does is similar to what is called *quining* in type-logical semantics.[80] It corresponds to a type-shift function **Q** in (333), which shifts a type $\langle e\rangle$ into $\langle e, t\rangle$. It is basically the same as Partee's (1987) *IDENT* type-shifting rule that we saw in Chapter 2.1. It maps an individual into the property of being identical to that individual. A predicative NP then corresponds to the function in (334).

(333) $\mathbf{Q} \stackrel{def}{=} \lambda x.\lambda y.x = y$

(334) $\mathbf{Q}(\mathrm{x}) \stackrel{def}{=} \lambda y.x = y$

We need such an identity function because we need a soa and at the same time this soa must not add anything to the meaning. We just want to change our *parameter*-meaning to an *soa*-meaning.[81] This is what the rule in (332) does. For technical reasons of the semantic framework, there is one more thing going on in (332). To pass up the meaning of the non-predicative noun or NP, we have to use a quantifier that takes scope over the meaning of the non-predicative noun or NP. This quantifier can either be present in the daughter already or be introduced by the phrase

[80] Carpenter (1997).

[81] For a different approach see Van Eynde (2007). Van Eynde assumes, among other things, that adjectives are treated in Ginzburg and Sag (2000) as objects with CONT-value of type *parameter*. This issue is not made explicitly clear in Ginzburg and Sag (2000). However, from one representation in Ginzburg and Sag (2000, p. 200) we can infer that they should have a CONT-value of type *soa*, not *parameter*. Therefore, I consider *soa* the appropriate semantic type for predicates of all kinds.

structure rule if it is not present in the daughter. This is expressed in the second condition below the AVM. The first condition below the AVM merely 'creates' a set out of the QUANTS-list members of the mother, so that we can make use of a subset relation in the second condition.

The STORE-set of the daughter must be mentioned in this rule because we have to override the GHFP. Since the mother is not of type *word*, the Store Amalgamation Constraint does not apply. Instead, the quantifiers must be collected 'by hand', i.e. the quantifiers from the daughter are unioned with the quantifiers from the subject. This is done in the second condition below the AVM. We need to look at this condition in detail. The first part of the second condition says that the quantifiers in the predicative NP are the sum of the quantifiers from the non-predicative noun phrase and from the quantifiers of the predicative noun's argument (the element on the SUBJ-list). This part (of the second condition below the AVM) handles the case in which the quantifier that takes scope over the meaning of the non-predicative NP is included in the non-predicative NP already. An example would be *The man is a liar*, where *a* introduces such a quantifier. The second part (of the second condition below the AVM) covers the other case, in which such a quantifier is introduced by the predicative NP. More specifically, this means that an existential quantifier is introduced that takes scope over the index and the meaning of the non-predicative NP. An example would *Sue is mayor of London*, where the NP *mayor of London* does not introduce a quantifier that comes from a determiner.[82] The requirement that either a weak quantifier or an existential quantifier must be present that takes scope over the meaning of the non-predicative NP rules out sentences like *The boy is every liar*. The type *weak-quantifier* is supposed to subsume quantifiers that do not appear in strongly quantificational NPs[83]. Quantifiers that can appear in strongly quantificational NPs must be of type *strong-quantifier*. These are e.g. *every*, *no*, *both*, etc. The problem with these quantifiers is, according to Partee (1987), that the type shift from generalized quantifier denotations $\langle\langle e,t\rangle\,,t\rangle$ to predicate denotations $\langle e,t\rangle$

[82] Note that in the fragment of Ginzburg and Sag (2000), count nouns are actually dealt with a bit differently. Count nouns have a determiner that gets deleted from the SPR-list via a *head-only-phrase*. This determiner introduces a quantifier. See Ginzburg and Sag (2000, p. 191f). If we use the rule in (332), such a mechanism is not needed anymore.

[83] See Mikkelsen (2004a, p. 11f).

yields "degenerate" results. This can be explained with Partee's (1987) type-shift function BE, which can be used for this shift and can be applied to generalized quantifiers.[84] It forms a set of entities out of all the singleton sets in the set of sets of individuals that it gets fed. In the case of strongly quantificational NPs like *most liars*, there are no singleton sets in the denotation. This means that applying BE to such generalized quantifier denotations returns the empty set, and the empty set is of course an unsatisfiable 'predicate'.

Note that there might be counterexamples to the restriction on strong quantifiers. Partee (1987) assumes that sentences like *This house has been every color* "can be explained in terms of the idiosyncratic and language-particular behavior of the head noun".[85] The rule for predicative NPs in (332) does not allow for such sentences at the moment. However, as soon as one classifies nouns according to the quantifiers with which they can appear, the rule in (332) can be altered.[86] This means the requirement that any quantifier in post-copular position must be of type *strong-quantifier* would be dropped. Instead, it would be sufficient to say that the meaning of the post-copular constituent is bound by some quantifier, whatever its type might be.

Furthermore, note that the rule in (332) could also introduce an existential quantifier for ungrammatical sentences like *A boy is every man*. More specifically, the rule could bind the index of *man* existentially by introducing an existential quantifier. This means the second part of the disjunction in the second addition below the AVM would be true. Theoretically and technically this could happen. Nevertheless, such a sentence would be ruled out. In this case, the ungrammaticality would result from the fact that the index of the predicative NP gets bound by two quantifiers. This is not allowed.

As a side-effect of the second condition below the AVM in (332), the predicative NP

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[84] See Partee (1987, p. 126ff). The definition of BE is given below.

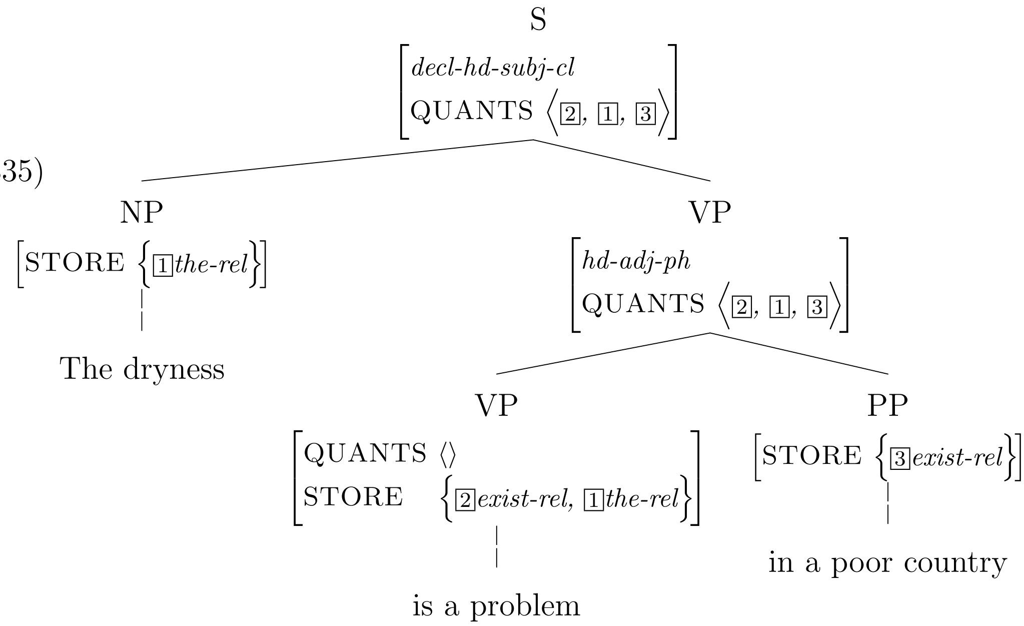
(i) BE $\stackrel{def}{=} \lambda P.\lambda x\,[\{x\} \in P]$

[85] Partee (1987, p. 132).

[86] To come up with such a classification here seems undesirable because "there appears to be considerable individual variation on the judgments about particular words", Partee (1987, p. 133).

is now allowed to retrieve quantifiers, i.e. to take them from the daughter's STORE-set and put them on its own QUANTS-list. This way the predicative NP behaves like a lexical head, which orders its quantifiers in the lexicon. However, this does not necessarily mean that quantifiers must be retrieved. We can still pass them on to any dominating auxiliary or raising verb. For certain more complex sentences, we need the retrieval and the storage higher in the tree, too. Note that we can have modifiers that introduce quantifiers above the predicative NP. These could be modifiers that attach to the VP or the sentence. An example in which a modifier introduces a quantifier in a predicative clause at the VP-level is sketched in (335). For such cases we must leave open the option of retrieving a quantifier from the predicative NP above the modifier's quantifier. Therefore, the quantifiers from the predicative NP must be allowed to appear in the predicative NP's STORE-set. This means immediate retrieval must be optional, not obligatory.

(335)



Here both quantifiers coming from the verb are passed up and get retrieved in the *hd-adj-phase*. If we did not have the possibility to store the quantifier from the predicative NP *a poor country*, the quantifier from the modifying PP would always get wide scope. This would deprive us of several possible readings of such a sentence.

Another thing that the rule in (332) does is constrain the SPR-list and the COMPS-list of the daughter to be empty. This has the effect that the entire NP (if there is a specifier present) is turned into a predicative NP. For an NP like *my cousin* as in *Mike is my cousin* this means we turn *my cousin* into a predicate and not just *cousin* (in the predicative reading). If we only turned *cousin* into a predicate, we could not combine this predicate with the remaining specifier without additional rules or 'machinery'. Consider the lexical entry for *my* below.

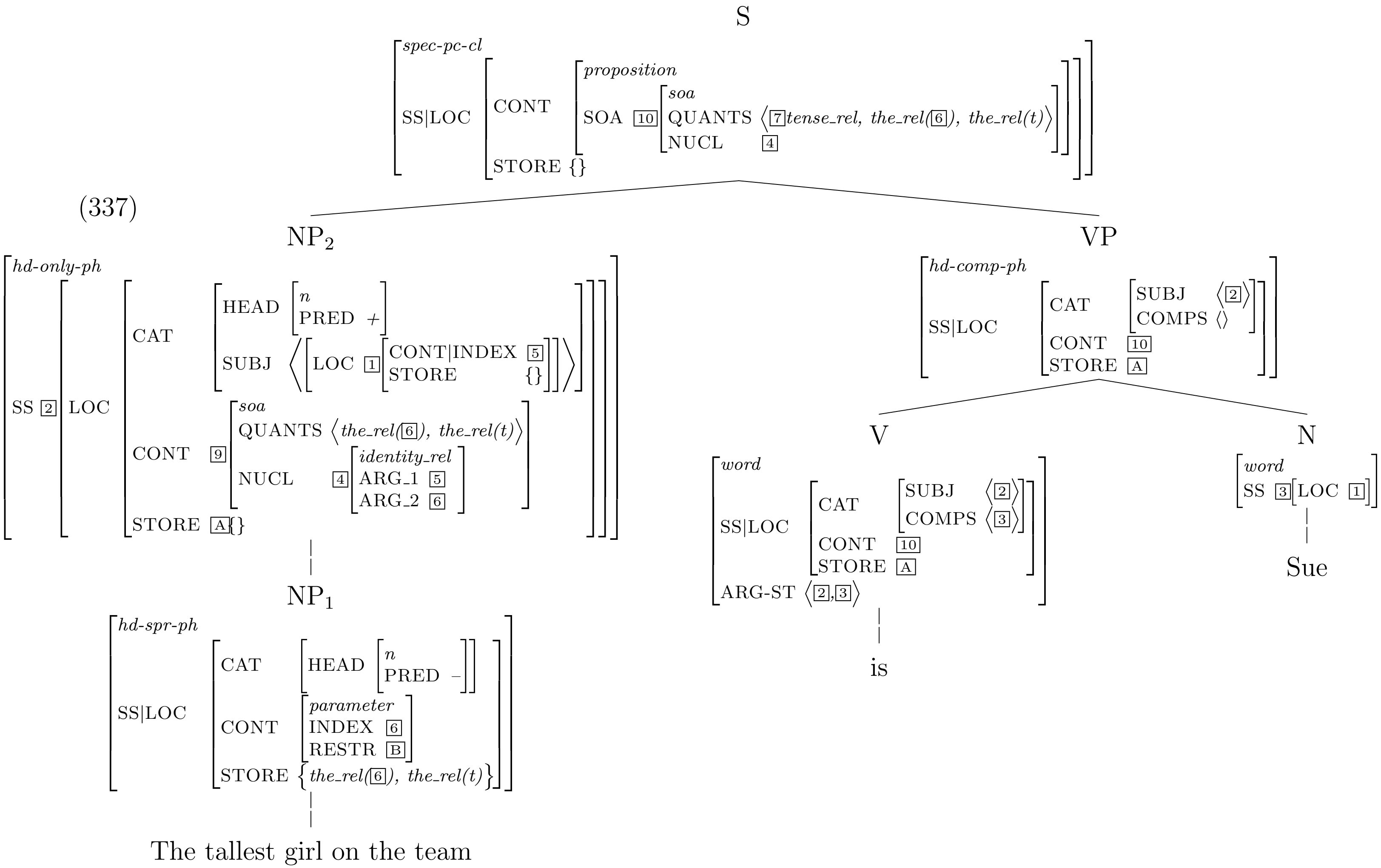
(336)
$$\begin{bmatrix} \text{PHON} & \left\langle \textit{my} \right\rangle \\ \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CAT|HEAD} & \begin{bmatrix} \textit{d} & \\ \text{SPEC} & \begin{bmatrix}\text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{\Sigma}\end{bmatrix}\end{bmatrix} \\ \text{CONT} & \boxed{2} \\ \text{STORE} & \left\{ \boxed{2} \begin{bmatrix} \textit{the\_rel} & \\ \text{INDEX} & \boxed{1} \\ \text{RESTR} & \boxed{\Sigma} \cup \left\{ \textit{possess}(\boxed{3},\boxed{1}) \right\} \end{bmatrix} \right\} \\ \text{BACKGRND} & \left\{ \textit{speaker}(\boxed{3}) \right\} \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\rangle \end{bmatrix}$$

Obviously, determiners need to specify something that shows the INDEX and the RESTR feature. An soa, which is the CONT-value of a predicative NP, does not fit that description. Even if we assume indices for the type *soa* (as discussed before), it would not work out. Therefore, constraining the daughter's SPR-list in (332) to be empty ensures that determiners combine first and only with the noun (or the nominal phrase if it is complex).

Now, that we have a way to produce predicative NPs, we can take a look at an example with such a predicative element. Consider the tree in (337).

In (337) we see the following. The two quantifiers present in the non-predicative NP_1 are retrieved in the step to NP_2 and put on the QUANTS-list of the predicative NP. According to the GPAP, the copula's soa is the same as the predicative NP's content. In this case it is a soa that expresses an identity relation because we need this identity-soa as the meaning of predicative NPs. It is a case of "identity as a special case of predication" as it was called in Section 2.1.3. However, this does not mean that we are dealing with an original equative sentence here. The *be* in this sentence is still the copula, i.e. it does not contribute anything to the sentence semantically (apart from tense). That the meaning which it 'copies' from its functor argument

(337)

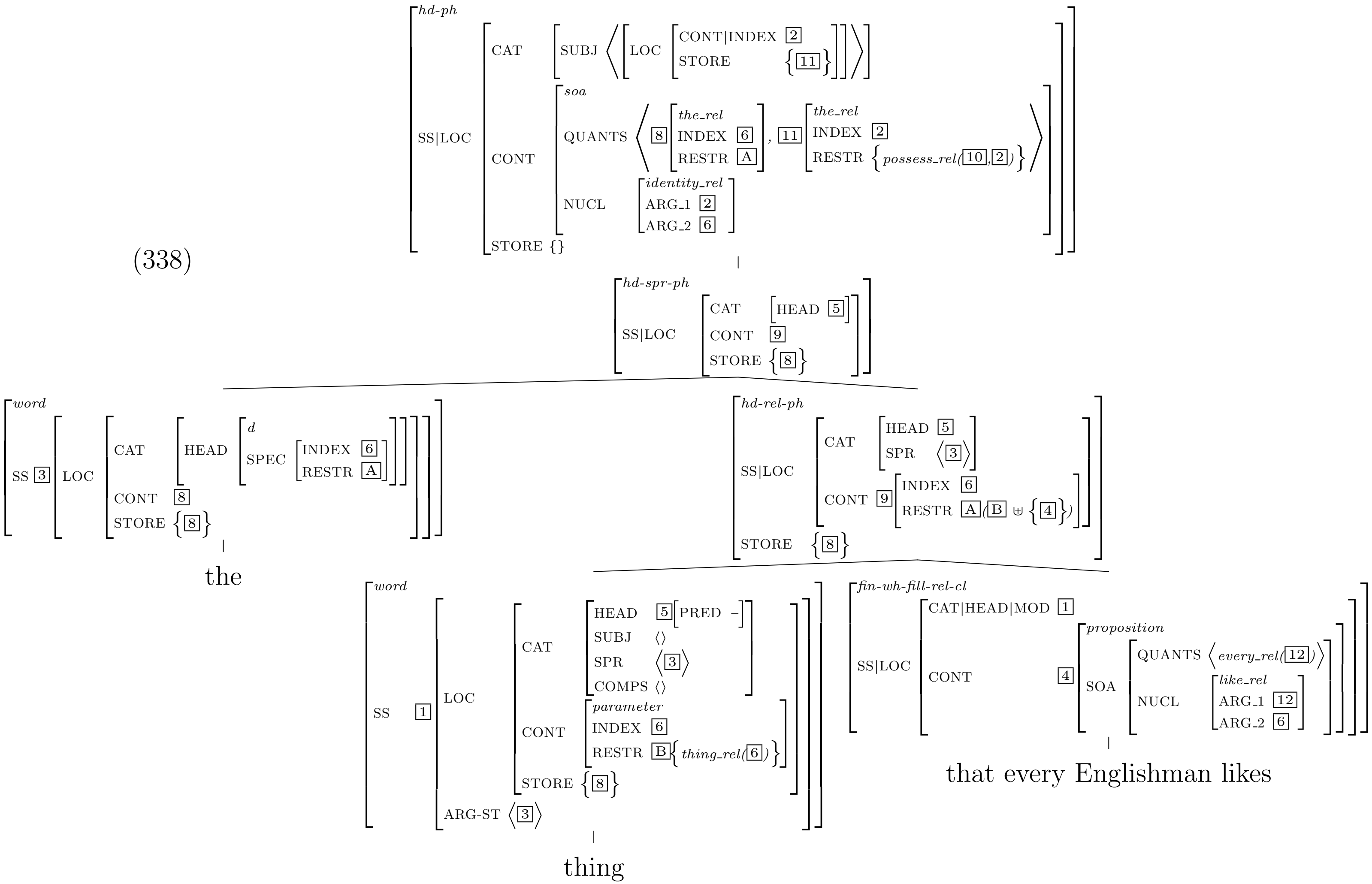

S
spec-pc-cl
SS|LOC
CONT
proposition
SOA 10
soa
QUANTS ⟨7 tense_rel, the_rel(6), the_rel(t)⟩
NUCL 4
STORE {}
NP2
hd-only-ph
SS 2 LOC
CAT
HEAD n PRED +
SUBJ ⟨LOC 1 CONT|INDEX 5 STORE {}⟩
CONT 9
soa
QUANTS ⟨the_rel(6), the_rel(t)⟩
NUCL 4
identity_rel
ARG_1 5
ARG_2 6
STORE A{}
NP1
hd-spr-ph
SS|LOC
CAT HEAD n PRED –
CONT
parameter
INDEX 6
RESTR B
STORE {the_rel(6), the_rel(t)}
The tallest girl on the team
VP
hd-comp-ph
SS|LOC
CAT SUBJ ⟨2⟩ COMPS ⟨⟩
CONT 10
STORE A
V
word
SS|LOC
CAT SUBJ ⟨2⟩ COMPS ⟨3⟩
CONT 10
STORE A
ARG-ST ⟨2,3⟩
is
N
word
SS 3 LOC 1
Sue

ends up being an identity-soa has technical reasons. If the creation of predicative NPs had taken a ι-based approach, there would be no identity-soa. Instead, a predicative NP's nucleus would be something like a complex relation between all the restrictions and the argument indices found in the nominal daughter. Yet, this is not the path taken here since the *quining*-based approach seems to be more in line with the way the fragment is set up in Ginzburg and Sag (2000).
Turning back to the description of (337), we see that the predicative NP_2 is on the copula's SUBJ-list. It becomes the subject in a *spec-pc-cl*. This means that it is treated like a cleft clause in a specificational pseudocleft. Therefore, it is subject to the constraint in (280). Just concentrating on the most important requirments of this constraint, we see that they are fulfilled: the nucleus of the matrix clause is the same as the nucleus of the subject, and the quantifier list of the matrix clause soa and subject soa only differ in the one tense-relation (the one introduced by the finite copula).

As a next step, we should consider the inner structure of a sentence like (327a) in detail. The predicative NP in that sentence consists of a head-noun and a restrictive relative clause plus a determiner. The inner structure of the subject is given in (338).

With respect to (338), the following things should be considered. First, note that I follow Sag (1997) when it comes to the analysis of *that* in relative clauses. In Sag (1997) it is assumed that it is a relative pronoun just like *who* or *which*. Therefore, we are dealing with a standard relative clause in (338). The relative clause attaches to the head noun via a *hd-rel-ph*. The restriction set of the *hd-rel-ph* is the union of the restrictions from the head noun and the relative clause. After the realization of the determiner, we arrive at a complex, non-predicative NP, which is a *hd-spr-ph*. Within the predicative NP, we find two quantifiers on the QUANTS-list. The first one comes from the article of the non-predicative NP. The second one comes from the argument of the predicative NP, i.e. from the element on the SUBJ-list. Since this structure belongs to the sentence in (327a), this means that the second quantifier comes from *his*. Both quantifiers are retrieved as allowed by the rule for predicative NPs in (332).
Note that according to standard assumptions, the scope of the quantifiers of the relative clause must already be fixed within the relative clause itself. Since the rules

(338)


hd-ph
SS|LOC
CAT
SUBJ
LOC
CONT|INDEX 2
STORE {11}
CONT
soa
QUANTS
8
the_rel
INDEX 6
RESTR A
11
the_rel
INDEX 2
RESTR {possess_rel(10,2)}
NUCL
identity_rel
ARG_1 2
ARG_2 6
STORE {}
hd-spr-ph
SS|LOC
CAT
HEAD 5
CONT 9
STORE {8}
word
SS 3
LOC
CAT
HEAD
d
SPEC
INDEX 6
RESTR A
CONT 8
STORE {8}
the
hd-rel-ph
SS|LOC
CAT
HEAD 5
SPR ⟨3⟩
CONT 9
INDEX 6
RESTR A(B ⊎ {4})
STORE {8}
word
SS 1
LOC
CAT
HEAD 5 PRED −
SUBJ ⟨⟩
SPR ⟨3⟩
COMPS ⟨⟩
CONT
parameter
INDEX 6
RESTR B{thing_rel(6)}
STORE {8}
ARG-ST ⟨3⟩
thing
fin-wh-fill-rel-cl
SS|LOC
CAT|HEAD|MOD 1
CONT
4
proposition
SOA
QUANTS ⟨every_rel(12)⟩
NUCL
like_rel
ARG_1 12
ARG_2 6
that every Englishman likes

for relative clause attachment do not pass up any STORE-values, the quantifier scope cannot be handled above the level of the relative clause. This causes a problem in the matrix clause. Consider the structure in (339), which shows the entire sentence (327a) in detail.

In (339) we see that the two quantifiers of the predicative subject NP are already on the subject's QUANTS-list. This QUANTS-list is passed on to the copula, which adds its tense-relation. Matrix clause and subject share a nucleus as required by the constraint on *spec-pc-cl* in (280). Now, the problem in (339) is that the *spec-pc-cl* constrains all quantifiers from post-copular position to appear in the tail of the subjects's QUANTS-list. But, to get a bound variable reading, we need the every-relation to precede the his-relation (exist-relation) on that QUANTS-list. Unfortunately, the every-relation cannot be extracted from the relative clause. Put differently: Quantifiers cannot scope out of relative clauses under standard assumptions. This is supposed to ensure that sentences like (340a) get only one interpretation, while sentences like (340b) are ambiguous. In the example of inverse linking in (340b), *every* is allowed to take wide scope.

(340) a. One apple [that is in every basket] is rotten.
b. One apple in every basket is rotten.

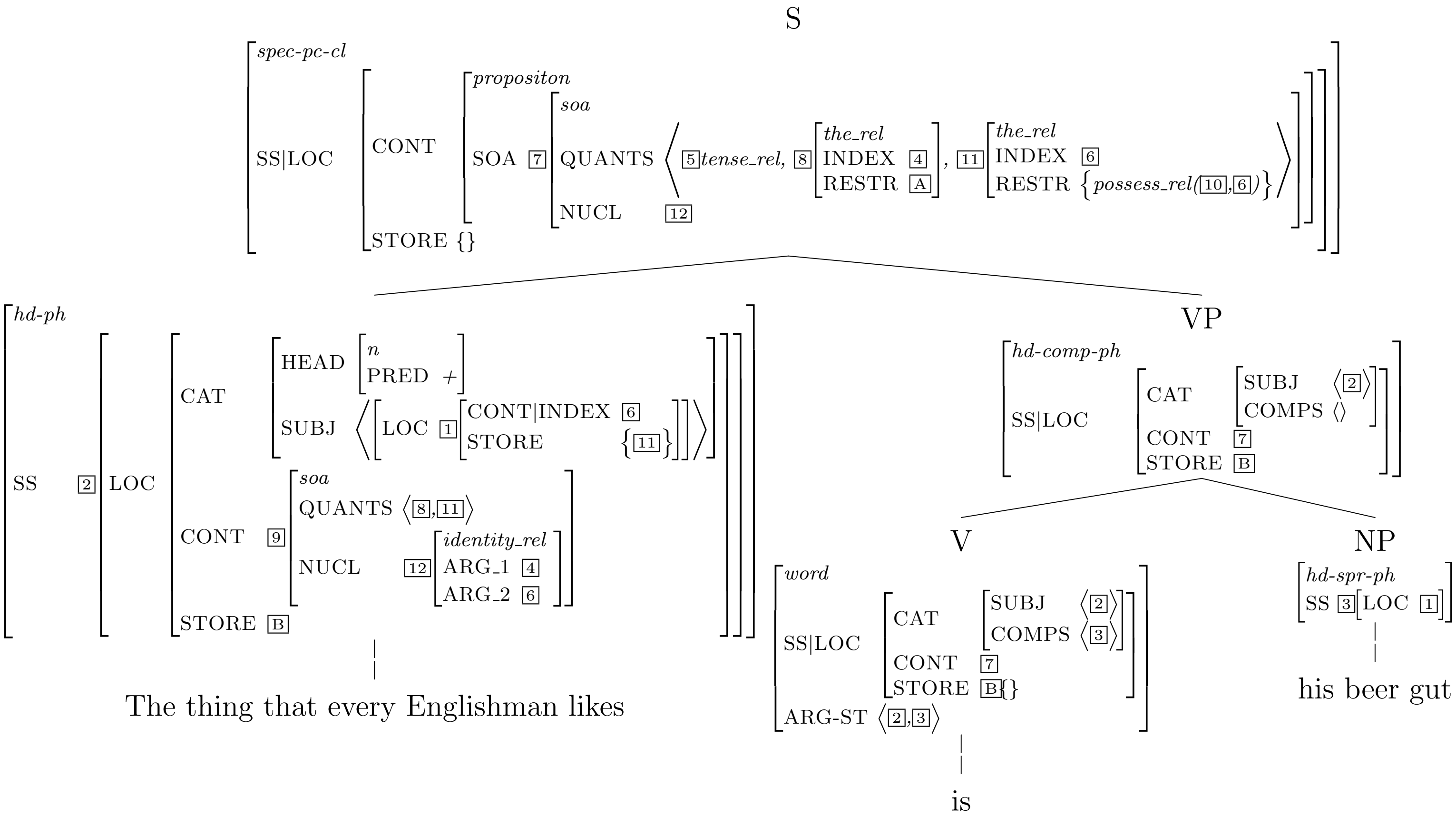
Although a ban on quantifier retrieval from relative clauses can explain the difference between these two, it fails for cases like those in (341).

(341) a. The tag that is on [every picture]$_i$ is its$_i$ price.
b. A man that is loved by [every mother]$_i$ is her$_i$ son.

Considering such examples, I regard opening relative clauses for quantifier retrieval the 'lesser of two evils'. Besides, such a step is in line with theories like that of Heim and Kratzer (1998). We can still restrict the order of quantifiers later on, i.e. higher in the tree, to account for cases like (340a).[87] However, 'locking them up' in the relative clause deprives us of an explanation for all sentences like those in

[87] The question of what exactly might block the extraction of quantifiers from a relative clause cannot be settled here. However, we can conclude from (341) that it is not the determiner of the head noun.

(339)


S
spec-pc-cl
SS|LOC
CONT
proposition
SOA 7
soa
QUANTS ⟨5 tense_rel, 8 [the_rel INDEX 4 RESTR A], 11 [the_rel INDEX 6 RESTR {possess_rel(10,6)}]⟩
NUCL 12
STORE {}
hd-ph
SS 2 LOC
CAT HEAD [n PRED +]
SUBJ ⟨[LOC 1 [CONT|INDEX 6 STORE {11}]]⟩
CONT 9 [soa QUANTS ⟨8,11⟩ NUCL 12 [identity_rel ARG_1 4 ARG_2 6]]
STORE B
The thing that every Englishman likes
VP
hd-comp-ph
SS|LOC
CAT [SUBJ ⟨2⟩ COMPS ⟨⟩]
CONT 7
STORE B
V
word
SS|LOC
CAT [SUBJ ⟨2⟩ COMPS ⟨3⟩]
CONT 7
STORE B{}
ARG-ST ⟨2,3⟩
is
NP
hd-spr-ph
SS 3 [LOC 1]
his beer gut

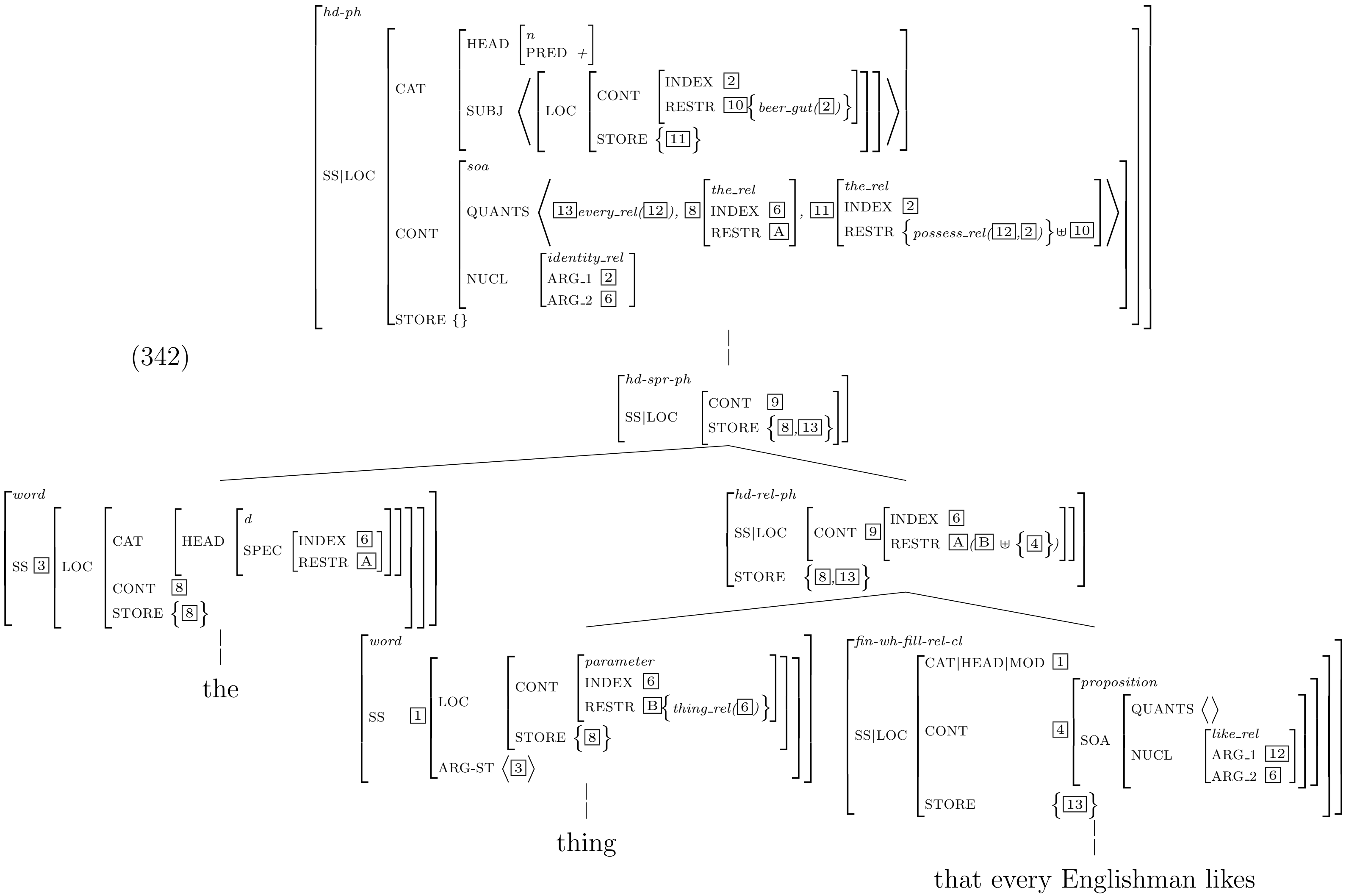
(341).[88] Making use of this new freedom, the subject of (327a) will now look like (342).

In (342) we see that letting the quantifier of *every* leave the relative clause allows us to put it at the head of the QUANTS-list of the predicative NP. Here it has scope over *his* as well as over *the*. This is what we need for a bound variable reading.

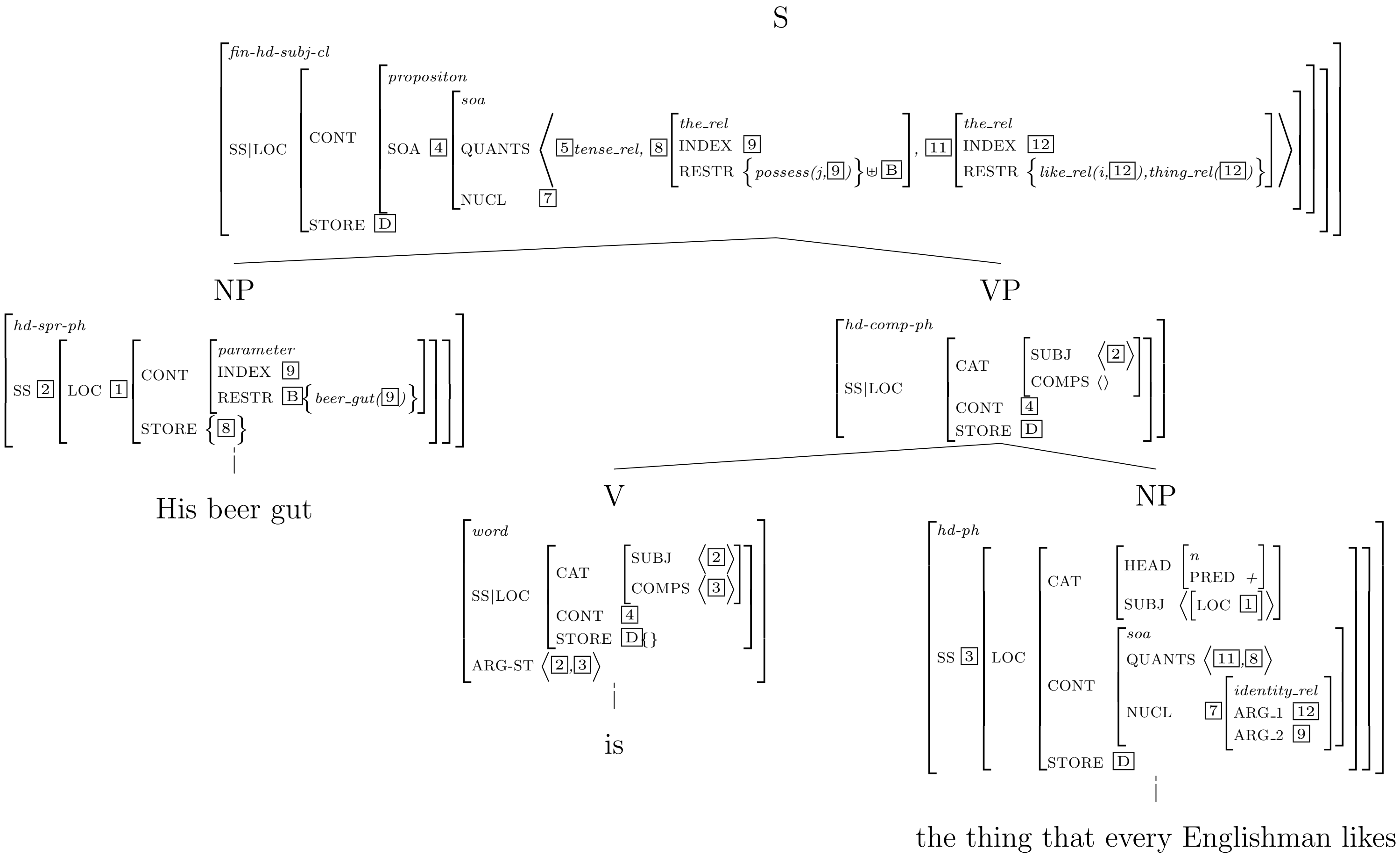
Now that we have seen what (327a) looks like, we should take a look at its reverse version in full detail. This is shown in (343).

[88] Note that there has actually not been a constraint in the fragment yet that prevented the quantifiers of relative clauses from being passed up. The first part of the Semantics Principle (see section (2.2.4)) does exactly this. Since the *hd-rel-ph* is a subtype of *hd-adj-ph* (see Sag (1997, p. 479)) and adjuncts are semantically potent daughters, quantifiers may be passed up to the mother node. So what I argue for is basically dropping a restriction that the fragment which I use lacks (but should have had).

(342)


hd-ph
hd-spr-ph
word
hd-rel-ph
fin-wh-fill-rel-cl
the
thing
that every Englishman likes

(343)


S
fin-hd-subj-cl
SS|LOC
CONT
proposition
SOA 4
soa
QUANTS ⟨ 5 tense_rel, 8 [the_rel INDEX 9 RESTR {possess(j, 9)} ⊎ B], 11 [the_rel INDEX 12 RESTR {like_rel(i, 12), thing_rel(12)}] ⟩
NUCL 7
STORE D
NP
hd-spr-ph
SS 2
LOC 1
CONT
parameter
INDEX 9
RESTR B {beer_gut(9)}
STORE {8}
His beer gut
VP
hd-comp-ph
SS|LOC
CAT
SUBJ ⟨2⟩
COMPS ⟨⟩
CONT 4
STORE D
V
word
SS|LOC
CAT
SUBJ ⟨2⟩
COMPS ⟨3⟩
CONT 4
STORE D{}
ARG-ST ⟨2, 3⟩
is
NP
hd-ph
SS 3
LOC
CAT
HEAD [n PRED +]
SUBJ ⟨[LOC 1]⟩
CONT
soa
QUANTS ⟨11, 8⟩
NUCL 7
identity_rel
ARG_1 12
ARG_2 9
STORE D
the thing that every Englishman likes

In contrast to the *spec-pc-cl* in (339), the quantifier order of the *fin-hd-subj-cl* is not restricted in (343). Besides, the soa of the matrix clause and the soa of the functor argument are not constrained to differ in no more than a tense-relation. This is only the case in a construction of type *spec-pc-cl*, but here we are dealing with a *fin-hd-subj-cl*. Note that what we see in (343) is only one of three possible structures for such a sentence. According to Mikkelsen (2004b), DPs can either be type $\langle e \rangle$ or type $\langle e, t \rangle$ (or of higher types), i.e. they can be functors or arguments.[89] From this and the fact that the *be* could be the copula or the *be* of identity, it follows that there are three possible semantic patterns: two with the copula and one with the *be* of identity. In (343) we see the predicative variant without a bound variable reading, in which the post-copular constituent is the functor for the subject, and the *is* is the copula. There is no every-relation present on any of the given QUANTS-lists because in this sentence the every-relation remained in the relative clause. This means the predicative NP looks like the one in (338).

Another issue that concerns specificational pseudoclefts in general and especially those with definite description subjects are doubly used prepositions. Consider example (110) from Chapter 3 repeated here in (344).[90]

(344) a. What he$_i$ fought against was against John$_{*i,k}$'s motherland.
b. What he$_i$ fought against was John$_{*i,k}$'s motherland.
c. *?The country I fought against was against Russia.
d. The country I fought against was Russia.

It seems like we are allowed to repeated the preposition *against* in post-copular position in (344a). The problem here is that the way things have been analyzed so far, we cannot ensure that the post-copular preposition has the same form as the one to the left of the copula. This means if we allow for (344a), we could also get *What he$_i$ fought against was for John$_{*i,k}$'s motherland.* This is based on the assumption that prepositions which are subcategorized for always behave like case-marking prepositions. Their semantic contribution gets integrated into the meaning of the verb. If the post-copular PP is headed by a case-marking preposition, it will

89 See chapter 2.1.

90 From Schlenker (2003, p. 15, footnote 16).

show the meaning of the NP complement. This means that *what* will also show the meaning of the NP complement. The problem now is that under this set-up any other preposition could behave the same way. This would happen if the sentence in (344a) was a specificational one. So can we argue that this is not a specificational sentence? Evidence for not considering this sentence specificational comes from examples like those below.

(345) a. *What Sue looked at was at Mike.
b. *What he complained about was about this noise.

Examples like these show that if we use unambiguously case-marking prepositions, doubling the preposition seems to be forbidden. From this we can conclude that what we see in (344a) is not a repetition of the same preposition but actually two different prepositions. The first one is the one which belongs to "fight", while the second one is a predicative preposition. This means the entire sentence should not be considered a specificational one, but rather a predicational one. The subject clause is a free relative clause with an NP interpretation.
But what can we say about the ungrammaticality of (344c)? Most probably the ungrammaticality judgment here is too strong. What we actually see is a difficulty getting the most prominent reading that we expect for a sentence with a wh-clause subject and a predicative PP in post-copular position. Consider the second sentence in the answer below.

(346) A: Can you tell me where I find the building that Mike was looking at (on this picture)?
B: I think it was somewhere round the parliament. In fact, I am sure that the building that Mike was looking at was at the parliament.

We see that B's answer can be read predicationally. This is due to the locative PP in post-copular position. This preposition just happens to be the same which we find in the relative clause. Now, what about (344c)? Here we find a PP headed by *against* in post-copular position and it seems that it does not allow for a predicative interpretation with a noun like *country*. However, if we create a certain context, we can get a predicative interpretation, too. Consider the example below.

(347) Putin fought a war against a small country. He did that to find support for Russia. He hoped that the defeated country would vote in favor of Russia at the United Nations. However, his plan did not work out. This became apparent in the referendum at the United Nations:
The country Putin fought against was against Russia.

From this example we can conclude that an ungrammaticality judgment for (344c) is too strong. In an appropriate context a sentence like (344c) is obviously grammatical.

Now that we have an analysis for several pseudoclefts and related constructions, we can once again compare specificational pseudoclefts and specificational clauses in general. So far we have treated specificational clauses with definite description subjects on par with specificational pseudoclefts. When it comes to connectivity effects, this is justified as was shown in Chapter 3.3. However, it was also shown in Section 3.2.2 that there are certain properties, e.g. restrictions on post-copular negation, which might not be shared by all specificational sentences, but only by specificational pseudoclefts. Only few authors like e.g. Declerck (1988) support the view that such restrictions are found in specificational clauses in general.[91] How can those properties be ascribed exclusively to specificational pseudoclefts? When we look at the constraint on *spec-pc-cl*, repeated in (348), we see that only a minor detail would have to be altered if one does not want to follow Declerck (1988).

(348) *spec-pc-cl:*

$$\begin{bmatrix} \text{SS|LOC} & \begin{bmatrix} \text{CAT|HEAD} & \begin{bmatrix} \text{IC} & + \\ \text{AGR} & \textit{3rd\_sg} \end{bmatrix} \\ \text{CONT|SOA} & \begin{bmatrix} \text{QUANTS} & \boxed{A} \\ \text{NUCL} & \boxed{3} \end{bmatrix} \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \text{SS|LOC} & \begin{bmatrix} \text{CAT|SUBJ} & \left\langle \begin{bmatrix} \text{LOC|STORE} & \boxed{B} \end{bmatrix} \right\rangle \\ \text{CONT|SOA} & \begin{bmatrix} \text{QUANTS} & \boxed{C}\left(\textit{list} \oplus \textit{order}(\boxed{B}) \right) \\ \text{NUCL} & \boxed{3} \end{bmatrix} \end{bmatrix} \end{bmatrix}, \mathbf{H}$$

$$\textbf{and } \boxed{A} \ominus \boxed{C} = \left\{ \textit{tense\_rel} \right\}$$

We have seen that all these restrictions on specificational pseudoclefts (like the ban of post-copular negation, post-copular modification, etc.) could be explained by 'semi-identifying' the soa of the matrix clause and the soa of the cleft clause. The expression 'semi-identifying' here means that the soa of the matrix clause differs from the soa of the cleft clause in only one tense-relation on the QUANTS-list. This requirement is expressed in the additional condition below the AVM. If we want to

[91] See Declerck (1988, p. 166).

make these restrictions apply to specificational pseudoclefts only, we can simply use two new construction types. Consider the construction types and the constraints below.

(349)

$$\begin{array}{c} \textit{spec-cl} \\ \diagup \quad \diagdown \\ \textit{spec-pc-cl} \quad \textit{spec-npc-cl} \end{array}$$

(350) *spec-cl:*

$$\left[\text{SS|LOC}\begin{bmatrix}\text{CAT|HEAD} & \begin{bmatrix}\text{IC} & + \\ \text{AGR} & \textit{3rd\_sg}\end{bmatrix} \\ \text{CONT|SOA|NUCL} & \boxed{3}\end{bmatrix}\right] \rightarrow \left[\text{SS|LOC}\begin{bmatrix}\text{CAT|SUBJ} & \left\langle\left[\text{LOC|STORE } \boxed{B}\right]\right\rangle \\ \text{CONT|SOA} & \begin{bmatrix}\text{QUANTS} & \textit{list} \oplus \textit{order}(\boxed{B}) \\ \text{NUCL} & \boxed{3}\end{bmatrix}\end{bmatrix}\right], \mathbf{H}$$

(351) *spec-pc-cl:*

$$\left[\text{SS}\begin{bmatrix}\text{LOC|CONT} & \begin{bmatrix}\text{SIT} & \boxed{4} \\ \text{SOA} & \left[\text{QUANTS } \boxed{A}\right]\end{bmatrix} \\ \text{BACKGROUND} & \left\{\left(\boxed{4}{=}\text{NOW} \vee \left(\boxed{4} \prec \text{NOW} \wedge \boxed{3} \leq \boxed{4}\right)\right)\right\}\end{bmatrix}\right] \rightarrow \left[\text{SS|LOC|CONT}\begin{bmatrix}\text{SIT} & \boxed{3} \\ \text{SOA|QUANTS} & \boxed{C}\end{bmatrix}\right], \mathbf{H}$$

and $\boxed{A} \ominus \boxed{C} = \left\{\textit{tense\_rel}\right\}$

The construction type hierarchy in (349) shows that we make use of three construction types now. We use the construction type *spec-cl* for specificational clauses in general. In (350) we see a constraint on this type that accounts for a subset of properties that the former constraint in (348) accounted for. First, it accounts for 3rd person agreement. Second, it accounts for the restricted order of quantifiers in specificational clauses. Third, it accounts for reconstruction effects by constraining the non-head-daughter to have a non-empty SUBJ-list, which means it must be a predicate. Fourth, it is ensured that the entire construction is based on a copula. This is done by identifying the nuclei of the top node and the non-head-daughter. Only with a copula, which is semantically empty, will the two nuclei turn out to be the same.

We now make use of the second construction type *spec-pc-cl* for specificational pseudoclefts. The constraint in (351) on this type ensures that this construction shows the following properties. First, it says that the soa of the cleft clause and that one of the matrix clause differ in only one tense-relation. Second, this constraint now does what was formulated in an extra constraint in (281). This means it also accounts for the tense patterns that we find between cleft clause and matrix clause. The constraint from (281) can be integrated into this new constraint because the former constraint was only meant to apply to specificational pseudoclefts. It never applied to specificational clauses in general anyway. The other construction type *spec-npc-cl* is needed for specificational clauses that are not pseudoclefts.

To summarize the results of this section: we have seen how the same means that were used to analyze standard specificational pseudoclefts can also be utilized to account for specificational sentences with definite description subjects. As was the case with reverse pseudoclefts, the theory makes strong use of the copula's argument structure ambiguity and the new construction type *spec-pc-cl*. The latter is now only used for specificational pseudoclefts. Other specificational clauses are now considered to be of type *spec-npc-cl*, a type introduced to account for the partly different properties of specificational pseudoclefts and non-pseudocleft specificational clauses. In the course of the analysis, it became apparent that we need a rule which turns non-predicative NPs into predicative NPs. The phrase structure rule that fulfills this purpose follows the semantic type-shift that we see in Partee's (1987) IDENT-function, i.e. it makes use of a soa with an identity-relation as nucleus. Besides, it became apparent that for certain sentences quantifiers must be allowed to scope out of relative clauses.

4.4 What is missing is opacity effects

One kind of connectivity that has not been dealt with so far is opacity effects. Here opacity effects means that a pseudocleft like (352a) has two readings just like the canonical sentence (352b). In one reading the existential quantifier takes scope over *seek*. This is the de re reading. In the other reading the existential quantifier is in the scope of *seek*. This is the de dicto reading.

(352) a. What Mike seeks is a unicorn.

b. Mike seeks a unicorn.

The problem with opacity is that neither the semantic system of Ginzburg and Sag (2000) nor the more recent approaches that use Minimal Recursion Semantics (MRS) can model opaque readings. Hence, an account of opacity effects was postponed until now not because it is difficult to handle in pseudoclefts, but because it cannot be handled within the system that is used here at all. As soon as the overall semantic system as used in Ginzburg and Sag (2000) can handle opacity, my analysis will automatically ensure that it also applies in pseudoclefts. Unfortunately, this is not the place to extend that system in such a way. However, for the time being I will show how opacity effects (not necessarily in pseudoclefts) can be accounted for by using Lexical Resource Semantics (LRS) and why MRS and the system in Ginzburg and Sag (2000) fail to do so.

4.4.1 The LRS-solution

LRS as used in e.g. Richter and Sailer (2003) and Sailer (2004) has the advantage that it can integrate logical forms from other semantic analyses (not based on situation semantics) directly. This is due to the way LRS is set up. In contrast to the semantic system used here so far, LRS does not consider the semantic contribution of a sign to be a single object. Instead, it is conceived as a list of subexpressions of the final logical form. This logical form is formulated in Ty2[92], a standard semantic representation language. It is this particular fact (being based on Ty2) that enables LRS to use logical forms from the literature, i.e. from standard analyses like Montague's PTQ[93].

Let us take a look at LRS in detail. LRS distinguishes local and non-local semantics. The local semantics appears under CONTENT; the non-local semantics appears under LOGICAL-FORM (LF), which is a feature of the type *sign*. The attribute LF takes values of sort *lrs*, which shows three attributes.

The feature INT(ERNAL)-CONT(ENT) specifies the scopally lowest expression in a head projection. The value of the feature EXT(ERNAL)-CONT(ENT) is the overall logical form of the sign. It is constituted of all subexpressions. The latter are collected on the PARTS-list. There are two well-formedness conditions on the type *lrs*. These are given below.[94]

[92] See Gallin (1975).

[93] Montague (1973).

[94] From Richter and Sailer (2003, p. 112).

TYPE	FEATURES / TYPE OF VALUE	IMMEDIATE SUPERTYPE
sign	$\begin{bmatrix} \text{PHONOLOGY} & \textit{list(form)} \\ \text{SYNSEM} & \textit{synsem} \\ \text{LOGICAL-FORM} & \textit{lrs} \end{bmatrix}$	*feature structure*
lrs	$\begin{bmatrix} \text{EXTERNAL-CONTENT} & \textit{me} \\ \text{INTERNAL-CONTENT} & \textit{me} \\ \text{PARTS} & \textit{list(me)} \end{bmatrix}$	*feature structure*
me		*feature structure*
content	$\begin{bmatrix} \text{INDEX} & \textit{extended-index} \\ \text{MAIN} & \textit{me} \end{bmatrix}$	*feature structure*
extended-index	$\begin{bmatrix} \text{PHI} & \textit{index} \\ \text{VAR} & \textit{me} \end{bmatrix}$	*feature structure*

Figure 4.1: Types for LRS

(353) The INT-CONT Principle (IContP)[95]
In each *lrs*, the INT-CONT-value is an element of the PARTS-list and a component of the EXT-CONT-value.

(354) The EXT-CONT Principle (EContP)

1. In every phrase, the EXT-CONT-value of the non-head daughter is an element of the non-head daughter's PARTS-list.

2. In every utterance, every subexpression of the EXT-CONT-value of the utterance is an element of its PARTS-list, and every element of the utterance's PARTS-list is a subexpression of the EXT-CONT-value.

The IContP makes sure that the value of INT-CONT also appears on the PARTS-list. Furthermore this INT-CONT value must also be a subexpression of the EXT-CONT-value. Since the EXT-CONT-value does not change throughout a head projection, this ensures that the basic semantic contribution of the lexical syntactic head is part of the logical form of the projection of this head. The EXT-CONT-value is further constrained by the EContP. The first clause of the EContP refers indirectly to the EXT-CONT-value of a completed head projection and states that it must be one of the elements of the sign's PARTS-list. A saturated head projection could either be an utterance (this case is covered by the second clause) or a sign that combines with another sign to form a phrase, where the resulting phrase is no longer a head projection of the sign under consideration. The IContP and the first clause of the EContP together thus specify that the EXT-CONT-value of a complete head projection must be an expression which was part of the semantic contribution of some dominated sign, and that the expression must contain the basic semantics of the lexical head as a subexpression. The second clause of the EContP ensures that for every utterance, all subexpressions of the EXT-CONT-value must be contributed by some lexical element that is dominated by that utterance. It also ensures that all semantic contributions of all lexical elements are part of the interpretation.

Another new sort in LRS apart from *lrs* is *meaningful-expression(me)*. This is the type for expressions of Ty2. The *me* is the value that the sign attribute LF takes. Note that the LF-value is the semantic representation of the sign, not its denotation.[96] The LF-value of a mother node is determined by the LF-values of its daughters and the latter's syntactic combination. This is taken care of by the Semantics Principle shown in (355), which identifies the EXT-CONT-value and INT-CONT-value of a phrase with that of its head-daughter. Furthermore, the Semantics Principle ensures that the PARTS-list of a phrase consists of the PART-lists of its daughters. Other parts of the Semantics Principle constitute scope constraints.

(355) Semantics Principle (SP)
In each headed-phrase,

1. the EXT-CONT-value of the head and the mother are identical,
2. the INT-CONT-value of the head and the mother are identical,[97]
3. the PARTS-value contains all and only the elements of the PARTS-values of the daughters,
4. the following condition holds:

[96] See Sailer (2004, p. 205, footnote 8).
[97] The noun is considered to be the head of a quantified NP.

a. if the nonhead is a quantifier then its INT-CONT-value is of the form $Qx[\rho \circ \nu]$[98], the INT-CONT-value of the head is a component of ρ, and the INT-CONT-value of the non-head daughter is identical with the EXT-CONT-value of the head daughter.

b. if the non-head is a quantified NP with an EXT-CONT-value of the form $Qx[\rho \circ \nu]$, then the INT-CONT-value of the head is a component of ν,

c. ...

The first scope constraint says that in a quantified NP, the external content of a noun head is the quantifier, and it says that the noun head must be in the scope of the quantifier. The second scope constraint says that if a quantified NP combines with another head, the semantic contribution of this head must appear somewhere in the nuclear scope of the quantified NP.

Here we turn to the next new sort in figure 4.1, the sort *content*. This type is needed for local semantics. The local semantics appears in the attribute CONTENT, which takes values of type *content*. *Content*-objects have the features INDEX and MAIN. The value of MAIN is the main semantic constant that a constituent contributes. The attribute INDEX takes a value of sort *extended-index*. Such indices show the two new features PHI and VAR. The values of PHI are of type *index*, which in this case corresponds to the type which is used in Pollard and Sag (1994). The attribute VAR takes a value of type *me* again, i.e. an expression of the semantic representation language. In the most basic case, this is an individual variable. The VAR-value corresponds to the referential semantic argument of the object in MAIN. We see this in the lexical entry for *someone* in (356), where the variable x that appears under VAR is the argument of *human_rel(ation)*, which is shown under MAIN.[99] Note that now verbs get an index, too, for which VAR is an eventuality

[98] $Qx[\rho \circ \nu]$ is shorthand for an avm like $\begin{bmatrix} \textit{quantifier} & \\ \text{VAR} & \textit{var} \\ \text{SCOPE} & \begin{bmatrix} \textit{l-const} & \\ \text{ARG1} & \rho \\ \text{ARG2} & \nu \end{bmatrix} \end{bmatrix}$

[99] Note that here the attribute ARG-ST is considered to belong to type *category*.

variable. For verbal indices under PHI, one could introduce a new type like *no-phi*, but this will play no role here.[100]

$$(356)\quad \begin{bmatrix} \text{PHON} & \left\langle \textit{someone} \right\rangle \\ \text{SS|LOC} & \begin{bmatrix} \text{CAT} & \begin{bmatrix}\text{HEAD} & \textit{noun}\\ \text{ARG-ST} & \langle\rangle\end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \textit{nom-obj} & \\ \text{INDEX} & \begin{bmatrix}\text{PHI} & \begin{bmatrix}\text{NUM} & \textit{sg}\\ \text{PERS} & \textit{3rd}\end{bmatrix}\\ \text{VAR} & x\end{bmatrix} \\ \text{MAIN} & \textit{human\_rel}\end{bmatrix}\end{bmatrix} \\ \text{LF} & \begin{bmatrix}\text{EXT-CONT} & \exists x[\alpha\wedge\beta]\\ \text{INT-CONT} & \textit{human\_rel(x)}\\ \text{PARTS} & \left\langle \exists x[\alpha\wedge\beta],\ \alpha\wedge\beta,\ \textit{human\_rel(x)}\right\rangle\end{bmatrix}\end{bmatrix} \quad \textbf{and } \textit{human\_rel(x)} \triangleleft \alpha$$

The relation $\triangleleft$ encodes subexpressionhood. Although the restrictor α and the nuclear scope β are not fully specified, the lexical entry for *someone* still specifies that the *human_rel* must be part of the restrictor.

Here we turn to opacity effects. To deal with opacity effects, we need to broaden our view and look at verbs (especially opaque verbs), too. In (357) we see a lexical entry for *seek*.

$$(357)\quad \begin{bmatrix} \text{PHON} & \left\langle \textit{seek} \right\rangle \\ \text{SS|LOC} & \begin{bmatrix} \text{CAT} & \begin{bmatrix}\text{HEAD} & \textit{verb}\\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{LOC} & \begin{bmatrix}\text{CAT} & \begin{bmatrix}\text{HEAD} & \textit{noun}\end{bmatrix}\\ \text{CONT} & \begin{bmatrix}\text{INDEX|VAR} & y\end{bmatrix}\end{bmatrix}\end{bmatrix}, \begin{bmatrix}\text{LOC} & \begin{bmatrix}\text{CAT} & \begin{bmatrix}\text{HEAD} & \textit{noun}\end{bmatrix}\\ \text{CONT} & \begin{bmatrix}\text{INDEX|VAR} & x\end{bmatrix}\end{bmatrix}\end{bmatrix} \right\rangle\end{bmatrix} \\ \text{CONT} & \begin{bmatrix}\text{INDEX} & \begin{bmatrix}\text{VAR} & e\end{bmatrix}\\ \text{MAIN} & \textit{seek}\end{bmatrix}\end{bmatrix} \\ \text{LF} & \begin{bmatrix}\text{EXT-CONT} & \gamma\\ \text{INT-CONT} & {}^{\vee}P(x)\\ \text{PARTS} & \left\langle \begin{array}{l} e,\ \exists e.\phi,\ \textit{seek},\ \textit{seek}(e,y,{}^{\wedge}\lambda P.\delta),\\ {}^{\wedge}\lambda P.\delta,\ P,\ P(x),\ {}^{\vee}P(x)\end{array}\right\rangle\end{bmatrix}\end{bmatrix}$$

and $\textit{seek(...)} \triangleleft \phi$

and ${}^{\vee}P(x) \triangleleft \delta$

[100] See Sailer (2004, p. 206).

In contrast to the lexical entry of *someone* in (356), the MAIN-value of *seek* does not appear in its INT-CONT-value. The scopally lowest subexpression that the verb contributes is $\check{}P(x)$. Note that the Semantics Principle only requires that the INT-CONT-value of the verb is in the scope of the quantifier. With the INT-CONT-value being $\check{}P(x)$, we can account for both readings of the ambiguous sentence in (358).

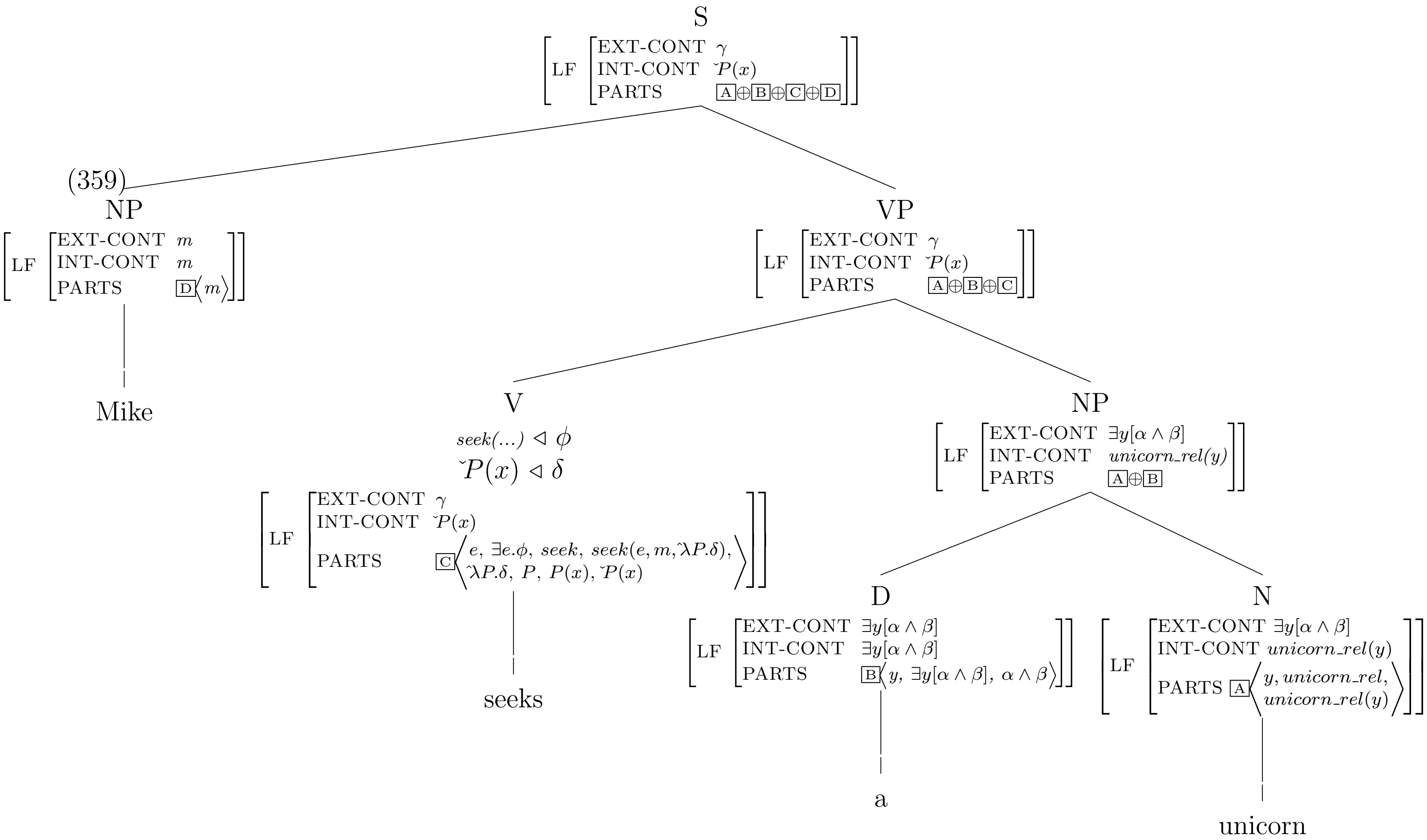
(358) Mike seeks a unicorn.
$\exists x[unicorn\_rel(x) \wedge \exists e[seek\_rel(e, \hat{}\lambda P.\check{}P(x))]]$ DE RE
$\exists e[seek\_rel(e, \hat{}\lambda P.\exists x[unicorn(x) \wedge \check{}P(x)])]$ DE DICTO

We see that in the de dicto-reading the semantic *seek_rel* is not in the scope of the existential quantifier that comes from the indefinite article. However, we see in both readings that it is still a subexpression of ϕ and thus does not violate any scope restrictions. In both readings the INT-CONT value $\check{}P(x)$ is in the scope of the quantifier in direct object position as required by clause (4.b) of the Semantics Principle. The tree for this sentence is shown in (359).

4.4.2 Opacity in Ginzburg and Sag (2000)

While the system used in Ginzburg and Sag (2000) could handle the de re/de dicto ambiguity that occurs with subject-raising verbs like *seem*, it cannot account for standard opaque verbs like *seek*. As was shown in Section 2.2.4, the quantifier in the sentence *A unicorn seems to be approaching* could be retrieved below *seem*. This was possible because there were lexical heads below *seem* where this could take place. In contrast to this, a sentence like *Mike seeks a unicorn* (as is shown in (360)) does not offer any position below the verb *seek* where one could retrieve the quantifier.

(359)


S
LF EXT-CONT γ
INT-CONT ˇP(x)
PARTS A⊕B⊕C⊕D
NP
LF EXT-CONT m
INT-CONT m
PARTS D⟨m⟩
Mike
VP
LF EXT-CONT γ
INT-CONT ˇP(x)
PARTS A⊕B⊕C
V
seek(...) ◁ φ
ˇP(x) ◁ δ
LF EXT-CONT γ
INT-CONT ˇP(x)
PARTS C⟨e, ∃e.φ, seek, seek(e, m, ˆλP.δ), ˆλP.δ, P, P(x), ˇP(x)⟩
seeks
NP
LF EXT-CONT ∃y[α ∧ β]
INT-CONT unicorn_rel(y)
PARTS A⊕B
D
LF EXT-CONT ∃y[α ∧ β]
INT-CONT ∃y[α ∧ β]
PARTS B⟨y, ∃y[α ∧ β], α ∧ β⟩
a
N
LF EXT-CONT ∃y[α ∧ β]
INT-CONT unicorn_rel(y)
PARTS A⟨y, unicorn_rel, unicorn_rel(y)⟩
unicorn

(360)

- S $\begin{bmatrix}\text{QUANTS} & \langle \boxed{1} \rangle \\ \text{STORE} & \{\}\end{bmatrix}$
  - NP $\begin{bmatrix}\text{STORE} & \{\}\end{bmatrix}$
    - Mike
  - VP $\begin{bmatrix}\text{QUANTS} & \langle \boxed{1} \rangle \\ \text{STORE} & \{\}\end{bmatrix}$
    - V $\begin{bmatrix}\text{QUANTS} & \langle \boxed{1} \rangle \\ \text{STORE} & \{\}\end{bmatrix}$
      - seeks
    - NP $\begin{bmatrix}\text{STORE} & \{\boxed{1}\}\end{bmatrix}$
      - a unicorn

The only interpretation we get with this system is one where the existential quantifier takes wide scope, i.e. the de re interpretation. It can only be retrieved in a position that has scope over *seek*. For a de dicto reading, we would have to retrieve the quantifier below *seek*.

4.4.3 No opacity in MRS

Another system one might use for structuring semantics in HPSG is MRS as used in Flickinger et al. (2003). As was the case with the system of Ginzburg and Sag (2000), it is possible to account for the de dicto/de re ambiguity in sentences with raising verbs. In (361) we see the MRS representation of such a sentence.

(361) A unicorn seems to be approaching.

$$\begin{bmatrix} \textit{mrs} & \\ \text{HOOK|LTOP} & \boxed{1}\textit{handle} \\ \text{RELS} & \left\langle \begin{bmatrix} \textit{\_a\_q\_rel} & \\ \text{LBL} & \boxed{2} \\ \text{ARG0} & \boxed{3} \\ \text{RESTR} & \boxed{4}\textit{handle} \\ \text{BODY} & \textit{handle} \end{bmatrix}, \begin{bmatrix} \textit{\_unicorn\_rel} & \\ \text{LBL} & \boxed{6} \\ \text{ARG0} & \boxed{3} \end{bmatrix}, \begin{bmatrix} \textit{\_seem\_rel} & \\ \text{LBL} & \boxed{7} \\ \text{ARG1} & \boxed{8} \end{bmatrix}, \begin{bmatrix} \textit{\_approach\_rel} & \\ \text{LBL} & \boxed{9} \\ \text{ARG1} & \boxed{3} \end{bmatrix} \right\rangle \\ \text{HCONS} & \left\langle \begin{bmatrix} \textit{qeq} & \\ \text{HARG} & \boxed{1} \\ \text{LARG} & \boxed{7} \end{bmatrix}, \begin{bmatrix} \textit{qeq} & \\ \text{HARG} & \boxed{4} \\ \text{LARG} & \boxed{6} \end{bmatrix}, \begin{bmatrix} \textit{qeq} & \\ \text{HARG} & \boxed{8} \\ \text{LARG} & \boxed{9} \end{bmatrix} \right\rangle \end{bmatrix}$$

A thorough introduction to the MRS cannot be provided here. Nonetheless, I will briefly describe what is shown in the MRS structure. The attribute LTOP takes as a value something that we might call the semantic top node. Under RELS we find a set of *elementary predications*. This is a collection of the relations that are part of an utterance. It corresponds largely to the PARTS-list in LRS. All the relations have various argument slots, i.e. features that take *handles* as values, where they can be connected to other relations. Some handles are designated to take up other handles; others are designated to be hooked up to such handles. Under the attribute HCONS we find a collection of constraints on handles. In this case they simply say that handle $\boxed{1}$ corresponds to handle $\boxed{7}$, $\boxed{4}$ to $\boxed{6}$, and $\boxed{8}$ to $\boxed{9}$. Hence, we know that the *unicorn*-relation is in the restrictor of the quantifier *a*. This quantifier is furthermore subject to variable binding conditions and the requirement that it must end up with a handle as its body. This underspecification accounts for the two possible readings of the sentence in (361). If the value of the body is $\boxed{7}$, the quantifier outscopes the *seem*-relation. This is the de re reading. If the value of the body is $\boxed{9}$ the quantifier appears within the *seem*-relation. This is the de dicto reading.

Now, we will take a look at a sentence with an opaque verb that does not make use of a raising verb. This is shown in (362), which is an MRS representation of the sentence *Mike seeks a unicorn*.

(362)

$$\begin{bmatrix} \textit{mrs} & \\ \text{HOOK}|\text{LTOP} & \boxed{1}\textit{handle} \\ \text{RELS} & \left\langle \begin{bmatrix} \textit{\_a\_q\_rel} & \\ \text{LBL} & \boxed{2} \\ \text{ARG0} & \boxed{3} \\ \text{RESTR} & \boxed{4}\textit{handle} \\ \text{BODY} & \textit{handle} \end{bmatrix}, \begin{bmatrix} \textit{\_seek\_rel} & \\ \text{LBL} & \boxed{7} \\ \text{ARG1} & \boxed{5} \\ \text{ARG2} & \boxed{8} \end{bmatrix}, \begin{bmatrix} \textit{\_named\_rel} & \\ \text{LBL} & \boxed{9} \\ \text{CARG} & \textit{Mike} \\ \text{ARG0} & \boxed{5} \end{bmatrix}, \begin{bmatrix} \textit{\_q\_rel} & \\ \text{LBL} & \boxed{10} \\ \text{ARG0} & \boxed{5} \\ \text{RESTR} & \boxed{11}\textit{handle} \\ \text{BODY} & \boxed{12}\textit{handle} \end{bmatrix}, \begin{bmatrix} \textit{\_unicorn\_rel} & \\ \text{LBL} & \boxed{6} \\ \text{ARG0} & \boxed{3} \end{bmatrix} \right\rangle \\ \text{HCONS} & \left\langle \begin{bmatrix} \textit{qeq} & \\ \text{HARG} & \boxed{4} \\ \text{LARG} & \boxed{6} \end{bmatrix}, \begin{bmatrix} \textit{qeq} & \\ \text{HARG} & \boxed{11} \\ \text{LARG} & \boxed{9} \end{bmatrix}, \begin{bmatrix} \textit{qeq} & \\ \text{HARG} & \boxed{1} \\ \text{LARG} & \boxed{7} \end{bmatrix}, \begin{bmatrix} \textit{qeq} & \\ \text{HARG} & \boxed{12} \\ \text{LARG} & \boxed{7} \end{bmatrix} \right\rangle \end{bmatrix}$$

In (362) we see the following: First of all, note that there is a quantifier in the RELS-list, which is not visible in the string of the sentence. This quantifier gets introduced by a unary phrase structure rule. This is the way proper nouns are treated in Flickinger et al. (2003), where all noun-relations are assumed to be dominated by a quantifier.

The problem with this structure is that a de dicto reading cannot be built because it would conflict with a constraint on MRS structures. By definition all MRS structures must be scopally resolvable. More specifically, this means they have to be extensible into scopally resolved MRS's by adding qeq-relations and identifying handles and labels of qeq-objects. The definition is given in (363).[101]

(363) A scope-resolved MRS structure is an MRS structure that satisfies both the following conditions:

1. The MRS structure forms a tree of EP conjunctions, where dominance is determined by the outscopes ordering on EP conjunctions (i.e., a connected graph, with a single root that dominates every other node, and no nodes having more than one parent).

2. The top handle and all handle arguments are identified with an EP label.

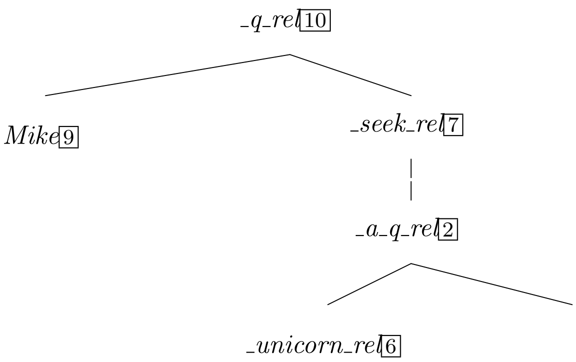
Obviously, the structure in (362) violates the second condition. Visualized as a tree structure, this is shown below.

(364)
- *_q_rel* $\boxed{10}$
  - *Mike* $\boxed{9}$
  - *_a_q_rel* $\boxed{2}$
    - *_unicorn_rel* $\boxed{6}$
    - *_seek_rel* $\boxed{7}$

(365)
- *_a_q_rel* $\boxed{2}$
  - *_unicorn_rel* $\boxed{6}$
  - *_q_rel* $\boxed{10}$
    - *Mike* $\boxed{9}$
    - *_seek_rel* $\boxed{7}$

[101] See Flickinger et al. (2003, p. 13).

(366)



In (364) the quantifier that is introduced by the proper noun *Mike* takes scope over the a-relation, which takes scope over the seek-relation. This is a de re reading. (365) gives another de re reading, in which the a-relation takes the widest scope. In (366) we see what a de dicto reading should look like. However, such a tree violates the second condition of (363). As is indicated by the empty branch under the a-relation, this quantifier lacks a body over which it could take scope. There is simply no EP-label left that could fill this position. Therefore, the structure is not scope-resolved.

4.4.4 Conclusion

In this section it was shown that opacity effects cannot be analyzed within the fragment of Ginzburg and Sag (2000). Unfortunately, their system lacks a way of dealing with this kind of opacity in general. Therefore, it cannot account for it in pseudoclefts, either. Furthermore, it was shown that an MRS-based fragment would not do any better since in its current state MRS cannot deal with opacity, either. The system that can account for opacity is LRS. While that is an obvious advantage of LRS, it is not quite clear whether reconstruction could be implemented in LRS as 'easily' as in the system of Ginzburg and Sag (2000). As soon as we have found a way to deal with opacity in the system of Ginzburg and Sag (2000) and Pollard and Yoo (1996), the analysis of opacity will also carry over to the present analysis of pseudoclefts automatically. This is due to the fact that the basic concept behind the present approach is reconstruction. This means that as soon as we have found a way to deal with the scope of opaque verbs, the present analysis will reconstruct the post-copular constituent in that scope.

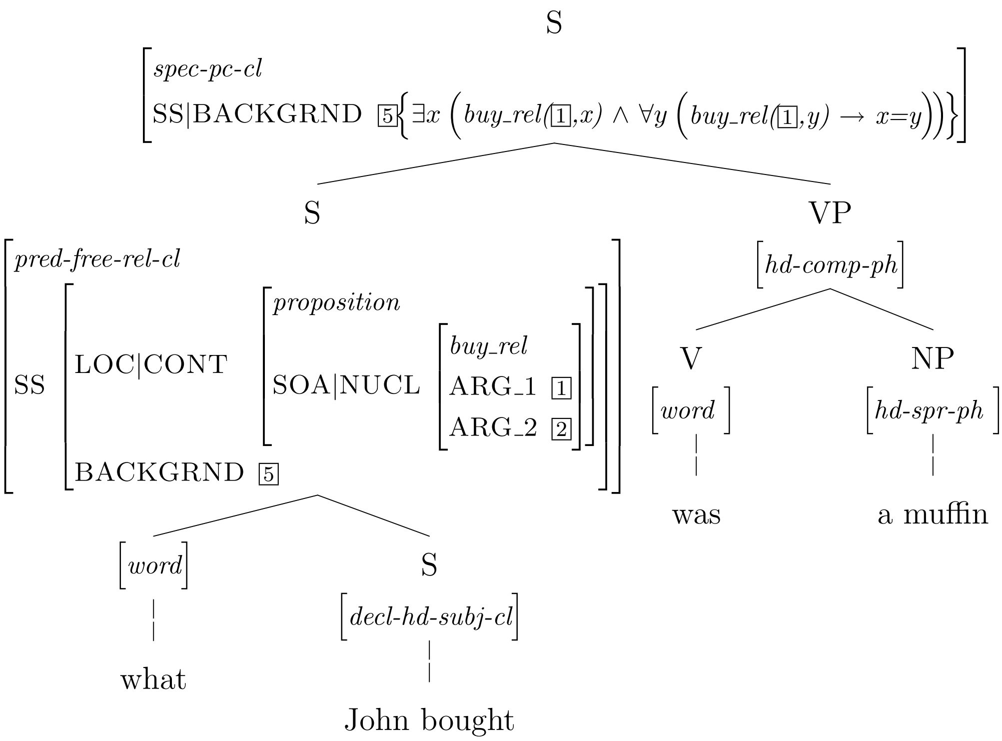
4.5 Adding information structure, presuppositions, and implicatures

In this section the insights from Chapter 3.4 are added to the analysis that was presented in the previous sections. The first subsection picks up observations from Section 3.2.1. This means implicatures and presuppositons will be added to the pseudocleft analysis. The second subsection will implement the restriction from Section 3.4, which said that the subject in a specificational sentence must always be the theme/topic.

4.5.1 Presuppositions and exhaustivity

Following Halvorsen (1978) and others, I will assume that specificational pseudoclefts show two properties: an existential presupposition and an exhaustiveness implicature. According to Delin (1995), Oberlander and Delin (1995), and Oberlander and Delin (1996), the presupposition is syntactically encoded. This means it is introduced by the cleft clause. Consider the tree below.

(367)



In (367) we find the presupposition and the implicature in the BACKGRND-set. The cleft clause introduces the presupposition of existence, which is passed on to the top node. It also introduces a uniqueness implicature to the BACKRGND-set. Note that here we are confronted with a shortcoming of the present system. The BACKGRND-set is supposed to include implicatures and presuppositions, but we cannot express the difference between the two. This means whatever is in this set could be either one or the other. Technically, the members of this set are only constrained to be of type *fact*, so the difference between implicature and presuppositions is not really captured. A future improvement, which cannot be provided here, could be to use two different types of semantic objects here or use another feature and store one of the two there. For the time being, we have to keep in mind that the BACKRGND-set includes two different things.
Here we turn to the technical implementation. The presupposition of existence is added by the following constraint.

(368)
$$\begin{bmatrix} \textit{pred-free-rel-cl} \\ \text{SS|LOC} \begin{bmatrix} \text{CAT} \begin{bmatrix} \text{SUBJ} \left\langle \begin{bmatrix} \text{INDEX } \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT|SOA|NUCL } \boxed{\varphi} \end{bmatrix} \end{bmatrix} \Rightarrow \begin{bmatrix} \text{SS|BACKGRND } \left\{ \exists x\ \boxed{\varphi}^{\boxed{1}/x}, \ldots \right\} \end{bmatrix}$$

This constraint says that the *pred-free-rel-cl* must show a presupposition of existence for the post-copular constituent of the matrix clause. This is expressed via a presupposition of existence for the item on the SUBJ-list because it is here on the SUBJ-list that we have access to the post-copular constituent of the (later) matrix clause. Technically, this constraint takes the semantic relation from the nucleus of the *pred-free-rel-cl* and replaces all occurrences of the index of the post-copular constituent (i.e. the item of the SUBJ-list) by a variable. Put differently: the constraint in (368) requires that the semantic relation from the nucleus is in the BACKGRND-set; here in the object of type *fact* in the BACKGRND-set the variable in the semantic relation is bound existentially.
If we apply this analysis to an example sentence like *What Mike bought was this muffin*, we will get the following: Let us assume the index of the post-copular expression is $\boxed{1}$ and that of *Mike* is $\boxed{2}$. The nucleus of the cleft clause is a buy-relation. Then the constraint in (368) introduces the presupposition of existence as given in (369) to the BACKGRD-set of the cleft clause.

$$(369)\quad \begin{bmatrix} \textit{fact} \\ \text{PROP|SOA} & \begin{bmatrix} \text{QUANTS} & \left\langle \begin{bmatrix} \textit{exist-rel} \\ \text{INDEX} & \boxed{1} \\ \text{RESTR} & \left\{ \boxed{3}\textit{buy\_rel}(\boxed{2},\boxed{1}) \right\} \end{bmatrix} \right\rangle \\ \text{NUCL} & \boxed{3}\begin{bmatrix} \textit{buy\_rel} \\ \text{ARG\_1} & \boxed{2} \\ \text{ARG\_2} & \boxed{1} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Another constraint adds the uniqueness implicature to the BACKGRND-set. Adding the uniqueness implicature causes exhaustiveness. The constraint that adds uniqueness is given below.

$$(370)\quad \begin{bmatrix} \textit{pred-free-rel-cl} \\ \text{SS|LOC} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{SUBJ} & \left\langle \begin{bmatrix} \text{INDEX} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT|SOA|NUCL} & \boxed{\varphi} \end{bmatrix} \end{bmatrix} \Rightarrow \begin{bmatrix} \text{BACKGRND} & \left\{ \exists x \left(\boxed{\varphi}^{\boxed{1}/x} \wedge \forall y \left(\boxed{\varphi}^{\boxed{1}/y} \rightarrow x = y \right) \right), \ldots \right\} \end{bmatrix}$$

With the constraints in (370) and (368) we can account for exhaustivity in pseudoclefts and also in reverse pseudoclefts. As was shown in Section 3.5 and also noted by other authors like e.g. Pavey (2004)[102], reverse pseudoclefts show exhaustivity, too. Accordingly, the exhaustiveness implicature should be related to the cleft clause rather than to the matrix clause. If we now use a *pred-free-rel-cl* as the post-copular constituent in a reverse pseudocleft, the matrix clause will also show an exhaustiveness implicature, just like the (non-reverse) pseudocleft.

When it comes to the presupposition of existence, we have to consider another aspect. If we follow authors like Jäger (1999) or Fery et al. (2007), we should relate the triggering of these presuppositions to the topicality of the cleft clause.[103] This means instead of a presupposition-introducing constraint on the construction type *pred-free-rel-cl* we should use a more general constraint on topical expressions. For predicative expressions we can use the constraint that is outlined in (371).

$$(371)\quad \boxed{2}\begin{bmatrix} \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{SUBJ} & \left\langle \begin{bmatrix} \text{INDEX} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT|SOA|NUCL} & \boxed{\varphi} \end{bmatrix} \\ \text{CONTEXT|INFO-STRUC|GROUND|LINK} & \boxed{2} \end{bmatrix} \end{bmatrix} \Rightarrow \begin{bmatrix} \text{SS|BACKGRND} & \left\{ \exists x\ \boxed{\varphi}^{\boxed{1}/x}, \ldots \right\} \end{bmatrix}$$

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[102] See table 2.1 in Pavey (2004, p. 50).

[103] See Jäger's analysis of stage level and individual level readings (Jäger (1999, p. 20ff)) or the notes on topics in Fery et al. (2007, p. 7): "[the notion of topic] has no truth-conditional effect except that it presupposes the existence of that individual. In this sense, the complement of 'topic' is 'comment', which can itself be partitioned into a focused and a backgrounded part."

This constraint introduces a presupposition of existence just like the constraint in (368). However, this time it applies to all topical expressions, whereas the one in (368) applied to expressions of type *pred-free-rel-cl* only. A constraint for non-predicative expressions like non-predicative NPs would have to look a bit different. To take the predicativity and non-predicativity into account is necessary because the semantic relations appear under a different path in the two kinds of expression. In predicative expressions they appear in a soa, and in non-predicative expressions they appear in the RESTR-set. The constraint below accounts for non-predicative topics.

(372) $$\boxed{2}\left[\text{SS}\ \begin{bmatrix}\text{LOC|CONT}\ \begin{bmatrix}\text{INDEX}\ \boxed{1}\\ \text{RESTR}\ \boxed{A}\end{bmatrix}\\ \text{CONTEXT|INFO-STRUC|GROUND|LINK}\ \boxed{2}\end{bmatrix}\right] \Rightarrow \left[\text{SS|BACKGRND}\ \left\{\exists x \forall \boxed{\varphi} \in \boxed{A}\ \boxed{\varphi}^{\boxed{1}/x}, \ldots\right\}\right]$$

This constraint introduces presuppositions for expressions that have as their meaning a restricted index. Since there can be several restrictions in the RESTR-set, this constraint introduces a presupposition of existence for all members of $\boxed{A}$ and binds all occurrences of the expression's index existentially. So what we end up with is the constraint in (370), (371), and (372), with which we can account for presuppositions of existence and exhaustivity in specificational pseudoclefts and reverse pseudoclefts.

4.5.2 Thematic subjects

Dealing with the restricted information structure in specificational pseudoclefts as presented in Chapter 3.4 is a straightforward matter. Using Engdahl and Vallduvi's (1996) system we can say that the *spec-pc-cl* constrains its subject to have an instantiated GROUND-value. This means the link must be located somewhere within the subject constituent. As mentioned before, there might be more advanced systems than Engdahl and Vallduvi's (1996) that can explain how the focus-ground distinction comes about or how the focus projection takes place. However, in the end all that is needed for the present purpose is the marking of the subject as ground, i.e. theme/topic. We are not even interested in the inner theme/rheme or focus/ground distinction within a cleft clause that is available in a four-way partition as in Steedman (2000). Even if we had a complex constituent in post-copular position that included another link, this would not matter. All we need is a subject constituent that is more thematic than the post-copular constituent, i.e. all we need is a diacritic. This was shown in Section 3.4. We can use the following constraint to mark the subject of a specificational clause as theme.

(373) $\left[\textit{spec-cl}\right] \rightarrow \boxed{1}\left[\text{CONTEXT|INFO-STRUC|GROUND|LINK } \boxed{1}\right], \mathbf{H}$

By constraining the subject to have an instantiated LINK-value, this constraint ensures that the subject in a *spec-cl* is always the theme. According to the hierarchy of constructions types in (349), this goes for specificational pseudoclefts as well as for regular specificational clauses, i.e. those with a definite description as subject.

Another question that must be addressed is when connectivity breaks down. Under what circumstances are we not allowed to reconstruct constituents into the functor argument, i.e. the predicate? We saw that anti-reconstruction effects occurred in reverse pseudoclefts. Some reverse pseudoclefts allow for reconstruction of the non-functor argument in the cleft clause and some do not. In Chapter 3.4 it was also shown that reverse pseudoclefts allow for two different information structures. Those reverse pseudoclefts that show the same information structure as specificational pseudoclefts are the ones in which we can reconstruct. In order to take this into account, we must also constrain the construction type *pred-free-rel-cl* to have an instantiated LINK-value. This is expressed in the following constraint.

(374) $\textit{pred-free-rel-cl} \Rightarrow \boxed{1}\left[\text{CONTEXT|INFO-STRUC|GROUND|LINK } \boxed{1}\right]$

If we use this constraint, the *pred-free-rel-cl* in a predicative reverse pseudocleft will always be the theme – no matter whether they appear in pseudoclefts or reverse pseudoclefts. In both cases we can use reconstruction. The reverse pseudoclefts in which we cannot reconstruct are equative clauses. Therefore, we need a constraint on equatives that ensures that they have an information structure which is different from that of reverse pseudoclefts with reconstruction. Such a requirement is not specific to equative reverse pseudoclefts, which can be seen in the following example.

(375) A: Tell me something about Bruce Wayne!
B_1: Bruce Wayne is Batman.
B_2: #Batman is Bruce Wayne.

This example shows that in a standard (i.e. non-pseudocleft) equative clause the theme must always come first (under the assumption that aboutness here clearly marks the theme). To achieve such an information structure the lexical entry of the *be* of identity must constrain its second argument to have an instantiated focus value. This is sketched in the representation below.

(376) $$\left\langle \textit{be}, \begin{bmatrix} \text{LOC|CONT|NUCL} & \begin{bmatrix} \textit{identiy-rel} \\ \text{ARG1 } \boxed{2} \\ \text{ARG2 } \boxed{3} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \begin{bmatrix}\text{CONT } \boxed{2}\end{bmatrix}, \boxed{1}\begin{bmatrix}\text{LOC|CONT } \boxed{3} \\ \text{CONTEXT|INFO-STRUC|FOCUS } \boxed{1}\end{bmatrix}\right\rangle \end{bmatrix}\right\rangle$$

With this *be* of identity it is now impossible to use a clause of type *pred-free-rel-cl* as the second argument in an equative reverse pseudocleft. The INFO-STRUC-value of the *pred-free-rel-cl* is incompatible with this *be* of identity. However, we can still use a *pred-free-rel-cl* as the first argument. This is the case in wh-amalgam clefts as was shown in Section 4.3.3. In that section it was left open why a sentence like (377a) is less acceptable than its reverse version (377b) (or even ungrammatical).

(377) a. ?/*Mike bought a donkey is what Mike bought.
b. What Mike bought is Mike bought a donkey.

Now we see that the difference in acceptability follows from the constraint in (376). A sentence like (377a) is an equation of two propositions. One is expressed in a regular declarative clause and the other one in a *pred-free-rel-cl*. As we have seen above, the latter is constrained to have an instantiated LINK-value. The problem with such a sentence is then that the *be* of identity as shown in (376), requires its second argument to have an instantiated FOCUS-value. Therefore, it is impossible for a *pred-free-rel-cl* to be the second argument of the *be* of identity, i.e. it is impossible for the *pred-free-rel-cl* to appear as the post-copular constituent in the wh-amalgam cleft.

In summary, we can say that we need only one constraint to ensure that the subject of specificational clauses is the theme, while the explanation for anti-reconstruction effects came in two steps. First, the *pred-free-rel-cl* had to be constrained to always be the topic. Second, the *be* of identity was restricted in such a way that the *pred-free-rel-cl* cannot appear as its second argument anymore.

Chapter 5

In Pro- and Retrospect

In this thesis I have examined the pseudocleft and related constructions in close detail. In Chapter 2 I provided theoretical foundations for the later analysis. These were an ontology of *be*-sentences and an introduction to the framework of HPSG and to the HPSG-fragment that was used. In Chapter 3 the key issues of the analysis of pseudoclefts were examined. These are the question of how pseudoclefts could be defined, the possible forms of the constituents, and the classification of pseudoclefts as copular clauses. Furthermore, the phenomenon of connectivity effects and the information structure were investigated. Apart from this, we looked at reverse pseudoclefts and related them to pseudoclefts. In the fourth chapter, these key issues were implemented into an HPSG analysis. Starting with a glimpse at a previous approach, a new way to analyze pseudoclefts was developed. The new analysis does not treat the cleft clause as a question, but as a predicative free relative clause. The existence of such a construction type is not unique to the present work. However, what is unique is the derivation of the construction as a cleft clause from the semantic analysis of copular clauses as in Mikkelsen (2004b). Another piece of the analysis that springs off from such an analysis of copular clauses is the set-up of the copula itself. It was shown that the only thing the copula contributes to the meaning of a copula clause is a tense-restriction. Its meaning and quantifiers come from its functor argument, which may appear in any position on the argument structure. Furthermore, it was shown how connectivity effects can be accounted for via reconstruction. The post-copular constituent of specificational pseudoclefts is reconstructed into the predicate in subject position. This is achieved by letting the *what* in the cleft clause share its meaning with the argument that the predicate is 'looking for'. This way the *what* appears to be a (wh-)moved variant of the semantically polymorphic *that*. This is similar to Jacobson (1994). What she achieves in the semantic approach by letting a lambda-operator take scope over two argument positions is achieved by structure sharing in the HPSG analysis. That is why we might call this new approach 'semantic reconstruction', which indicates that it uses ideas of the syntactic reconstruction approach to connectivity and ideas of the semantic approach as well. The peculiar behavior of specificational pseudoclefts with respect to post-copular negation and related effects could be explained by a pseudocleft-specific construction type for the matrix clause. A constraint on this construction requires that the matrix clause and the predicate in subject position (semi-)share a mutual soa. This soa-sharing triggers the desired effect. Then it was shown how reverse pseudoclefts, predicative pseudoclefts, and equative pseudoclefts can be analyzed. For the cleft clause of equative pseudoclefts, another construction type was introduced. In equative pseudoclefts the cleft clause is not a predicative free relative clause, but an NP-like free relative clause, i.e. it must be referential, i.e. the HPSG pendant to type $\langle e \rangle$. It was shown that using a new construction type for the free relative clause can avoid the introduction of an idiosyncratic feature. Another subsection took a look at wh-amalgam clefts. It became apparent that Yoo's (2003) insights and aspects of my theory could be combined in the analysis of this construction. This means wh-amalgam clefts were analyzed as an equation of two propositions. The cleft clause is a predicative free relative and the *be* is the *be* of identity as in Yoo (2003). Eventually, specificational sentences with definite description subjects – another pseudocleft-related construction – were implemented. Here it became evident that we need a rule that 'produces' predicative NPs. The rule that was introduced is in principle 'syntactic *quining*'. It is based on an identity-relation and a head-only-phrase. An advantage of this rule is that it can turn entire NPs into predicates and not just the head noun of an NP. In addition, it was argued in this subsection that quantifiers should be allowed to scope out of relative clauses to account for the bound variable readings that we find in specificational clauses with definite description subjects. In another section it was shown that opacity effects cannot be implemented into the fragment yet. While this is a clear shortcoming of the system of Ginzburg and Sag (2000), it was also shown that alternative systems are not unproblematic either. The final section of the implementation chapter added information structural aspects to the analysis. An existential presupposition was attached to the cleft clause and a constraint was formulated that adds an appropriate uniqueness presupposition to the *pred-free-rel-cl* too. To account for the fixed theme-rheme structure in specificational clauses, I formulated a constraint on the construction type *spec-clause* which ensures that the subject has an instantiated LINK-value. Anti-reconstruction effects in reverse pseudoclefts were accounted for by a constraint that requires the *pred-free-rel-clause* to have an instantiated LINK-value and a constraint on the *be* of identity which requires the second argument to be the rheme. This way predicative free relative clauses cannot appear in post-*be* position in equative reverse pseudoclefts.

To make the results more graphic, the most important new types and constraints are summarized again below. The development of the theory started with the copula. The lexical entry of the copula itself is rather uninformative. The crucial properties come from the GPAP, which was formulated on the new type *copula-lexeme*.

(378) Generalized Predicative Argument Principle (GPAP)

$$\textit{copula-lx} \Rightarrow \begin{bmatrix} \text{SS|LOC} & \begin{bmatrix} \text{CONT} & \textit{soa\_of}(\boxed{1}) \end{bmatrix} \\ \text{ARG-ST} & \left\langle \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{PRED} & + \end{bmatrix} \\ \text{SUBJ} & \left\langle \begin{bmatrix} \text{LOC} & \boxed{4} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT} & \boxed{1} \end{bmatrix}, \begin{bmatrix} \text{LOC} & \boxed{4} \\ \text{SLASH} & \{\} \end{bmatrix} \right\rangle \\ & \vee \left\langle \begin{bmatrix} \text{LOC} & \boxed{4} \\ \text{SLASH} & \{\} \end{bmatrix}, \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{PRED} & + \end{bmatrix} \\ \text{SUBJ} & \left\langle \begin{bmatrix} \text{LOC} & \boxed{4} \end{bmatrix} \right\rangle \end{bmatrix} \\ \text{CONT} & \boxed{1} \end{bmatrix} \right\rangle \end{bmatrix}$$

The GPAP requires the copula to have a functor argument and another argument that shares a LOC-value with the argument which the functor argument needs. The order of these arguments is left open. Furthermore, the GPAP ensures that the copula shares a meaning (which here means soa) with its functor argument.

Next, the cleft clause was set up as a predicative relative clause. This new clause type required a new pronoun *what*.

(379)
$$\begin{bmatrix} \textit{word} & \\ \text{PHON} & \left\langle \textit{what} \right\rangle \\ \text{SS} & \begin{bmatrix} \text{LOC} & \begin{bmatrix}\text{CAT|HEAD} & n \\ \text{CONT} & \boxed{1}\end{bmatrix} \\ \text{WH} & \{\} \\ \text{REL} & \left\{\boxed{1}\right\} \\ \text{PC} & + \end{bmatrix}\end{bmatrix}$$

As mentioned before, this *what* can be considered a variant of the semantically polymorphic *that*. By the interaction of this *what* and the construction type *pred-free-rel-clause*, it is ensured that the meaning and the quantifiers of the post-copular constituent are reconstructed with the cleft clause. The specification as [HEAD n] also guarantees that several relations between the post-copular constituent and the gap in the cleft clause, which lead to ungrammatical results, are ruled out. The cleft clause construction type *pred-free-rel-clause* is subject to the following constraint.

(380) *pred-free-rel-cl: (final version)*
$$\begin{bmatrix} \text{SS|LOC|CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{VFORM} & \textit{fin} \\ \text{IC} & - \end{bmatrix} \\ \text{SUBJ} & \left\langle \begin{bmatrix} \text{LOC} & \begin{bmatrix} \text{CONT} & \boxed{1} \\ \text{STORE} & \boxed{2} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \textit{word} & \\ \text{LOC} & \begin{bmatrix} \text{CONT} & \boxed{1} \\ \text{STORE} & \boxed{2} \end{bmatrix} \\ \text{PC} & + \end{bmatrix}, \ \mathbf{H} \begin{bmatrix} \text{SS|LOC|CONT} & \textit{proposition} \end{bmatrix}$$

This construction is a subtype of *decl-cl* and *hd-fill-ph*. The main purpose of this construction is the reconstruction of the post-copular constituent in the cleft clause as mentioned above. We find a 'trace' of the post-copular constituent on the SUBJ-list of this construction. The specification of the non-head daughter as [PC +] ensures that only *what* (possibly *who*) can appear in cleft clauses of specificational pseudoclefts. Requiring the head daughter to express a proposition avoids spurious ambiguity with subject gaps in the cleft clause.

Finally, a construction for the matrix clause was introduced. After it had been developed, it became apparent that instead of one matrix clause construction type we need two: one for specificational pseudoclefts and one for specificational non-pseudocleft clauses. Both of them are subtypes of a mutual supertype, from which they inherit the properties that are specific to specificational clauses, as is shown in (381). The *spec-cl* itself is a subtype of *decl-cl*.

(381)

$$\begin{array}{c} \textit{spec-cl} \\ \diagup \quad \diagdown \\ \textit{spec-pc-cl} \qquad \textit{spec-npc-cl} \end{array}$$

(382) *spec-cl:*

$$\left[\text{SS|LOC}\left[\begin{array}{ll}\text{CAT|HEAD} & \left[\begin{array}{ll}\text{IC} & +\\ \text{AGR} & \textit{3rd\_sg}\end{array}\right]\\ \text{CONT|SOA|NUCL} & \boxed{3}\end{array}\right]\right] \rightarrow \left[\text{SS|LOC}\left[\begin{array}{ll}\text{CAT|SUBJ} & \left\langle\left[\text{LOC|STORE }\boxed{B}\right]\right\rangle\\ \text{CONT|SOA} & \left[\begin{array}{ll}\text{QUANTS} & \textit{list} \oplus \textit{order}(\boxed{B})\\ \text{NUCL} & \boxed{3}\end{array}\right]\end{array}\right]\right], \mathbf{H}$$

(383) *spec-pc-cl:*

$$\left[\text{SS}\left[\begin{array}{ll}\text{LOC|CONT} & \left[\begin{array}{ll}\text{SIT} & \boxed{4}\\ \text{SOA} & \left[\text{QUANTS }\boxed{A}\right]\end{array}\right]\\ \text{BACKGROUND} & \left\{\left(\boxed{4} = \textit{now} \vee \left(\boxed{4} \prec \textit{now} \wedge \boxed{3} \leq \boxed{4}\right)\right)\right\}\end{array}\right]\right] \rightarrow \left[\text{SS|LOC|CONT}\left[\begin{array}{ll}\text{SIT} & \boxed{3}\\ \text{SOA|QUANTS} & \boxed{C}\end{array}\right]\right], \mathbf{H}$$

and $\boxed{A} \ominus \boxed{C} = \left\{\textit{tense\_rel}\right\}$

According to the constraint in (382), quantifiers from the post-copular constituent cannot take wide scope in specificational clauses. Furthermore, the constraint ensures that specificational clauses are copular constructions. This is done by specifying the semantic nuclei of the non-head daughter and the mother to be the same. Such a constellation is only possible if the head daughter, from which the mother inherits its meaning, is based on the copula. The constraint in (383) accounts for the peculiarities that we find in specificational pseudoclefts, which were presented in Chapter 3. This is for instance the impossibility of having a post-copular modifier. Additionally, it accounts for the restricted tense patterns between the cleft clause and the matrix clause.

For specificational non-pseudocleft clauses, we also needed a rule that 'produces' predicative NPs. I decided on a rule that is based on an identity-relation and corresponds to a type shift like Partee's *IDENT* type-shifting rule. However, the predicate that it 'produces' is not only semantically a predicate but also syntactically.

(384)
$$\left[\text{SS|LOC}\ \left[\begin{array}{ll}\text{CAT} & \left[\begin{array}{l}\text{HEAD|PRED} +\\ \text{SUBJ}\left\langle\left[\begin{array}{ll}\text{CONT|INDEX} & \boxed{2}\\ \text{STORE} & \boxed{A}\end{array}\right]\right\rangle\end{array}\right]\\ \text{CONT} & \left[\begin{array}{ll}\multicolumn{2}{l}{\textit{soa}}\\ \text{QUANTS} & \boxed{D}\\ \text{NUCL} & \left[\begin{array}{l}\textit{identity\_relation}\\ \text{ARG\_1}\ \boxed{1}\\ \text{ARG\_2}\ \boxed{2}\end{array}\right]\end{array}\right]\\ \text{STORE} & \boxed{C}\end{array}\right]\right] \longrightarrow \left[\begin{array}{ll}\boxed{4} & \\ \text{SS|LOC} & \left[\begin{array}{ll}\text{CAT} & \left[\begin{array}{ll}\text{HEAD} & \left[\begin{array}{l}\textit{noun}\\ \text{PRED} -\end{array}\right]\\ \text{SPR} & \langle\rangle\\ \text{COMPS} & \langle\rangle\end{array}\right]\\ \text{CONT} & \left[\begin{array}{l}\textit{parameter}\\ \text{INDEX}\ \boxed{1}\\ \text{RESTR}\ \boxed{F}\end{array}\right]\\ \text{STORE} & \boxed{B}\end{array}\right]\end{array}\right]$$

$$\textbf{and } \forall x \left(\textsc{member}(x,\boxed{D}) \leftrightarrow x \in \boxed{E}\right)$$

$$\textbf{and } \left(\left[\begin{array}{l}\textit{weak\_quant\_rel}\\ \text{INDEX}\ \boxed{1}\end{array}\right] \in \boxed{B} \wedge \left(\boxed{A} \cup \boxed{B} = \boxed{C} \cup \boxed{E}\right)\right) \vee \left(\left(\boxed{C} \cup \boxed{E}\right)\backslash\left(\boxed{A} \cup \boxed{B}\right) = \left\{\left[\begin{array}{l}\textit{exist\_rel}\\ \text{INDEX}\ \boxed{1}\\ \text{RESTR}\ \boxed{F}\end{array}\right]\right\}\right)$$

$$\textbf{and } \boxed{4} \neq \textit{free-rel-phrase}$$

This rule allows nouns and entire nominal phrases to turn into predicates. The main characteristic of these nominal predicates is a CONT-value of type *soa*. This is a property that such NPs share with APs and predicative PPs, i.e. with other non-verbal predicates that we find in post-copular position. By constraining the quantifiers of the predicative noun, this rule also ensures that certain quantified expressions like strongly quantificational NPs cannot be used predicatively.
As a by-product of the analysis of connectivity effects, I introduced the rule in (385), which adds a 'trace' (a *gap-ss* element) to the argument structure of words if there is a slashed clause on that argument structure.

(385)
$$\left[\begin{array}{l}\textit{word}\\ \text{ARG-ST}\left\langle \ldots, \boxed{3}\left[\begin{array}{l}\textit{clause}\\ \text{SLASH}\ \left\{\boxed{1}\right\}\end{array}\right]\right\rangle\end{array}\right] \Longrightarrow_{LR} \left[\text{ARG-ST}\left\langle \ldots,\boxed{3}, \left[\begin{array}{ll}\text{LOC} & \boxed{1}\\ \text{SLASH} & \left\{\boxed{1}\right\}\end{array}\right]\right\rangle\right]$$

Using this rule, we can explain the data repeated in (386), which were problematic for the standard binding theory.

(386) a. What Mike thinks Sue likes is himself/herself.
b. *Mike thinks that Sue likes himself.
c. Himself/Herself Mike thinks Sue likes.

For sentences like (386c), it has never been quite clear how *himself* could be licensed. Under standard assumptions there was only a *gap-ss* element on the argument structure of *likes*, and this 'trace' had to be bound by *Sue*, which should actually render an ungrammatical result. Now, however, there is also a 'trace' of *himself* on the argument structure of *thinks*, and it is here that the index is bound.[1]

An issue that has not been dealt with as far as the implementation goes is the difference between stage level and individual level readings. Consider the examples repeated below.

(387) a. A fireman is available.
b. There is a fireman available.
c. A fireman has the intrinsic property of being available.

(388) What a fireman is is available.

The canonical sentence (387a) is ambiguous between the stage-level interpretation in (387b) and the individual-level interpretation in (387c). The (specificational) pseudocleft in (388) on the other hand only has the individual-level interpretation. An analysis in full detail cannot be offered here since the issue of stage level and individual level readings is too complex. However, a solution might present itself in Jäger (1999). Jäger comes up with a generalization, which says that stage level readings, i.e. existential readings, occur when a non-overt argument (like an event variable or an implicit argument) is the theme. Since in specificational pseudoclefts the theme is always the cleft clause, it would follow from Jäger's generalization that they can never show these existential readings.

At this point we may ask how the current study can contribute to the study of cleft constructions in general. As was shown at the very beginning of this work, the analysis of pseudoclefts was once closely related to the analysis of *it*-clefts. Having developed a new theory now offers the opportunity to look for a relation between the two constructions again. Here the following idea presents itself. At an early stage, the analysis developed here used the assumption that *what* and the post-copula constituent shared their entire local values in a pseudocleft. This assumption had to be corrected because the range of possible post-copular constituents is limited. The cleft clause *what* was restricted to be a noun that only shares its meaning with the post-copular constituent. Considering the possible shapes of the clefted constituent

[1] Another addition to the binding theory is that an index need only be bound on one argument structure.

in *it*-clefts, we see that the assumption of a complete LOC-value sharing might come in handy for analyzing *it*-clefts. An analysis of *it*-clefts – which cannot be elaborated on here – should be based on this mechanism if it is to account for the data given below.

(389) a. It is Mike's car that/∅ Sue took.
b. It is to Sue that/∅ Mike gave his car.
c. It was Julia Roberts that/∅ he sent the flowers to.
d. It was yesterday that/∅ Mike borrowed Sue his car.
e. It was green that/∅ he painted the house.
f. It was a liar that she called Kissinger.[2]

The data show that the clefted constituents in *it*-clefts are not restricted category-wise. The cleft clause has the form of a restricted relative clause. However, this restricted relative clause cannot really be considered a modifier here. This is most apparent in (389d), where it would have to modify an adverb. This is a thing relative clauses cannot do. What one would want to say instead is that the clefted constituent should be reconstructed within the cleft clause. This reconstruction could be achieved via a mechanism that ensures LOC-value sharing. Thus, we see that what was once assumed to be related by derivation is not all that different. Specificational pseudoclefts and *it*-clefts can both be analyzed via a reconstruction mechanism. However, in specificational pseudoclefts this mechanism is a bit more restricted than in *it*-clefts, because only the semantics is reconstructed.

There is another construction for which the analysis proposed here might offer new insights. It was recently analyzed in Ballmaier (2006) and was already noticed by Higgins (1973). Webelhuth (2007) calls it *NP-separation* as mentioned in Chapter 3.4. It is shown in the examples below.[3]

(390) a. The plan is to go to the cinema.

[2] From Delahunty (1984, p. 75). The judgments differ about such sentences. Hedberg (1990, p. 71) considers sentences like *It is a fool that John considers Mary* ungrammatical. Declerck (1988) gives a detailed analysis of the restrictions on predicate nominals as clefted constituents.

[3] From Ballmaier (2006).

b. The claim was that the poles will melt.

c. Australia's main problem is who to leave out.

Higgins considers such sentences specificational (in his sense). Ballmaier argues that they are also specificational in the sense of Mikkelsen (2004b). This means the subject is a semantic predicate and the post-copular constituent is the predicate's argument. However, the semantic relation between predicate and argument is different from that of the specificational sentences that were looked at in this work. The post-copular constituent seems to be something like a complement to the subject. This becomes apparent in the examples below, which make use of the NPs from (390) in a different environment.

(391) a. They liked the plan to go to the cinema.

b. The claim that the poles will melt was ignored.

c. They discussed Australia's main problem of who to leave out.

Even though the relation between predicate and argument might differ from the one that was considered in this work, the major parts of the current analysis carry over to the NP-separation construction: The copula and the *spec-npc-clause* can be used straightforwardly. What is left open is the question of how the subject NP comes about. Ballmaier outlines two approaches. One could either use a question-in-disguise approach in line with Yoo (2003) or a lexical rule. If one opts for the latter, the lexical rule that 'produces' predicative NPs, which was proposed in Section 4.3.4, can be used. Though admittedly it does not explain the whole story. It does not account for the different relation between predicate and argument. The argument would simply be treated like any subject of any other predicative NP. However, this relation is not entirely clear at the moment and should be subject to future research anyway, as Ballmaier notes.

In conclusion of this work, we can ask what new insights the theory presented here has to offer compared to previous theories. In this respect, I would like to quote Carl Popper.

(392) "[Man kann] die Überlegenheit einer Theorie gegenüber einer anderen hauptsächlich nach folgenden Gesichtspunkten beurteilen: ob sie mehr erklärt; ob sie gründlicher überprüft ist, das heißt, ob man über sie ernsthafter und

> kritischer diskutiert hat im Lichte von all dem, was wir wissen, von allen möglichen Einwänden, und insbesondere auch von allen Beobachtungen und experimentellen Untersuchungen, die wir entwerfen konnten mit dem Plan, die Theorie zu kritisieren und sie, wenn möglich, zu widerlegen.
> Unsere Versuche, Wissen über die Welt zu erlangen, enthalten nur ein einziges rationales Element: die kritische Prüfung unserer Theorien."[4]

With the present work, I hope to do justice to these desiderata. Now it is up to future works and authors to take my theory and critically examine it as I did with the others'.

[4] Popper (1997, p. 9f). My translation:

(i) "The superiority of a theory compared to another is to be judged mainly by the following criteria: whether it is more explanatory; whether it has been considered more thoroughly, i.e. whether it has been discussed more seriously and critically in light of everything that we know about all possible objections and especially about all observations and empirical investigations which we could develop with the plan to criticize and possibly disprove the theory.
There is only one rational element in our attempts to acquire knowledge about the world: the critical examination of our theories. "

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