

Danish in Head-Driven Phrase Structure Grammar

Draft

comments welcome!

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For Friederike

Preface

The aim of this book is twofold: First we want to provide a precise description of a large fragment of the Danish language that is useful for readers regardless of the linguistic framework they work in. This fragment comprises not only core phenomena such as constituent order and passivizing, but to a large extent also a number of less-studied phenomena which we believe to be of interest, not only for the description of Danish (and other mainland Scandinavian languages), but also for comparative work in general. It has been an important goal for us to base our analyses on comprehensive, empirically sound descriptions of the studied phenomena. For that reason we mainly use real data extracted from a corpus or from web-pages. The second aim of the book is to provide a fully formalized linguistic theory of the described fragment that is provably internally consistent and furthermore compatible with psycholinguistic theories and with insights about human language from language acquisition research. The linguistic theory will be worked out in the framework of Head-Driven Phrase Structure Grammar (Pollard and Sag, 1987, 1994), but readers who do not care about formal linguistics or this particular branch of formal linguistics do not have to worry: the book is organized in a way that makes it possible to read the descriptive parts of the respective chapters without reading the analysis parts. However, we think that dealing with the analyses will result in a better understanding of the language facts, so it may be worthwhile to read the analysis sections even for those who are new to HPSG.

In what follows we describe the project and the guiding linguistic assumptions in more detail and then make some brief remarks about Danish and the data we have used.

Danish

Danish is a North-Germanic language and belongs to the continental Scandinavian languages. Its closest siblings are Norwegian (Bokmål) and Swedish. It is the official language of Denmark and also of the Faroe Islands (besides Faroese). It used to be an official language in Iceland, Greenland and the Virgin Islands. In Greenland Danish is still widely used in the administration. Danish is spoken by approximately 5 million people in Denmark, but it is also spoken by members of the Danish minority in the region of Southern Schleswig and by groups in Greenland, Norway and Sweden. Of course, there are also Danish-speaking immigrant groups all over the world.

Danish is an SVO-language like English, but it differs from English in being a V2-language just like German – with a different linearization of the finite verb in root clauses and non-root clauses. It has little inflection. Finite verbs inflect for tense and passive and nouns inflect for genitive/non-genitive and for definiteness (only personal pronouns have an accusative form). Adjectives inflect for number and gender and also for definiteness in attributive use. The constituent order is fairly rigid: the complements within the VP obey a strict ordering IO > DO > OTHER COMPLEMENTS, while the subject precedes the VP. Adjuncts can either immediately precede or follow the VP. Danish only allows few clause-internal permutations: non-focal unstressed pronominal non-subjects are linearized between the subject and the VP (and not in complement position within the VP), and inherently negated NPs are linearized in the position of sentential negation. However, extractions into the prefield also from embedded clauses are very common.

The present book has grown out of a common interest of the authors in German and in the typological differences between the Germanic languages. Point of departure for the project was a big implemented grammar of German and the wish to see in what way this grammar had to be amended to accommodate an SVO language such as Danish. The reader will therefore find many references to and comparisons with German in the book even though only few of the analyses are actually contrastive due to lack of space. In this sense the present analyses invite further comparative work.

In the book we cover the following phenomena:

- Danish constituent order in the topological model
- Danish constituent order in HPSG
- Object-shift and negation-shift
- Extraposition of clauses
- Passivization
- Raising passives
- Subject extraction and case marking
- Subject extraction and positional expletives

- *do*-support
- Preposed negation

Despite the diversity of these topics, they are all related to a few core phenomena of Danish that we believe can be traced back to Danish being an SVO language: the presence of a VP, the primacy of the subject in the Danish clause and permutations of constituents given the basic NP-VP structure of the clause.

In the chapters on Topology and Constituent order we illustrate the NP-VP structure of Danish while providing an account of the core constituent order. The chapter on Danish in the topological model provides the basics by giving an account of Danish constituent order in a revised version of the topological model and comparing it with German. At the same time all the phenomena discussed in the book are introduced and related to the topological model. The chapter on constituent order gives an elaborated account of the constituent order within the chosen linguistic framework, HPSG. All other phenomena discussed in the book can be seen as elaborations on the chapters on constituent order and many of the phenomena are topics that appear to have been less studied or have almost gone unnoticed in the literature, such as raising passives, (non-finite) *do*-support, and preposed negation.

As noted above, we want to illustrate three properties of Danish that seem to be related to its status as an SVO language: (i) the subject has a prominent status; (ii) The order of the complements is fixed within the VP and (iii) Danish has a VP. We want to illustrate these properties as follows: In Danish the subject is a prominent grammatical function. We examine raising passives in Danish and show how raising in passives can be seen as a way of providing a subject for the matrix verb. In a similar vein we examine embedded *wh*-clauses and show that the use of positional expletives in such clauses allows the subject position to be filled and the clause to be marked as a non-V2-clause.

Danish has a relatively fixed word order but there are ways to deviate from the canonical order. We discuss several deviations from the canonical order: Extraction of subjects and the particular case marking of extracted subjects, Object-Shift, Negation-Shift, Negation preposing and extraposition of clauses.

Danish clauses have a VP and we show how finite *do*-support serves to project a VP in the absence of a finite verb. In a similar vein we examine non-finite *do*-support and we show how non-finite *do*-support serves to project a VP and to ensure a canonical mapping between internal complements and valency requirements.

The Data

The data that we use to explain details of Danish grammar are primarily taken from the KorpusDK, an annotated corpus of 56 million words documenting contemporary Danish (Asmussen, 2001; Andersen, Asmussen and Asmussen, 2000). The corpus is provided by Det Danske Sprog- og Litteraturselskab in Copenhagen and it is accessible over the internet under the URL <http://ordnet.dk/korpusdk>. Sometimes additional examples from the World Wide Web are used. Our experience is that intuitions of linguists (including our own intuitions) are not very reliable. Several cases have been documented where the majority of linguists believed that certain structures

are impossible. And indeed if one thinks about possible examples one tends to agree. But if data from newspapers or other sources is examined more carefully examples are found that contradict current wisdom. Of course it could be the case that the grammar of a journalist differs from the grammar of the linguists that made the claims, but our experience is that linguists accept the data as falsifying their claims as soon as they see them in their naturally occurring form. The reason is that many phenomena interact with information structural constraints and sometimes it is difficult to imagine the contexts that would be appropriate for a certain constituent order. Cases of such a type have been studied in Müller 2007d and in Meurers and Müller 2009. The case studies include Subjacency (extraposition from NP across several maximal projections), fronting of particles in particle verb constructions, and multiple frontings. All these phenomena played a major role in theory formation (Subjacency and island conditions) and/or foundational definitions (the notion of particle verb and *Satzglied*), nevertheless they relied on introspection-based judgements of researchers. Another case in point in Danish is the possibility of fronting a non-finite verb while the object is left in the “shifted” position preceding sentential adjuncts. Such examples have been discussed in the literature and their grammaticality has often been questioned. Given the right information structural environments such examples are possible and can be found in naturally occurring text as shown in Chapter 5. Therefore, we try to avoid mistakes by looking at corpora. Of course we also start with intuitive judgements, without intuition one would not know what to look for. Also when we talk about ungrammatical examples the statement is foremost based on the absence of respective examples in corpora and on Bjarne Ørsnes’s judgments. However, in most cases also other informants were consulted, but not in any systematic way given the vast number of covered phenomena and analyses. The absence of examples alone does not prove anything (although it is an indication), so judgements by native speakers or other experiments are needed.

We took the liberty to use parts of sentences to enhance readability. When discussing word sequences that are impossible we mark them with ‘*’. Very marked sentences that we do not want to count as well-formed are marked by ‘?*’. ‘??’ is used to indicate that a sentence is marked but possible. Sometimes the examples are long and difficult to read for non-native speakers. In such cases we used square brackets to highlight the important parts of the examples. In some chapters the main focus is on linearization variants of a sentence. If sentences do not differ in translation we do not provide full translations for all variants but translate the first occurrence only and provide glosses for the other ones.

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1. A Brief Introduction to Head-Driven Phrase Structure Grammar

Head-Driven Phrase Structure Grammar (HPSG) was developed by Ivan Sag and Carl Pollard in the mid 80s. The main publications are Pollard and Sag 1987, 1994. International conferences have been held since 1994 and there is a rich collection of publications regarding analyses of linguistic phenomena (in the area of phonology, morphology, syntax, semantics, and information structure), formal foundations of the framework, and computational issues like efficient parsing and generation. See <http://hpsg.fu-berlin.de/HPSG-Bib/> for bibliographic data.

Since HPSG analyses are usually sufficiently formalized they can and have been implemented as computer processable grammars. This makes it possible to check the interactions of analyses with other phenomena and to use the linguistic knowledge in practical applications. See Bender et al. In Preparation for further details.

1.1. Formal Foundations

HPSG assumes feature structures as models of linguistic objects. Feature structures consist of feature value pairs. The values can be atomic or feature structures. Every feature structure is of a certain type. Types are ordered in hierarchies with the most general type at the top of the hierarchy and the most specific types at the bottom. Figure 1.1 shows an example hierarchy for the type *case* and its subtypes. Types in a model of a linguistic object are maximally specific,

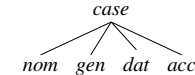


Figure 1.1.: Subtypes of *case* in a grammar of German

that is, a noun or an attributive adjective in a model of an actual utterance has a case value that is *nom*, *gen*, *dat*, or *acc*. The linguist develops theories that describe possible feature structures. In contrast to feature structures, feature descriptions can be partial. For instance it is not necessary to specify a case value for the German word *Frau* ('woman') since *Frau* can be used in NPs of all four cases. (1) shows a simplified description of the nominal agreement information for the German noun *Frau* ('woman') (see Kathol 1999 for details and Wechsler and Zlatić 2003 for a comprehensive overview of agreement in HPSG). *Frau* has feminine gender, is compatible with all four cases, and is singular. The AVM has the type *nom-agr*. Types are written in italics. *nom-agr* is a complex type which introduces the features GEN, CASE, and NUM. *fem*, *case*, *sg* are also types, but they are atomic. *fem* and *sg* are maximally specific, since they do not have subtypes, but *case* does have subtypes.

$$(1) \begin{bmatrix} \text{GEN} & fem \\ \text{CASE} & case \\ \text{NUM} & sg \\ nom-agr & \end{bmatrix}$$

One very important part of the formalism is structure sharing. It is used to express that information in feature structures is identical. Structure sharing is indicated by boxed numbers in feature descriptions. An identical number at several places in an AVM expresses the fact that the respective values are identical.

To give an example of structure sharing, the agreement information of a noun in German has to be compatible with the agreement information of the adjective and the determiner. This compatibility is established by identifying a part of the structure that represents a noun with parts of the structure for the adjective and the determiner in an NP. In an analysis of (2), the definite article has to be compatible with the description in (1).

- (2) die Frau
the woman

die is ambiguous between feminine singular nominative/accusative and plural nominative/accusative.

$$(3) \begin{bmatrix} \text{GEN} & fem \\ \text{CASE} & nom \vee acc \\ \text{NUM} & sg \\ nom-agr & \end{bmatrix} \vee \begin{bmatrix} \text{CASE} & nom \vee acc \\ \text{NUM} & pl \\ nom-agr & \end{bmatrix}$$

Since *Frau* is singular, only feminine singular nominative/accusative is compatible with this noun. The result of identifying the feature bundles of *die* and *Frau* therefore is (4):

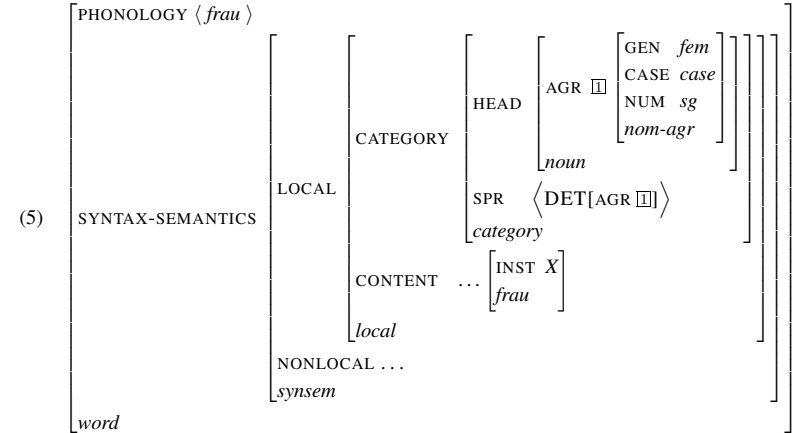
$$(4) \begin{bmatrix} \text{GEN} & fem \\ \text{CASE} & nom \vee acc \\ \text{NUM} & sg \\ nom-agr & \end{bmatrix}$$

While structure sharing is the most important expressive means in HPSG there is one extension of the basic formalism that plays a crucial role in most HPSG analyses: relational constraints. Relational constraints are used to relate several values in a feature structure to each other. The relational constraint that is used most often in HPSG is *append* ($'\oplus'$). *append* is used to concatenate two lists. Schema 1, which will be discussed in Section 1.2.2, is an example for an application of such a constraint.

This brief sketch basically described all the formal tools that are used in HPSG. Of course a lot more could be and has been said about the properties of the formalisms, but this introductory section is not the place to discuss these issues in detail. However, it cannot be emphasized enough that it is important that the formal details are worked out and the interested reader is referred to the work of Shieber (1986), Pollard and Sag (1987, Chapter 2), Johnson (1988), Carpenter (1992), King (1994, 1999), Pollard (1999) and Richter (2004). The work of King,

Pollard, and Richter reflects current assumptions, that is, the model theoretic view on grammar that is assumed nowadays.

Before I start to discuss several phenomena and their analyses in HPSG in the following sections I want to give an overview of the general feature geometry as it was developed in Pollard and Sag 1994. (5) shows parts of the lexical item for *Frau* ('woman').



The first feature value pair describes the phonological form of the word. The value of PHON is a list of phonemes. For reasons of readability usually the orthographic form is given in HPSG papers and phonological structure is omitted, but see Bird and Klein 1994 and Höhle 1999 for analyses. The second feature is SYNTAX-SEMANTICS (SYNSEM) and its value is a description of all properties of a linguistic object that are syntactically and semantically relevant and can be selected by other heads. Information that is locally relevant (LOCAL) is distinguished from information that plays a role in non-local dependencies (NONLOCAL, see Section 11). Syntactic information is represented under CATEGORY (CAT) and semantic information under CONTENT (CONT). The example shows the HEAD value, which provides information about all aspects that are relevant for the external distribution of a maximal projection of a lexical head. In particular the part of speech information (*noun*) is represented under HEAD. The value of AGREEMENT (AGR) is the one given in (1). As well as information regarding the head features, valence information also belongs under CAT. The example shows the SPR feature, which is used for the selection of a specifier (see the next section for details on valence). The $\boxed{1}$ is an example of structure sharing. It ensures that the specifier that is realized together with the noun has compatible agreement features.

1.2. Valence and Constituent Order

1.2.1. Valence

Descriptions of lexical elements contain a list with descriptions of the syntactic and semantic properties of their arguments. This list is called Argument Structure (ARG-ST). (6) gives some prototypical examples for ARG-ST values.

(6) Verb	ARG-ST	SPR	COMPS
<i>sleeps</i>	$\langle \text{NP}[\text{nom}] \rangle$	$\langle \text{NP}[\text{nom}] \rangle$	$\langle \rangle$
<i>likes</i>	$\langle \text{NP}[\text{nom}], \text{NP}[\text{acc}] \rangle$	$\langle \text{NP}[\text{nom}] \rangle$	$\langle \text{NP}[\text{acc}] \rangle$
<i>talks</i>	$\langle \text{NP}[\text{nom}], \text{PP}[\text{about}] \rangle$	$\langle \text{NP}[\text{nom}] \rangle$	$\langle \text{PP}[\text{about}] \rangle$
<i>gives</i>	$\langle \text{NP}[\text{nom}], \text{NP}[\text{acc}], \text{NP}[\text{acc}] \rangle$	$\langle \text{NP}[\text{nom}] \rangle$	$\langle \text{NP}[\text{acc}], \text{NP}[\text{acc}] \rangle$

In (6) items like $\text{NP}[\text{nom}]$ are abbreviations that stand for feature descriptions. The elements in the ARG-ST list are ordered according to the obliqueness hierarchy suggested by Keenan and Comrie (1977) and Pullum (1977).

SUBJECT => DIRECT => INDIRECT => OBLIQUES => GENITIVES => OBJECTS OF
OBJECT OBJECT COMPARISON

In grammars of configurational languages like English, the ARG-ST list is mapped onto two valence features: SPR and COMPS. Examples for the respective values are also given in (6). We assume that Danish is a configurational language as well and hence the arguments will be mapped to SPR and COMPS as in the examples given above. The evidence for such a treatment is discussed in Chapter 4 and a more detailed analysis is provided.

The HPSG representation of valence is reminiscent of Categorical Grammar (Ajdukiewicz, 1935; Steedman, 2000) where each head comes with a description of its arguments. Figure 1.2 shows the saturation of the specifier valence: A head that requires a specifier can be combined with a subject that matches the description in the SPR list. The $\sqsubseteq$ indicates that the properties of the subject NP and its description in the SPR list are identified. Therefore accusative NPs like *him* are excluded as a subject of *sleeps*. The elements in valence lists are canceled off once

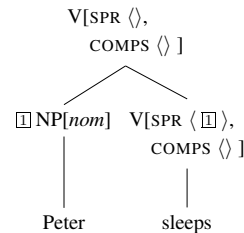


Figure 1.2.: Analysis for *Peter sleeps*

the combination with an appropriate item has taken place, that is the SPR list of *Peter sleeps* is empty since the SPR element of *sleeps* is realized as a sister of *sleeps*. Figure 1.3 shows a more complex example with a transitive verb. *likes* and *Sandy* form a VP (a verbal projection with

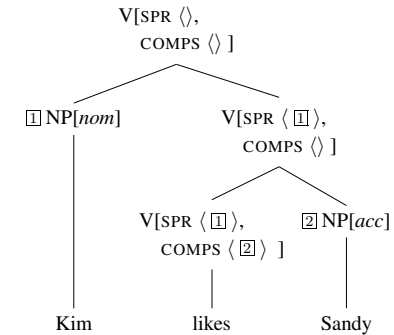


Figure 1.3.: Analysis for *Kim likes Sandy*.

an empty COMPS list) and this VP is combined with its subject to form a fully saturated verbal projection, that is, a clause.

1.2.2. Constituent Structure

As was explained in Section 1.1, HPSG exclusively uses feature structures with structure sharing and relational constraints for modeling linguistic objects. As a consequence of this the theory does not use phrase structure rules. Instead the dominance relation between linguistic objects is modeled with feature structures. Trees are used for visualization purposes only. The attribute value matrix that represents the dominance relations in the tree in Figure 1.4 is shown in (7).

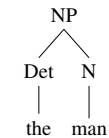


Figure 1.4.: *the man*

$$(7) \begin{bmatrix} \text{PHON} & \langle \text{the man} \rangle \\ \text{HEAD-DTR} & \begin{bmatrix} \text{PHON} \langle \text{man} \rangle \end{bmatrix} \\ \text{NON-HEAD-DTRS} & \langle \begin{bmatrix} \text{PHON} \langle \text{the} \rangle \end{bmatrix} \rangle \end{bmatrix}$$

For explanatory purposes (7) shows the phonological information only. Part of speech information and valence information that is contained in the tree in Figure 1.4 is omitted. The value of PHON gives a list of phonological contributions of the daughter signs. The feature HEAD-DTR is appropriate for headed structures. Its value is the sign that contains the head of a complex expression (the verb in a VP, the VP in a clause). The value of NON-HEAD-DTRS is a list of all other daughters of a sign.

The following implication shows the constraints that hold for structures of type *head-complement-phrase*:

Schema 1 (Head-Complement-Schema (fixed order))

head-complement-phrase $\Rightarrow$

$$\left[\begin{array}{l} \text{SYNSEM|LOC|CAT|COMPS } \boxed{1} \\ \text{HEAD-DTR|SYNSEM|LOC|CAT|COMPS } \langle \boxed{2} \rangle \oplus \boxed{1} \\ \text{NON-HEAD-DTRS } \left\langle \left[\text{SYNSEM } \boxed{2} \right] \right\rangle \end{array} \right]$$

This constraint splits the COMPS list of the head daughter into two parts: a list that contains exactly one element ($\langle \boxed{2} \rangle$) and a remaining list ($\boxed{1}$). The first element of the COMPS list is identified with the SYNSEM value of the non-head daughter. It is therefore ensured that the description of the properties of the complement of a transitive verb like *likes* in Figure 1.3 is identified with the feature value bundle that corresponds to the properties of the object that is combined with the head (*Sandy* in the case of Figure 1.3). Since Schema 1 licenses structures with exactly one head daughter and exactly one non-head daughter, structures will be binary. This is not the only option for defining head complement structures. The constraints can be specified in a way that allows for the realization of any number of complements in one go. See for instance Pollard and Sag 1994 for an analysis of English with a flat VP and Bouma and van Noord (1998) for an absolutely flat analysis of Dutch, including a flat verbal complex.

The Schema 1 licences the VP in Figure 1.3. The combination of the VP and its specifier is licenced by the Head-Specifier-Schema:¹

Schema 2 (Specifier-Head-Schema)

head-specifier-phrase $\Rightarrow$

$$\left[\begin{array}{l} \text{SYNSEM|LOC|CAT|SPR } \boxed{1} \\ \text{HEAD-DTR|SYNSEM|LOC|CAT|SPR } \boxed{1} \oplus \langle \boxed{2} \rangle \\ \text{NON-HEAD-DTRS } \left\langle \left[\text{SYNSEM } \boxed{2} \right] \right\rangle \end{array} \right]$$

This schema also licences the combination of nominal projections with a determiner.

¹Note that the non-head daughter is taken from the end of the SPR list, while the non-head daughter in head-complement phrases is taken from the beginning. For heads that have exactly one specifier this difference is irrelevant, but in the analysis of object shift and negation shift that will be provided in Chapter 5, we will have multiple specifiers and the difference in order of combination will be relevant.

1.2.3. Constituent Order

In the simple NP example above the order of the elements is fixed: the head follows the non-head. However this is not always the case. For instance there are mixed languages like Persian that allow some heads to the left of their arguments and some heads to the right (Prepositional phrases are head initial and verb phrases are head final in Persian). For such reasons HPSG assumes a separation between immediate dominance (ID) constraints and linear precedence (LP) constraints as was common in GPSG (Gazdar et al., 1985). For instance, Schema 1 does not impose any order on the head and the non-head. This is taken care of by a set of separate constraints.

Heads that precede their complements can be marked as INITIAL+ and those which follow their complements as INITIAL-. The following LP constraints ensure the right ordering of heads with respect to their complements:

- (8) a. HEAD [INITIAL+] < COMPLEMENT
- b. COMPLEMENT < HEAD [INITIAL-]

1.2.4. Free Constituent Order Languages

Schema 1 allows for the combination of a head with its complements in a fixed order (similar to what is known from Categorical Grammar). Taken together with the linearization constraint in (8a), this results in a fixed constituent order in which the verb preceeds its complements and the complements are serialized according to their obliqueness. However there are languages with much freer constituent order than English. If one does not want to assume a base order from which other orders are derived by movement or equivalents to movement one has to find ways to relax the constraint on head complement structures. One way of doing this is to allow the non-head daughter to be an arbitrary element from the COMPS list of the head daughter. The respective modification of the schema is given as Schema 3:

Schema 3 (Head-Complement-Schema (free constituent order))

head-complement-phrase $\Rightarrow$

$$\left[\begin{array}{l} \text{SYNSEM|LOC|CAT|COMPS } \boxed{1} \oplus \boxed{3} \\ \text{HEAD-DTR|SYNSEM|LOC|CAT|COMPS } \boxed{1} \oplus \langle \boxed{2} \rangle \oplus \boxed{3} \\ \text{NON-HEAD-DTRS } \left\langle \left[\text{SYNSEM } \boxed{2} \right] \right\rangle \end{array} \right]$$

The COMPS list of the head daughter is split into three parts: a list of arbitrary length ($\boxed{1}$), a list containing one element ($\langle \boxed{2} \rangle$) and another list of arbitrary length ($\boxed{3}$). $\boxed{1}$ and $\boxed{3}$ can be the empty list or contain one or more arguments.

For non-configurational languages it is assumed that the subject of finite verbs is treated like the other arguments, that is, it is mapped to COMPS instead of being mapped to SPR as in English. Having explained the difference in the HPSG analysis of configurational and non-configurational languages we can now give an example of an analysis of a language with rather free constituent order: Figures 1.5 and 1.6 show the analysis of the German sentences in (9):

- (9) a. [weil] jeder das Buch kennt
 because everybody the book knows
 ‘because everybody knows the book’
 b. [weil] das Buch jeder kennt
 because the book everybody knows

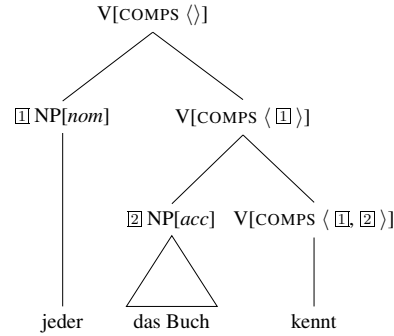


Figure 1.5.: Analysis of *jeder das Buch kennt* (everybody the book knows)

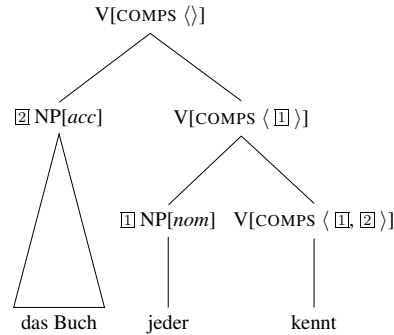


Figure 1.6.: Analysis of *das Buch jeder kennt* (the book everybody knows)

In Figure 1.5 the object is combined with the verb first and the subject is represented in the COMPS list of the mother and in Figure 1.6 the subject is combined with the verb first and the object is represented in the COMPS list of the mother. As far as constituent ordering is concerned, this analysis is equivalent to proposals that assume a set for the representation of valence

information. Any element from the set can be combined with its head. Such analyses were suggested very early in the history of HPSG by Gunji (1986) for Japanese. See also Hinrichs and Nakazawa (1989), Pollard (1996a), and Engelkamp, Erbach and Uszkoreit (1992) for set-based approaches to constituent order in German. A crucial difference between a set-based analysis and the list-based analysis advocated here is that the elements of the lists are ordered in order of obliqueness. This order is used in various subparts of the theory for instance for assignment of structural case and for expressing constraints on pronoun binding. So the obliqueness ordering has to be represented elsewhere in set-based approaches.

For authors who assume binary branching structures the difference between languages with fixed constituent order and languages with free constituent order lies in the value of [1] and [2] in Schema 3. If either [1] or [2] is the empty list one gets a fixed constituent order, with head complement combination either in order of obliqueness or in the reverse order of obliqueness.

To sum up, there are three approaches to free constituent order: Flat structures, linearization domains with discontinuous constituents, and the non-cancellation of syntactic and semantic properties of arguments.

1.2.5. Heads and Projection of Head Features

Section 1.1 introduced head features and Figure 1.3 shows that the information about part of speech of the head is present at every projection, but until now nothing has been said about head feature propagation. The identity of the head features of a head and of a mother node is taken care of by the following principle:

Principle 1 (Head Feature Principle) *In a headed phrase, the HEAD value of the mother and the HEAD value of the head daughter are identical.*

This can be formalized by the following implicational constraint:

$$(10) \text{ headed-phrase} \Rightarrow \left[\begin{array}{l} \text{SYNSEM} | \text{LOCAL} | \text{CAT} | \text{HEAD } [1] \\ \text{HEAD-DTR} | \text{SYNSEM} | \text{LOCAL} | \text{CAT} | \text{HEAD } [1] \end{array} \right]$$

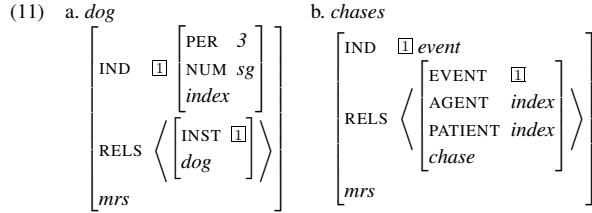
The head daughter is the daughter that contains the syntactic head, that is, in the phrase *likes Sandy* in Figure 1.3 it is the lexical item *likes* and in the phrase *Kim likes Sandy* it is the constituent *likes Sandy*. The constraint is a constraint on structures of type *headed-phrase*. Types like *head-complement-phrase* and *head-specifier-phrase* are subtypes of *headed-phrase* and hence the constraint in (10) applies to them too.

1.3. Semantics

The first publications on HPSG assumed Situation Semantics (Barwise and Perry, 1983) as the underlying semantic framework (Pollard and Sag, 1987, 1994). While there are also more recent publications in this tradition (Ginzburg and Sag, 2000), many current analyses use semantic formalisms that allow for the underspecification of scope constraints such as for instance Minimal Recursion Semantics (MRS, Copestake, Flickinger, Pollard and Sag 2005b) and Lexical Resource Semantics (LRS, Richter and Sailer 2004).

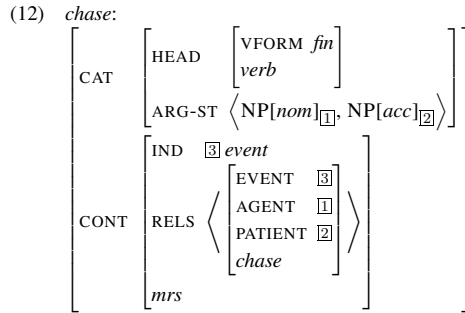
1.3.1. Minimal Recursion Semantics

(11) shows the examples for the semantic contribution of a noun and a verb in Minimal Recursion Semantics (MRS):



An MRS consists of an index, a list of relations, and a set of handle constraints, which will be introduced below. The index can be a referential index of a noun (11a) or an event variable (11b). In the examples above the lexical items contribute the *dog'* relation and the *chase'* relation. The relations can be modeled with feature structures by turning the semantic roles into features. The semantic index of nouns is basically a variable, but it comes with an annotation of person, number, and gender since this information is important for establishing correct pronoun bindings.

The arguments of each semantic relation (e.g. agent, patient) are linked to their syntactic realization (e.g. NP[nom], NP[acc]) in the lexicon. (12) shows an example. NP[nom]₁ stands for a description of an NP with the semantic index identified with 1. The semantic indices of the arguments are structure shared with the arguments of the semantic relation *chase'*.



Generalizations over linking patterns can be captured elegantly in inheritance hierarchies (see Section 1.5 on inheritance hierarchies and Davis 1996; Wechsler 1991; Davis and Koenig 2000 for further details on linking in HPSG).

Before turning to the compositional analysis of (13a), I want to introduce some additional machinery that is needed for the underspecified representation of the two readings in (13b,c).

- (13) a. Every dog chased some cat.

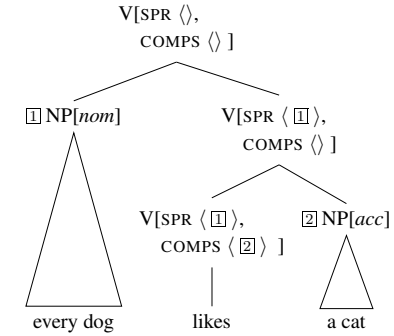


Figure 1.7.: Analysis for *Every dog chases a cat.*

- b. $\forall x(dog(x) \rightarrow \exists y(cat(y) \wedge chase(x, y)))$
c. $\exists y(cat(y) \wedge \forall x(dog(x) \rightarrow chase(x, y)))$

Minimal Recursion Semantics assumes that every elementary predication comes with a label. Quantifiers are represented as three place relations that relate a variable and two so-called handles. The handles point to the restriction and the body of the quantifier, that is, to two labels of other relations. (14) shows a (simplified) MRS representation for (13a).

- (14) $\langle h0, \{ h1: every(x, h2, h3), h2: dog(x), h4: chase(e, x, y), h5: some(y, h6, h7), h6: cat(y) \} \rangle$

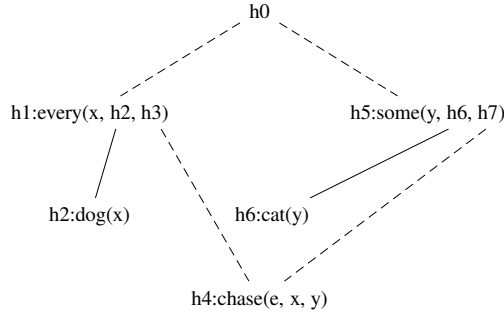
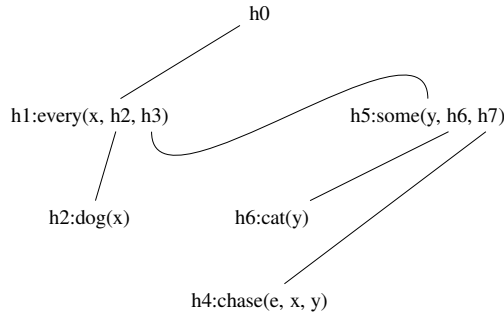
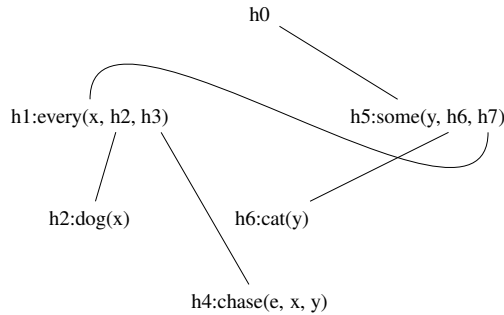
The tree-place representation is a syntactic convention. Formulae like those in (13) are equivalent to the results of the scope resolution process that is described below.

The MRS in (14) can best be depicted as in Figure 1.8. h0 stands for the top element. This is a handle that dominates all other handles in a dominance graph. The restriction of *every* points to *dog* and the restriction of *some* points to *cat*. The interesting thing is that the body of *every* and *some* is not fixed in (14). This is indicated by the dashed lines in Figure 1.8 in contrast to the straight lines connecting the restrictions of the quantifiers with elementary predications for *dog* and *cat*, respectively. There are two ways to plug an elementary predication into the open slots of the quantifiers:

- (15) a. Solution one: h0 = h1 and h3 = h5 and h7 = h4.
(every dog has wide scope)
b. Solution two: h0 = h5 and h7 = h1 and h3 = h4.
(some cat has wide scope)

The solutions are depicted as Figure 1.9 and Figure 1.10.

There are scope interactions that are more complicated than those we have been looking at so far. In order to be able to underspecify the two readings of (16) both slots of a quantifier have to stay open.

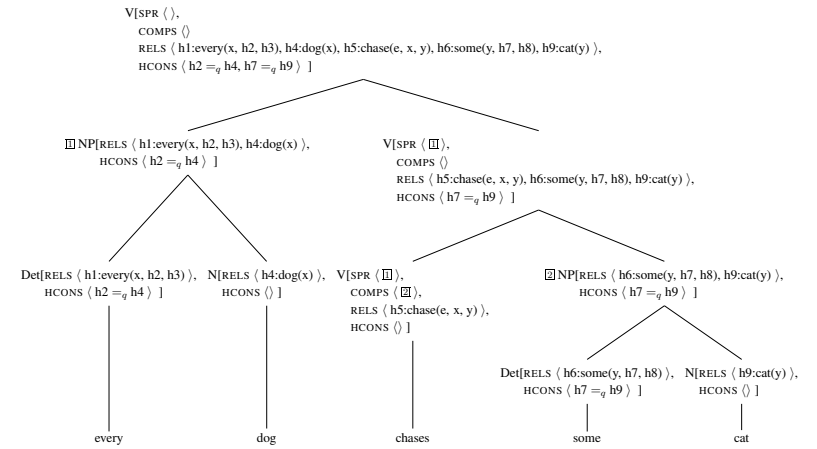
Figure 1.8.: Dominance graph for *Every dog chases some cat.*Figure 1.9.: $\text{every}(x, \text{dog}(x), \text{some}(y, \text{cat}(y), \text{chase}(x, y)))$ Figure 1.10.: $\text{some}(y, \text{cat}(y), \text{every}(x, \text{dog}(x), \text{chase}(x, y)))$

- (16) a. Every nephew of some famous politician runs.
 b. $\text{every}(x, \text{some}(y, \text{famous}(y) \wedge \text{politician}(y), \text{nephew}(x, y)), \text{run}(x))$
 c. $\text{some}(y, \text{famous}(y) \wedge \text{politician}(y), \text{every}(x, \text{nephew}(x, y), \text{run}(x)))$

In the analysis of example (13a), the handle of dog' was identified with the restriction of the quantifier. This would not work for (16a) since either some' or nephew' can be the restriction of every' . Instead of direct specification so-called handle constraints are used (req oder $=_q$). A req constraint relates an argument handle and a label: $h =_q l$ means that the handle is filled by the label directly or one or more quantifiers are inserted between h and l . Taking this into account, we can now return to our original example. The correct MRS representation of (13a) is given in (17).

- (17) $\langle h0, \{ h1: \text{every}(x, h2, h3), h4: \text{dog}(x), h5: \text{chase}(e, x, y), h6: \text{some}(y, h7, h8), h9: \text{cat}(y) \}, \{ h2 =_q h4, h7 =_q h9 \} \rangle$

The handle constraints are associated with the lexical entries for the respective quantifiers. Figure 1.11 shows the analysis. For compositional cases as in Figure 1.11, the RELS value of a sign

Figure 1.11.: Analysis for *Every dog chases a cat.*

is simply the concatenation of the RELS values of the daughters. Similarly the HCONS value is a concatenation of the HCONS values of the daughters.

1.3.2. The Analysis of Non-Compositional Constructions

Copestake, Flickinger, Pollard and Sag 2005b extended the basic analysis that concatenates RELS and HCONS to cases in which the meaning of an expression is more than the meaning

that is contributed by the daughters in a certain structure. They use the feature C-CONT for the representation of constructional content. While usually the semantic functor (the head in head argument combinations and the adjunct in head adjunct structures) determines the main semantic contribution of a phrase, the C-CONT feature can be used to specify a new main semantic contribution. In addition relations and scope constraints may be introduced via C-CONT. The feature geometry for C-CONT is given in (18):

$$(18) \left[\begin{array}{l} \text{HOOK} \left[\begin{array}{l} \text{INDEX } \textit{event-or-index} \\ \text{LTOP } \textit{handle} \end{array} \right] \\ \text{RELS } \textit{list of relations} \\ \text{HCONS } \textit{list of handle constraints} \\ \text{c-cont} \end{array} \right]$$

The HOOK provides the local top for the complete structure and a semantic index, that is a nominal index or an event variable. In compositional structures the HOOK value is structure shared with the semantic contribution of the semantic functor and the RELS list and the HCONS list is the empty list. As an example for a non-compositional combination Copestake et al. 2005b discuss determinerless plural NPs in English. For the analysis of *tired squirrels* they assume an analysis using a unary branching schema. Their analysis corresponds to the one given in (19):²

$$(19) \left[\begin{array}{l} \text{SYNSEM|LOC|CONT } [1] \\ \text{RELS } [2] \oplus [3] \\ \text{HCONS } [4] \oplus [5] \\ \\ \text{C-CONT} \left[\begin{array}{l} \text{HOOK } [1] \text{ IND } [0] \\ \text{RELS } [2] \left\langle \begin{array}{l} \text{ARG0 } [0] \\ \text{RESTR } [6] \\ \text{BODY } \textit{handle} \\ \textit{undef-rel} \end{array} \right\rangle \\ \text{HCONS } [4] \left\langle \begin{array}{l} \text{HARG } [6] \\ \text{LARG } [7] \\ \textit{qeq} \end{array} \right\rangle \end{array} \right] \\ \\ \text{HEAD-DTR} \left[\begin{array}{l} \text{SYNSEM|LOC|CONT } \left[\begin{array}{l} \text{IND } [0] \\ \text{LTOP } [7] \end{array} \right] \\ \text{RELS } [3] \left\langle \begin{array}{l} \text{LBL } [7] \\ \text{ARG1 } [0] \\ \textit{tired} \end{array} \right\rangle, \left[\begin{array}{l} \text{LBL } [7] \\ \text{ARG0 } [0] \\ \textit{squirrel} \end{array} \right] \\ \text{HCONS } [5] \langle \rangle \end{array} \right] \end{array} \right]$$

The semantic content of the determiner is introduced constructionally in C-CONT. It consists of the relation *undef-rel'*, which is a placeholder for the quantifier that corresponds to *some* or *every*

²We do not assume a unary branching schema for bare plurals but an empty determiner.

in the case of overt determiners.

The semantics principle can now be specified as follows:

Principle 2 (Semantics Principle) *The main semantic contribution of a phrase is identical to the value of C-CONT|HOOK. The RELS value is the concatenation of the RELS value in C-CONT and the concatenation of the RELS values of the daughters. The HCONS value is the concatenation of the HCONS value in C-CONT and the concatenation of the HCONS values of the daughters.*

For compositional schemata both the RELS value and the HCONS value under C-CONT is the empty list. The HOOK value is identical with the HOOK value of one of the daughter, namely with the HOOK value of the daughter that is the semantic functor.

1.3.3. Decomposition in Syntax vs. Underspecification

An interesting application of the underspecification of scope constraints is the treatment of the ambiguity of (20a).

- (20) a. dass Max alle Fenster aufmachte
that Max all windows opened
'that Max opened all windows'
b. $\forall x (\text{window}(x) \rightarrow \text{CAUSE}(\text{max}, \text{open}(x)))$
c. $\text{CAUSE}(\text{max}, \forall x (\text{window}(x) \rightarrow \text{open}(x)))$

The first reading corresponds to a situation in which all windows were closed and Max opens each window and the second reading corresponds to a situation in which some windows were open already and Max opened the remaining windows which results in a situation in which all windows are open.

Egg (1999) suggests specifying the meaning of *öffnen* ('to open') in an underspecified way.

(21) gives an MRS version of his analysis:

$$(21) \langle h0, \{ h1:\text{CAUSE}(x, h2), h3:\text{open}(y) \}, \{ h2 =_q h3 \} \rangle$$

The CAUSE operator embeds the *open'* relation, but the embedding is not direct. It is stated as a dominance constraint $h2 =_q h3$. This allows for quantifiers to scope between the CAUSE operator and the embedded predicate and therefore admits the readings in (20b,c). The analysis also extends to the readings that can be observed for sentences with adverbials like *wieder* ('again'). The sentence in (22) has three readings that originate from different scopings of CAUSE, $\forall$, and *wieder* ('again'):

- (22) a. dass Max alle Fenster wieder aufmachte
that Max all windows again opened
b. $\text{CAUSE} > \forall > \textit{again}' > \textit{open}'$
c. $\forall > \text{CAUSE} > \textit{again}' > \textit{open}'$
d. $\forall > \textit{again}' > \text{CAUSE} > \textit{open}'$

The first two readings are so-called repetitive readings and the third one is a restitutive reading. See Dowty 1979, Section 5.6 on this phenomenon. Since only the relative scope of CAUSE and *open'* is fixed, other scope-taking elements can intervene.

With such a semantic representation the syntax-semantics interface can be set up as follows: the adverbial combines with *aufmachen* and the resulting phrase is combined with the object *alle Fenster* and the subject *Max*. The scoping of the universal quantifier and the adverbial *wieder* depends on the ordering of the elements, that is in (22a) only readings in which $\forall$ outscopes *again'* are available. See Kiss 2001 for more information of the treatment of quantifier scope in German in the framework of HPSG.

Egg (1999) suggests the underspecification analysis as an alternative to von Stechow's analysis in the Minimalist Program (1996). Von Stechow assumes a decomposition in syntax in the style of Generative Semantics and relies on several empty heads and movement operations that are necessary to derive readings. As was pointed out by Jäger and Blutner (2003) the analysis does not get all attested readings. Apart from such empirical problems, the underspecification analysis has to be preferred for reasons of simplicity: the syntactic structures directly correspond to observable facts.

1.4. Lexical Rules

Since HPSG is a lexicalist theory, the lexicon plays an important role. The lexicon is not just a prison for the lawless as suggested by Di Sciullo and Williams (1987, p. 3), but is structured and lexical items are related to each other. One means of capturing generalizations is lexical rules. A lexical rule says if there is a lexical item with certain properties then there is also another lexical item with certain other properties. An example for the application of lexical rules is morphology (Pollard and Sag, 1987, Chapter 8.2, Orgun, 1996, Riehemann, 1998, Ackerman and Webelhuth, 1998, Kathol, 1999, Koenig, 1999). The HPSG lexicon (of inflecting languages) consists of roots that are related to stems or fully inflected words. The derivational or inflectional rules may influence part of speech (adjectival derivation) and/or valence (*-able* adjectives and passive). (23) is an example for a lexical rule. It was suggested by Kiss (1992) to account for the personal passive in German.³ The rule takes as input a verbal stem that governs both a nominative and an accusative. The nominative argument is not represented in the COMPS list of the output. The case of the object is changed from *acc* to *nom*. The remaining arguments (if there are any) are taken over from the input (③).

(23) Lexical rule for the personal passive following Kiss (1992):

$$\left[\begin{array}{l} \text{PHON } \boxed{\text{I}} \\ \text{SYNSEM|LOC|CAT} \left[\begin{array}{l} \text{HEAD } \textit{verb} \\ \text{SUBCAT } \langle \text{NP}[\textit{nom}], \text{NP}[\textit{acc}]_{\boxed{2}} \rangle \oplus \boxed{3} \end{array} \right] \\ \textit{stem} \end{array} \right] \mapsto$$

³For a more general passive rule that unifies the analyses of personal and impersonal passives see Müller 2002, Chapter 3. This more general rule for the passive uses the distinction between structural and lexical case.

$$\left[\begin{array}{l} \text{PHON } f(\boxed{\text{I}}) \\ \text{SYNSEM|LOC|CAT} \left[\begin{array}{l} \text{HEAD } \left[\begin{array}{l} \text{VFORM } \textit{passive-part} \end{array} \right] \\ \text{SUBCAT } \langle \text{NP}[\textit{nom}]_{\boxed{2}} \rangle \oplus \boxed{3} \end{array} \right] \\ \textit{word} \end{array} \right]$$

The stem is mapped to a word and the phonology of the input ($\boxed{\text{I}}$) is mapped to the passive form by a function f .

During the past decades there has been some discussion concerning the status of lexical rules. One way to formalize them is to fully integrate them into the formalism of typed feature structures. According to this view the input of the lexical rule is a daughter of the output (Krieger and Nerbonne, 1993, Chapter 7.4.1; Copestake and Briscoe, 1992; Meurers, 1995, 2001; Riehemann, 1998). This is basically equivalent to a unary branching immediate dominance rule. (24) shows the lexical rule in (23) in a format that directly reflects this approach.

(24) Lexical rule for the personal passive (fully integrated into the formalism):

$$\left[\begin{array}{l} \text{PHON } f(\boxed{\text{I}}) \\ \text{SYNSEM|LOC|CAT} \left[\begin{array}{l} \text{HEAD } \left[\begin{array}{l} \text{VFORM } \textit{passive-part} \end{array} \right] \\ \text{SUBCAT } \langle \text{NP}[\textit{nom}]_{\boxed{2}} \rangle \oplus \boxed{3} \end{array} \right] \\ \text{LEX-DTR} \left[\begin{array}{l} \text{PHON } \boxed{\text{I}} \\ \text{SYNSEM|LOC|CAT} \left[\begin{array}{l} \text{HEAD } \textit{verb} \\ \text{SUBCAT } \langle \text{NP}[\textit{nom}], \text{NP}[\textit{acc}]_{\boxed{2}} \rangle \oplus \boxed{3} \end{array} \right] \\ \textit{stem} \end{array} \right] \\ \textit{acc-passive-lexical-rule} \end{array} \right]$$

A further advantage of this notation is that lexical rules are constraints on typed feature structures and as such it is possible to integrate them into an inheritance hierarchy and to capture generalizations over various linguistic objects.

For instance it was argued by Höhle (1997) that complementizers and finite verbs form a natural class in German.

- (25) a. dass Karl das Buch liest
that Karl the book reads
'that Karl reads the book'
b. Liest Karl das Buch?
reads Karl the book
'Does Karl read the book?'

In head-movement-inspired approaches (see Borsley (1989) for a head-movement approach for English, Chapter 4 for a head-movement approach for Danish, and Kiss and Wesche 1991; Kiss 1995; Meurers 2000; Müller 2008b for head-movement approaches for German) the verb in

(25b) is related to a lexical item for the verb as it occurs in (25a) by a lexical rule. The complementizer and the lexical rule are subtypes of a more general type capturing the commonalities of *dass* in (25a) und *liest* in (25b).

1.5. Generalizations

HPSG is a theory that places a lot of information in the lexicon. For instance lexical entries of verbs contain detailed descriptions of their arguments, they contain information on how arguments are linked to the semantic contribution of the verb, information about semantic roles and so on. A good way to capture generalizations with respect to this lexical knowledge is to use type hierarchies with multiple inheritance (Pollard and Sag, 1987, Chapter 8.1). Sag (1997) argued for several different immediate-dominance schemata for variants of English relative clauses and modified the feature geometry of HPSG in a way that made it possible to capture the generalizations over the various schemata in an inheritance hierarchy. Figure 1.12 gives an example of how (parts of) an inheritance hierarchy that includes both lexical and phrasal types may look. In Section 1.2.5 we discussed constraints on phrases of type *headed-phrase*. Since structures

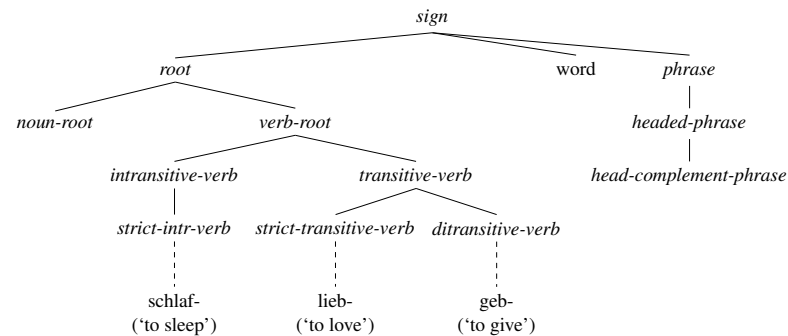


Figure 1.12.: Part of an inheritance hierarchy that contains lexical entries and immediate dominance schemata

of the type *head-complement-phrase* are a subtype of *headed-phrase*, they inherit all the constraints from their supertype. Hence, head features at the mother node of a head complement phrase are identified with the head features of the head daughter. Similarly the constraint that there is an nominative and an accusative object is represented at the type *transitive-verb*. The type *strict-transitive-verb* adds the information that there is no further argument and the type *ditransitive-verb* adds the information about an additional dative argument.

3. A topological model of the Danish clause

The purpose of this chapter is to provide a general background for the description of constituent order in Danish within a frame-work widely used to describe constituent order in Danish: the topological model. Contrary to many other topological descriptions of Danish constituent order, the present proposal is an attempt to develop a unified topological model for the description of constituent order in Danish and German. In this way it serves as a point of reference for the description of Danish constituent order within HPSG to be presented in Chapter 4. Subsequent chapters will occasionally refer to the topological model developed in this chapter.

3.1. The topological model

The order of constituents can be described within a so-called topological model of the clause (Drach, 1939; Diderichsen, 1957; Reis, 1980; Höhle, 1986; Wöllstein, 2010; Hansen and Heltoft, 2011, among many others). Topological models are not restricted to clausal structures: any kind of phrase can be described in a topological model, but here we will concentrate exclusively on clauses, i.e. phrases headed by verbs (finite and non-finite verbal phrases). As indicated by the name, the topological model makes available a number of slots (topological fields) that can be filled in a clause. The model defines the order of the topological fields as well as the number and kind of the possible fillers of the individual topological fields. Some fields only allow one constituent at a time, while others allow more. Some fields are unrestricted in that they allow (practically) any kind of constituents, while others are restricted to constituents of certain syntactic categories or certain syntactic functions. The topological model is maximal in the sense that it provides the maximal number of fields for a given clause. However, not all fields need be filled in an actual instantiation. Usually only a subset of the fields will be filled in a given clause.

As a very simple illustration of a topological model, a clause can be defined as consisting of a subject, a verb, adjuncts, and an object as shown for the examples in (1) in the following figure.

- (1) Den lille dreng læser sikkert altid tegneserier
 the little boy reads presumably always comics
 ‘The little boy is presumably always reading comics.’

SUBJ	V	ADJUNCTS	OBJ
den lille dreng (‘the little boy’)	læser (‘reads’)	sikkert altid (‘presumably always’)	tegneserier (‘comics’)

The field V is defined in terms of syntactic category, the other ones in terms of syntactic function. The order is determined so that the subject always precedes the V and the object always follows

the V. Adjuncts occur between the verb and the object. As shown in the figure the ADJUNCTS field can contain more constituents, while the other fields only contain one constituent.

When developing a topological model for the constituent order of a language, the number, the order and the syntactic content of the fields must be determined.

The topological model has proven to be a very useful descriptive tool for describing the constituent order in Danish and German. As pointed out in Ørnes 2009a, however, the formulation of topological models is not subject to theoretical constraints. For that reason proposed topological models tend to differ considerably in the number of fields, the definition of the individual fields and the amount of structure embodied in the models. Some models assume a completely flat structure (as in the figure above for (1)), while others assume a more elaborate structure. Further structure can be imposed on the model by combining fields to bigger fields as in the following figure where the V and the NP are combined into a VP.

		VP	
	Subj	V	OBJ
(at) (‘that’)	den lille dreng (‘the little boy’)	læser (‘reads’)	tegneserier (‘comics’)

Thus, not only do topological models for individual languages differ, they also differ considerably for different languages, e. g. for Danish and German. Since Danish and German are generally described by means of different topological models, cross-linguistic generalizations in the realm of constituent order are hard to come by in the topological model.

Here we will present a topological model that allows for a straightforward comparison of the basic constituent structure in German and Danish. We will deal primarily with “higher-level” generalizations. This means that we will discuss the placement of verbs, complementizers and topicalized constituents. We will only hint at the internal ordering of complements and adjuncts in the so-called “Sentence Field” (the “kernefelt” (kernel field) of Hansen and Heltoft 2011, p. 1592). Especially in the Danish tradition (e. g. in Clausen 1995 and Colliander 2002), it is common to assume a hierarchical ordering of the model so that e. g. the Sentence Field is further subdivided into separate fields for individual syntactic functions such as the indirect object and the direct object. As a consequence the ordering of indirect objects before direct objects is “hard-wired” into the model. For Danish, individual fields for specific syntactic functions makes sense, since the order of constituents in Danish is more rigid as compared to German. For German, it makes little sense to make a particular ordering of complements part of the model, since the constituent order in German is relatively free (German allows scrambling, while Danish does not). For that reason we do not assume a further division of the model into fields for individual syntactic functions. The present model is intended to capture the basic similarities and differences between the two languages, leaving further language particular properties of the constituent order to be accounted for in language-particular extensions to the topological model.

There is an important feature about natural language that the topological model has to account for: Clauses can contain other clauses or other verbal phrases. This means that the topological model must allow for recursion in the sense that the individual fields can contain structures which are themselves instantiations of the topological model. Examples of such embedded

topological structures are embedded clauses and embedded non-finite constructions as shown below. Example (2) contains a clause embedded within the clause, namely a clausal subject.

- (2) [Om andre bisper har lignende planer], vides ikke.¹
 whether other bishops have similar plans know.PASS.PRES not
 ‘It is not known whether other bishops have similar plans.’

The clausal subject in example (2) *om andre bisper har lignende planer* (‘whether other bishops have similar plans’) is in itself an instantiation of a complete topological model. The following figure shows how the example in (2) can be represented in a topological model. In the first row of the figure the whole (main) clause is shown with the clausal subject appearing in one field, namely the Prefield. In the subsequent row the internal structure of the clausal subject is represented in a separate topological model.

Prefield	T/C	Sentence Field		
			Verbal Field	
Om andre bisper ... (‘whether other bishops’)	vides (‘know.PRES.PASS’)	ikke (‘not’)		
	om (‘whether’)	andre bisper (‘other bishops’)	har (‘have’)	lignende planer (‘similar plans’)

The novelty of the topological model as also described in Ørsnes 2009a is the introduction of a verbal field which is linearized differently in Danish and German as in the figure above. In Danish the verbal field is linearized *within* the Sentence Field accounting for the fact that Danish is an SVO-language (O being an abbreviation for objects and other non-subjects). In German the verbal field is placed at the *end* of the Sentence Field accounting for the fact that German is an SOV-language.² Before presenting the topological model we will present the basic clause types in Danish to be accounted for by the model.

3.2. V_{base} -clauses and V_{front} -clauses

As in German, three basic clause types can be distinguished in Danish. The three clause types are defined according to the placement of the finite verb and the status of the first position (the Prefield) as either filled or unfilled. The clause types roughly correspond to an embedded clause (Type I), an unembedded declarative clause (Type II) and a polar question (Type III), but these are only approximations. All clause types occur embedded and unembedded and with different illocutionary forces as also shown in the examples below (cf. also Hansen and Heltoft 2011, p. 1569).

- **Type I:** V_{base} -clause (the “embedded” clause): The finite verb is in the verbal field following sentential adverbs such as the negation. The a.-example is embedded, the b.-example

¹KorpusDK.

²We follow Bierwisch 1963, Thiersch 1978, Müller 2008b and Haider 2009 and several others in assuming that German is an SOV language. Arguments for claiming that Danish is SVO are given in Section 3.2.1.

is unembedded.³

- (3) a. fordi beviserne [ikke] [hang] sammen⁴
 because evidence.DEF not hang together
 ‘because the evidence was not sufficient’
 b. Bare Antonio [ikke] [misforstår] det.⁵
 if.only Antonio not misunderstands it
 ‘If only Antonio does not misunderstand it.’

- **Type II:** V_{front} -clause with a filled Prefield (an unembedded declarative clause): The finite verb is outside the Verbal Field in a fronted position preceding sentential adverbs such as the negation, and the Prefield is filled (V2). Note that the finite verb *precedes* the negation, while it *follows* the negation in Type I-clauses (example (3a) and (3b)). The a.-example is an unembedded Type-II-clause, the b.-example is an embedded Type-II-clause

- (4) a. [Danmark] [er] [ikke] repræsenteret ved finalen i Wien.⁶
 Denmark is not represented at final.DEF in Vienna
 ‘Denmark is not represented at the final in Vienna.’
 b. fortalte en ældre mand, at [tidligere] [kunne] han [ikke] lide udlændinge,⁷
 told an elderly man that previously could he not like foreigners
 ‘an elderly man told that he used not to like foreigners.’

- **Type III:** V_{front} -clause with an unfilled Prefield (a polar question): the verb (finite or imperative) is in a fronted position preceding sentential adverbs and the Prefield is unfilled (V1). The a.-example is unembedded, the b.-example is embedded (a conditional V1-clause).⁸

³Interestingly type I-clauses (with a complementizer) can also be the complement of another complementizer. In example (1), the complementizer *at* (‘that’) takes as its complement a type I-clause introduced with the complementizer *mon* (‘I wonder’) (Hansen and Heltoft, 2011, p. 1588). The complementizer *mon* (‘I wonder’) is further discussed in Section 3.3.3.1 below.

(i) Tænk blot på, [at] [mon ikke de også holder sommerferie]
 think just of that MON not they also make summer.vacation
 ‘I was just thinking, I wonder if they are not also on summer vacation.’
 (<http://www.netdoktor.dk/interactive/discussion/viewtopic.php?f=84&t=17419>, [5/7 2011].)

⁴KorpusDK.

⁵KorpusDK.

⁶KorpusDK.

⁷<http://www.tvaerkulturelt-center.dk/SamirBagi.htm>, [13/10 2010].

⁸Reis and Wöllstein (2010) claim for German that such V1-conditionals are not in the Prefield, but in an unintegrated left-adjoined position. The exact position of the conditional clause is not crucial in this context. In any case, the conditional is subordinated to the matrix clause *kommer Bournonville til dem* (‘comes Bournonville to them’).

- (5) a. [Kommer] far [ikke] snart ned?⁹
comes Dad not soon down
'Isn't Dad coming down soon?'
b. Men [kommer] amerikanerne [ikke] til København, kommer Bournonville
but come Americans.DEF not to Copenhagen comes Bournonville
til dem.¹⁰
to them
'If the Americans do not come to Copenhagen, Bournonville will come to them.'

Imperative clauses allow the Prefield to be filled by a pronoun resuming a conditional clause which is either left-dislocated or appearing in the previous discourse as in (6). We consider such clauses to be of type II.

- (6) Lyst til at prøve? [Så] [kom] ind og hør om Eye-Care.¹¹
desire PREP to try then come in and hear about Eye-Care
'Wanna try? Then come on in and hear about Eye-Care.'

In the following we will assume that the V_{base} -clause (Type I) illustrated in (3a) and (3b) is the basic constituent order, while the V_{front} -clauses (Type II and III) illustrated in (4a) and (5a) are seen as variants of the basic structure with a fronted finite or imperative verb. We will also show how the proposed topological model reflects this assumption.

3.2.1. V_{base} -clauses: The basic constituent order

The basic constituent order illustrated in (3) is referred to as the neutral word order in Hansen and Heltoft 2011. The neutral constituent order signals the absence of a particular illocutionary force and the absence of a truth value.¹² Therefore the neutral word order in embedded clauses is compatible with a wide range of semantically different matrix predicates, e. g. factive predicates such as *fortryde* ('to regret') and interrogative predicates such as *spørge* ('to ask').

The distinguishing property of the basic constituent order in (3a) and (3b) is that the finite verb is adjacent with the non-finite verbs (if present) as in (7) and that the finite verb follows the subject and sentence adverbials such as sentential negation *ikke* ('not') and modal particles.¹³

- (7) [...], at hun [ikke] [ville have kunnet genkende] mig på gaden.¹⁴
that she not would have could recognize me in street.DEF
'[...] that she would not have been able to recognize me in the street.'

⁹KorpusDK.

¹⁰KorpusDK.

¹¹KorpusDK.

¹²On the analysis in Truckenbrodt 2006, p. 265–66 verb fronting is associated with Hearer orientation: In imperatives the Speaker wants something from the Hearer, in declaratives and interrogatives the Speaker wants from the Hearer that a particular proposition belongs to the Common Ground.

¹³See however the discussion of preposed negation in Chapter 10.

¹⁴KorpusDK.

The basic constituent order is the one commonly found in embedded sentences. Embedded sentences are assumed to show less constituent order variation than main sentences since their illocutionary force is generally restricted by the embedding verb and since the information structure of embedded clauses is less dependent on the surrounding discourse. The basic constituent order is also found in independent clauses with no truth-value (and no hearer orientation, see footnote 12) such as exclamative clauses as in (8) and optative clauses as in (9).

- (8) Hvor drenge [dog] [er] underlige!¹⁵
how boys DOG are strange
'How strange boys are!'
(9) Hvem der [ikke] [skulle] på arbejde imorgen!¹⁶
who there not should on work tomorrow
'Wish I did not have to go to work tomorrow!'

We will refer to the position of the finite verb in the basic order as the V_{base} -position and clauses with the basic constituent order as V_{base} -clauses, i.e. clauses where a finite verb has not been fronted.

The basic constituent order is also found in non-finite root sentences such as the so-called Mad Magazine sentences as in (10) and *wh*-infinitivals as in (11) (Akmajian, 1984).

- (10) Mig gøre rent?¹⁷
me do.INF cleaning
'Me and cleaning?'
(11) Men hvorfor [altid] [gå] i det samme?¹⁸
but why always walk.INF in the same
'Why always wear the same?'

As the examples in (8) and (9) show the Prefield in a V_{base} -clause can be filled by a *wh*-constituent. Hansen and Heltoft (2011) assume that the *wh*-constituent is in the position of the complementizer, since it lexicalizes a complementizer element (p. 1633). We assume that *wh*-constituents are always in the Prefield. Otherwise we would have to assume that *wh*-constituents are in different positions in V_{base} -clauses and in V_{front} -clauses where the *wh*-constituents are unambiguously in the Prefield.

3.2.2. V_{front} -clauses: V1 and V2-clauses

In V1- and V2-clauses the finite verb is not in the base position within the verbal field. It is in the position occupied by the complementizer in a V_{base} -clause. We will refer to clauses with the verb in this fronted position as V_{front} -clauses. Thus V_{front} -clauses comprise V1- and V2 clauses, the difference being whether the Prefield is filled or not. In a V2-clause the verb is in second position because the Prefield is filled by a constituent.

¹⁵KorpusDK.

¹⁶<http://www.gamereactor.dk/forum/?forum=5&thread=34086&page=2>, [9/1 2012].

¹⁷<http://netdate.dk/debat/fri-debat-8/154163-jeres-mening?page=19>, [6/7 2011]

¹⁸KorpusDK.

In V_{front} -clauses, the finite or imperative verb *precedes* sentential adverbs and modal particles – a clear indication that the verb is no longer in its base-position within the verbal field. Cf.

(12) Peter [er] [ikke] urolig
Peter is not anxious
'Peter is not anxious.'

(13) [vær] [ikke] urolig
be not anxious
'Don't be anxious.'

Assuming that the position of sentential adjuncts is fixed (immediately preceding the Verbal Field), the finite or imperative verb thus appears to be displaced out of its base position, which is to the right of sentential adjuncts in V_{base} -clauses.

The distinction between the three types of clauses from Section 3.2 is summarized in Figure 3.1. The three clause types are distinguished on the basis of the finite verb as either in V_{base}

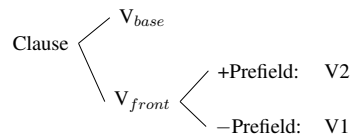


Figure 3.1.: Clause Types in Danish

or V_{front} and whether the Prefield is filled or not.

3.3. A topological model

We will use the following topological model of the Danish clause based on the model presented in Ørsnes 2009a. The examples illustrate the V_{base} -order and the two V_{front} -orders: V1- and V2-clauses.

Prefield	T/C	Sentence Field			
			Verbal Field		
	at (‘that’)	drengen ikke (‘the boy not’)	har set (‘has seen’)	filmen (‘the movie’)	(V_{base})
Drengen (‘the boy’)	har (‘has’)	ikke (‘not’)	set (‘seen’)	filmen (‘the movie’)	(V_{front} : V2)
	se (‘watch’)	ikke (‘not’)		filmen! (‘the movie’)	(V_{base} : V1)

At the topmost level the model consists of the following three fields:

- The Prefield

- The T/C-field (Tense and Complementizer)
- The Sentence Field

Embedded within the Sentence Field is the

- Verbal Field

The position of the Verbal Field will be shown to be the crucial distinction between German and Danish constituent order. The Prefield is the field of fronted constituents in V2-clauses, *wh*-constituents in V_{base} -clauses and resumptive pronouns for left-dislocated constituents (as in (6) above). The T/C-field (mnemotechnical for Tense and Complementizer-field) is the field for tensed (and imperative) verbs in V_{front} -clauses and for the complementizer in V_{base} -clauses. Canonically a complementizer introduces a V_{base} -clause, but some complementizers can also introduce a V2-clause, i.e. a clause containing a Prefield and yet another T/C-field occupied by a verb (we will return to such cases of *embedded* V2 below).

The Prefield and the T/C-field fulfill special functions. The Prefield is the position of fronted elements, i.e. operators or discourse prominent constituents. The T/C-field (also called the Modality Field in Hansen and Heltoft 2011) is crucial for identifying the clause as either a V_{front} - or a V_{base} -clause and thereby for identifying the illocutionary force of the clause.

The Sentence Field contains the *propositional core* of the clause. It is the part of the clause following the Prefield and the T/C-field. The name is meant to indicate that the sentence field contains the part of the sentence which is not related to illocutionary force (T/C) or to a special discourse prominent position (Prefield). The Sentence Field itself contains the verbal field. The verbal field accommodates all the verbs in V_{base} -clauses and the non-finite verbs in V_{front} -clauses. The Verbal Field splits the Sentence Field into two parts. The region to the left of the Verbal Field hosts the subject¹⁹ and adverbial phrases (and usually in that order).²⁰ The region to

¹⁹Heavy subjects (subject-NPs with post-modification) can be shifted to the right as in the example below where the subject occurs after the Verbal Field containing *er samlet* ('are gathered').

- (i) I Eterra er samlet [IT-håndværkerne, der skal bygge platforme til virksomheder], [...]
in Eterra are gathered IT-workers.DEF who skal build platforms for companies
'In Eterra are gathered the IT-workers that are going to build platforms for companies.' (KorpusDK.)

The constraints on this kind of Heavy NP-Shift are not quite clear. Note that the example in (1) cannot be analyzed as a kind of presentational sentence where a subject is demoted to object. Presentational sentences require their postverbal NPs to be indefinite (Lumsden (1988) and many others), and the post-verbal NP in (1) is definite.

²⁰Cf. however, the discussion of preposing of sentential adjuncts in V_{base} -clauses in Chapter 10. Jørgensen (2000b) and Hansen and Heltoft (2011, p. 1745) also discuss examples where an adjunct precedes a subject in a V_{front} -clause as shown in (1).

- (i) Han lå der, ja, hvor er [forresten] [madrasen]?
he lay there yes where is by.the.way mattress.DEF
'He was lying there, well, where is the mattress by the way?'
(KorpusDK.)

Only particular adverbs seem to be able to precede the subject and preferably in constituent questions as in (1), but the exact conditions appear not to be well understood. Sentential negation does not allow this kind of preposing in V_{front} -clauses.

the right of the verbal field contains the internal complements and adjuncts. This model clearly reflects the fact that the subject is external to the VP (it does not occur to the right of non-finite verbs or after the finite verb in V_{base} -clauses).

3.3.1. V_{base} -clauses in the topological model

The following table shows how different kinds of V_{base} -clauses are represented in the proposed model. The table contains examples of finite clauses as well as of non-finite root-clauses.

	Prefield	T/C	Sentence Field		
				Verbal Field	
1)		at (‘that’)	drengen ikke (‘the boy not’)	har set (‘has seen’)	filmen (‘the movie’)
2)	Mig (‘me’)			gøre rent? (‘doing cleaning’)	
3)	Hvem (‘who’)		der bare (‘there only’)	havde (‘had’)	ferie lige nu! (‘vacation right now’)
4)	Hvordan (‘how’)			analysere (‘analyze’)	et digt? (‘a poem’)

Example 1) in the table shows the canonical embedded clause with the complementizer in T/C and the finite verb in the Verbal Field. Note that the finite verb follows the negation since the Verbal Field splits the Sentence Field into two parts. In Example 2) (illustrating a Mad Magazine Sentence) the non-finite verb is in the Verbal Field. We assume that the initial accusative NP (*mig* ‘me’)) is in the Prefield.²¹ This is possibly too simplistic since Mad Magazine sentences often contain a coordinating coordination *og* ‘and’) and thus (presumably) should be treated as coordinated structures (cf. the discussion of coordination in Section 3.4).

- (14) Mig og gøre rent?
me and do cleaning
‘Me and cleaning?’

Example 3) in the table illustrates an optative clause, i.e. an unembedded V_{base} -clause. The finite verb is in the Verbal Field and the Prefield contains a *wh*-element. Example 4), finally, shows a *wh*-infinitival question: the non-finite verb is in the Verbal Field and the *wh*-constituent is in the Prefield.

(ii) *Hvad har [ikke] Peter sagt?
what has not Peter said
‘What hasn’t Peter said?’

²¹Hansen and Heltoft (2011, p.8, 1623–1625) provide a topological analysis of so-called *sætningssemner* (‘sentence fragments’) defined to be root clauses without a finite verb (p. 1623). However, they only give examples with root clauses with no verbs at all, and noone with non-finite verbs.

3.3.2. V_{front} -clauses in the topological model

The following table shows how different kinds of V_{front} -clauses are represented in the proposed topological model.

	Prefield	T/C	Sentence Field		
				Verbal Field	
1)	Drengen (‘the boy’)	har (‘has’)	ikke (‘not’)	set (‘seen’)	filmen (‘the movie’)
2)	Filmen (‘the movie’)	har (‘has the boy’)	drengen ikke (‘not’)	set (‘seen’)	
3)	Hvem (‘who’)	har has	ikke (‘not’)	set (‘seen’)	filmen? (‘the movie’)
4)		har (‘has’)	drengen ikke (‘the boy not’)	set (‘seen’)	filmen? (‘the movie’)
5)		Se (‘see’)	ikke (‘not’)		den film! (‘that movie’)

As the table shows, the crucial difference between the V_{base} -order and the V_{front} -order is the position of the finite verb. The finite verb is no longer in the Verbal Field but in the T/C-field. The Verbal Field in turn only contains non-finite verbs. Therefore the finite verb precedes sentential adverbs in V_{front} -clauses. In declarative clauses and constituent questions, the Prefield is filled by a constituent. Note that almost any constituent can be in the Prefield, even though constituents other than subjects and pronouns are marked. In polar questions, imperatives and V1-conditionals, the Prefield is empty (in imperatives a resumptive pronoun can, however, appear in the Prefield as shown in (6) above).

3.3.3. More on the individual positions

In the following we will briefly discuss the individual positions of the proposed topological model.

3.3.3.1. The T/C-field

The T/C-field generally contains a finite verb (Tense), an imperative verb or a complementizer. The position of the finite verb in the T/C-field in V_{front} -structures gives the effect of Verb Second.

In the V_{base} -structure T/C-field canonically contains a complementizer. For German it is sometimes claimed that the complementizer and the finite verb compete for the same position: if a complementizer is present, the verb has to stay in final position. Without a complementizer the verb is fronted. In Danish, the finite verb is in the Verbal Field, even if a complementizer is not present:

- (15) Han siger, han [ikke] [har] lyst.²²
 he says he not has desire
 'He says he doesn't want to.'

Example (15) shows a complementizer-less embedded clause. The finite verb is within the Verbal Field as witnessed by the position to the right of sentential negation. The following table gives the topological analysis.

	Prefield	T/C	Sentence Field		
			Verbal Field		
(han siger) (‘he says’)			han ikke (‘he not’)	har (‘has’)	lyst (‘desire’)

In constructions with embedded V2 as in (16) (Vikner, 1995, kap. 4), the complementizer is (almost) obligatory (Hansen and Heltoft (2011, p. 1589) give a couple of examples without a complementizer, but they appear to be rare). Again this shows that the position of the finite verb is independent of the presence of a complementizer.²³ The example in (4b) above, repeated here as (16) for convenience, illustrates the presence of a complementizer in embedded V2.

- (16) Efter den sidste fest fortalte en ældre mand, [at] [tidligere kunne han ikke lide
 after the last party told an elderly man that before did he not like
 udlændinge], [...]]²⁵
 foreigners
 ‘After the latest party an elderly man told me that he used not to like foreigners, [...]’

²²KorpusDK.

²³It is often claimed that embedded V2 is licensed by the semantics of the embedding predicate (Hansen and Heltoft 2011, p. 1683–1686 and Wiklund, Bentzen, Hrafnbjargarson and Hróarsdóttir 2011). Assertive verbs allow embedded V2, while emotive and factive predicates resist it. However, embedded V2 also depends on the kind of constituent appearing in the Prefield of the embedded clause. While embedded V2 with a fronted NP, PP or AP is highly degraded or ungrammatical with emotive and factive predicates, embedded V2 with a fronted conditional clause is perfectly all right. Example (1a) shows the factive predicate *opdage* (‘to discover’) with embedded V2. The fronted constituent is a conditional clause. Example (1b) shows the emotive predicate *trøst* (‘consolation’) again with a fronted conditional clause in embedded V2.

- (i) a. han havde opdaget, at [hvis man kombinerede kokain med sovetabletter], [var] virkningen
 he had discovered that if you mixed cocain with sleeping.pills was effect.DEF
 formidabel.
 formidable
 ‘He had discovered that if you mixed cocain with sleeping pills, the effect was formidable.’
 (KorpusDK)
- b. Så kan de have den (falske) trøst, at [hvis bare de holder pinslerne ud her i
 then can they have the false consolation that if only they tolerate sufferings PART here in
 livet], [skal] det nok gå dem godt i døden.²⁴
 life.DEF will it for.sure go them well in death.DEF
 ‘Then they can keep the (false) consolation that if only they stand the sufferings of this life, they
 will be all right in death.’
 (http://www.studieportalen.dk/forums/Thread.aspx?id=351462,[7/7 2011])

In (16), the embedded clause *at tidligere kunne han ikke lide udlændinge* (‘that before he did not like foreigners’) contains the finite verb *kunne* (‘could’) in the second position after the adverb *tidligere* (‘before’) and the complementizer *at* (‘that’) is obligatory. Embedded V2-structures with an overt complementizer cannot be fitted into the model as it stands. This is further discussed in Section 3.4 below.

Also embedded *wh*-clauses (e.g. embedded interrogatives) show that there is no connection between the filling of the T/C-field and the position of the finite verb in the Verbal Field. In embedded *wh*-clauses the T/C-field is empty and still the finite verb is in the base position with the *wh*-constituent in the Prefield. In colloquial Danish, the T/C-field, however, can contain the complementizer *at* (‘that’).

- (17) a. Jeg ved ikke [hvem I prøver at narre]
 I know not who you try to fool
 ‘I don’t know who you are trying to fool.’
 b. Jeg ved ikke [hvem] [at] i prøver at narre, [...]]²⁶
 I know not who that you try to fool
 ‘I don’t know who you are trying to fool, [...]’

There is a third class of items that can occur in the T/C-field. Certain modal complementizers such as *mon* (‘I wonder’), *gid* (‘wish’) and *sæt* (‘if’) (Vikner 1995, p. 45 and Hansen and Heltoft 2011, p. 1568) occupy the T/C-field of a *V_{base}*-clause. They mark deliberative questions, exclamatives or optatives. Some of these modal complementizers such as *bare* (‘I wish’), *måske* (‘perhaps’) and *gudskelov* (‘luckily’) also occur as adverbs.

- (18) a. [Mon] [han alligevel kommer]?
 I.wonder he anyway comes
 ‘I wonder if he is coming anyway?’
 b. [Gid] [det ikke var sådan!].
 wish it not was so
 ‘I wish it wasn’t like that’
 c. [Gudskelov] [det ikke var koen], [...] sagde kællingen, da hends mand
 luckily it not was cow.DEF said woman.DEF when her husband
 døde.²⁷
 died
 ‘I am glad it wasn’t the cow, the woman said, when her husband died.’

The complementizer *mon* (‘I wonder’) even allows a *wh*-constituent to be extracted into the prefield.²⁸

²⁶http://www.bt.dk/politik/rendyrket-personangreb?page=2, [13/10 2010].

²⁷KorpusDK.

²⁸Erteschik-Shir (2010) claims that *mon* (‘I wonder’) is an adverb on the grounds that clauses with *mon* (‘I wonder’) do not allow extraction into the Prefield. She considers the example in (1) ungrammatical. As shown, these examples are perfectly grammatical (Cf. also the examples and the discussion in Hansen and Heltoft 2011, p. 1568).

- (19) [Hvilke værdier] [mon] der er blevet fokuseret på, [...] ²⁹
 which values I.wonder there have been focussed on
 ‘I wonder what values have been focussed on, [...]’

The following figure shows how the examples in (18a) and in (19) are represented in the proposed topological model.

Prefield	T/C	Sentence Field		
			Verbal Field	
	mon (‘I wonder’)	han alligevel (‘he anyway’)	kommer? (‘comes’)	
Hvilke værdier (‘which values’)	mon (‘I wonder’)	der (‘there’)	er blevet fokuseret (‘have been focused’)	på on

While the T/C-field can be empty in V_{base} -clauses, it must be filled in V_{front} -clauses. If a lexical verb is missing, the dummy-verb *gøre* is used to fill the T/C-field. In (20) the finite verb *sveder* (‘sweat’) is in the Prefield, and the dummy verb *gør* (‘do’) fills the T/C-field. This kind of VP-topicalization will be discussed in Chapter 14.

- (20) Pulsen er på vej op, men [sveder] [gør] jeg ikke ³⁰
 pulse.DEF is on way up but sweat.PRES do I not
 ‘The pulse is increasing, but I am not sweating.’

The T/C-field canonically only contains one lexical category (C^0 or V^0). However, some adverbs can adjoin to lexical V and are linearized in the T/C-field giving rise to apparent V3-structures (Nilsen (2002) and Nimb (2009)). The class of adverbs that can adjoin to lexical elements, is very restricted, though. Cf.

- (21) De [nærmest boltrer] sig i det. ³¹
 they almost indulge REFL in it
 ‘They almost indulge in it.’

Prefield	T/C	Sentence Field		
			Verbal Field	
De (‘they’)	nærmest boltrer (‘almost indulge’)		sig i det REFL in it	

- (i) [Hvem] [mon] ikke får lov?
 who MON not gets permission
 ‘I wonder who isn’t allowed to do so.’
 (<http://ing.dk/artikel/93437-godkendt-gm-majs-forringer-forplantningsevnen-hos-mus>, [5/7 2011])

²⁹KorpusDK.

³⁰KorpusDK.

³¹KorpusDK.

If the constituent in the Prefield is associated with a topic-binding adverb we even find (apparent) V4-structures.

- (22) [Eleverne] [for eksempel] [nærmest] [boltrer] sig i det.
 pupils.DEF for example almost indulge REFL in it
 ‘The pupils for example almost indulge in it.’

Prefield	T/C	Sentence Field		
			Verbal Field	
Eleverne for eksempel (‘the pupils for example’)	nærmest boltrer (‘almost indulge’)		sig i det REFL in it	

3.3.3.2. The Prefield

The Prefield is delimited to the right by the finite verb in V_{front} -structures and it is always filled in V2-clauses. In V_{base} -structures the Prefield can contain a *wh*-constituent and occasionally an accusative NP in Mad-Magazine sentences. The Prefield allows exactly one constituent of almost any syntactic category: NP, PP, VP, CP, ADVP, ADJP. In (23) the Prefield contains an NP-object and in (24) it contains a PP-adjunct.

- (23) [Ham] har Giuseppe Tornatore selv opfundet. ³²
 him has Giuseppe Tornatore himself invented
 ‘Giuseppe Tornatore has invented him himself.’
- (24) [Til dette valg] opstiller DM-listen, [...] ³³
 to this election candidates DM-list.DEF
 ‘The DM-list is a candidate to this election, [...]’

The following table shows how the examples in (23) and (24) are represented in the proposed topological model.

Prefield	T/C	Sentence Field		
			Verbal Field	
Ham (‘him’)	har (‘has’)	Giuseppe Tornatore selv (‘Giuseppe Tornatore himself’)	opfundet (‘invented’)	
Til dette valg (‘to this election’)	opstiller (‘candidate’)	DM-listen (‘the CM-list’)		

The Prefield appears to be associated with a particular discourse prominence. In the default case, it is occupied by the subject or anaphoric pronouns. Subjects are closely associated with topichood (Lambrecht, 2000, p. 131) and so are anaphoric pronouns, since they refer to salient entities in the discourse. Interestingly constituents in the Prefield can be morpho-syntactically marked in a way that is unexpected from their syntactic dependency to the rest of the clause.

³²KorpusDK.

³³KorpusDK.

The constituent in the Prefield in example (25a) is the subject of the embedded clause *vil vise sig hos os* ('will show up at our place'), but nevertheless it is marked with the accusative case and not the nominative case. In example (25b) the constituent in the Prefield is a bare infinitive, even though it is syntactically dependent on the verb *lære* ('to learn') which requires a full infinitive with *at* ('to').

- (25) a. [Dem_i] håber vi _i vil vise sig hos os [...] ³⁴
 them hope we will show REFL with us
 'We hope of them that they will show up with us.'
- b. [Synge_i] [lærte] han _i ³⁵
 sing.INF learned he
 'As for singing, he learned to do so.'

This phenomenon will be discussed in Chapter 12 and Chapter 14 respectively.

Some constituents such as sentential negation are extremely marked in the Prefield (26a). Modal particles appear to be wholly excluded as shown in (26b) (as also noted for German in Hoberg 1997, p. 1587).

- (26) a. [Ikke] vil jeg bo noget andet sted. ³⁶
 not will I live any other place
 'Not will I live in any other place.'
- b. * [Jo] vil jeg bo et andet sted.
 as.you.know will I live an other place
 'As you know, I would like to live in any other place.'

A constituent in the Prefield can co-occur with an adverb giving rise to apparent V3-structures, as also observed with some adverbials attached to lexical V (as illustrated in (30)). These are so-called topic-binding adverbials, such as *derimod* ('instead') (27a) or *for eksempel* ('for example') (see Breindl (2008) on German). But also adverbs such as *allerede* ('already') can occur with another constituent in the Prefield as in (27b).

- (27) a. [Israelerne derimod] [er] fortrøstningsfulde. ³⁷
 israelis.DEF instead are confident
 'The israelis instead are confident.'
- b. [Allerede i gymnasiet] [havde] jeg forkastet Nietzsche. ³⁸
 already in high.school had I rejected Nietzsche
 'Already in high school I had rejected Nietzsche.'

The adverb *derimod* ('on the other hand') does not seem to form a constituent with the preceding NP. As shown for German in Jacobs 1986 the NP and the adverb cannot occur together as the complement of a preposition:

³⁴<http://www.dr.dk/Sporten/Fodbold/Superliga/2010/09/01/221736.htm>, [15/2 2011].

³⁵Example from (Hansen, 1967, p. 70)

³⁶<http://www.visdal.dk/maelkeboetter.html>, [14/4 2011].

³⁷KorpusDK.

³⁸KorpusDK.

- (28) ?? Det var med [israelerne derimod] de forhandlede.
 it was with israelis.DEF instead they negotiated
 'Instead they negotiated with the Israelis.'

It is not entirely clear how the examples in (27a) and (27b) should be analyzed. They could be analyzed as instances of multiple fronting (multiple constituents in the Prefield), even though multiple fronting appears not to occur in Danish as opposed to German (Müller, 2003, 2005b). Multiple fronting will not be dealt with here, but topic-binding adverbs as in (27a) will, however, assume some importance in Chapter 10 on preposed negation.

3.3.3.3. The Verbal Field

The Verbal Field contains all verbs (finite and non-finite) in *V_{base}*-clauses and all the non-finite verbs (if present) in *V_{front}*-clauses. Canonically the verbs in the Verbal Field form a verb cluster that cannot be interrupted by other linguistic material. Exceptions are some unstressed reflexives as in example (29) (see also Lødrup 1996, p. 84) and adverbs modifying lexical Vs as in example (30) below.

- (29) men Gerda havde aldrig fået [sig] taget sammen til det ³⁹
 but Gerda had never got herself pulled together to it
 'but Gerda had never managed to pull herself together to do it'
- (30) fordi de har [nærmest] boltret sig i det
 because they have almost indulged REFL in it
 'because they almost have indulged in it'

It appears that the Verbal Field also can contain manner adverbials as in example (31) where the adverb *positivt* ('positively') intervenes between the two non-finite verbs.

- (31) Forslagene er blevet [positivt] modtaget, og ideen er grundlæggende god, ⁴⁰
 proposal.DEF have been positively received and idea.DEF is basically good
 'The proposals have been positively received and the idea is basically good.'

We will, however, analyse the past participle *modtaget* ('received') as an adjectival participle and not as part of a verb cluster (a periphrastic verb form). "Intruding" manner adverbs as in (31) are only observed with the verb *blive* ('to become') which is a copula verb (in addition to being an auxiliary). Note further that also non-valency bound *Accusative Iudicantis*-NPs can intervene between *blive* and a manner adverbial modifying an adjectival participle. This suggests that the past participle *modtaget* ('received') is not in the Verbal Field.

- (32) ? Forslagene er blevet [regeringen] lidt for positivt modtaget, [...]
 proposal.DEF have been government.DEF little too positively received
 'To the government the proposals have been a little too well received [...]

The order of the verbs in the Verbal Field is strictly left-to-right since the Danish VP is head-initial. The example in (33) illustrates the hypotactic chain following Bech (1955).

³⁹KorpusDK.

⁴⁰KorpusDK.

- (33) Jeg ved at han ikke ville₁ have₂ kunnet₃ gøre₄ det.
 I know that he not would have could do it
 'I know that he wouldn't have been able to do it.'

3.3.3.4. The Sentence Field

The Sentence Field hosts the Verbal Field and is divided into two areas by the Verbal Field. The left-hand side contains the subject and zero or more adjuncts. Almost all adjuncts can occur to the left of the verbal field, but sentence adverbs and modal particles obligatorily do so.

- (34) a. Fordi Peter (heldigvis) har hentet avisen (*heldigvis).
 because Peter fortunately has collected newspaper.DEF fortunately
 'Because Peter fortunately has collected the newspaper.'
 b. Fordi Peter (i dag) har hentet avisen (i dag).
 because Peter today has collected newspaper.DEF today
 'Because Peter has collected the newspaper today.'

The fact that sentence adverbs obligatorily precede the verbal field follows from their scopal properties. Sentence adverbs have scope over the whole clause and so tend to precede the finite verb (see Pittner 2004 for German).

Also unstressed bare pronouns are found to the left of the Verbal Field under special circumstances. When the Verbal Field is empty, object pronouns and the locative pronouns *her* ('here') and *der* ('there') linearize to the left of the Verbal Field (preceding sentential adjuncts) as shown in (35a). When the Verbal Field contains a verb (either finite or non-finite), these pronouns are linearized to the right of the Verbal Field as in (35b). This is referred to as *Object-Shift* (Vikner, 2006, among many others). Object shift is discussed in Chapter 5.

- (35) a. I drøftede [den] slet ikke
 you discussed it at.all not
 'You didn't discuss it at all.'
 b. I har slet ikke drøftet [den].⁴¹
 you have at.all not discussed it
 'You haven't discussed it at all.'

Finally, inherently negated objects are linearized in the position of the sentential negation, i.e. to the left of the Verbal Field. In V_{base} -structures, inherently negated objects occur to the left of the finite verb (see the discussion in Chapter 4, Section 5.1.2).

- (36) [...] så sig, at du [ingenting] har set.⁴²
 then say that you nothing have seen
 '[...] then say that you haven't seen anything.'

The right-hand side of the Verbal Field is the field for internal complements and adjuncts. The order of the internal complements of the verb is determined by their syntactic function in accordance with the hierarchy of grammatical functions shown below. The hierarchy will be further

⁴²KorpusDK.

discussed and motivated in Chapter 4. Note that manner adverbs are treated as complements following the suggestion in McConnell-Ginet 1982.

- (37) IO >> DO >> Manner Adverbs/PART >> OBL

Adjuncts occur to the right of the internal complements. But some adjuncts can occur interspersed with oblique complements. The exact conditions for this are not clear. For instance in (38) the temporal adjunct *i to timer* ('for two hours') is linearized before the prepositional object *på bussen* ('for the bus').

- (38) fordi jeg måtte vente [i to timer] [på bussen]
 because I had.to wait for two hours for bus.DEF
 'because I had to wait two hours for the bus'

3.3.4. Extensions to the model

The topological model as presented cannot accommodate coordinating conjunctions as in (39a), or dislocated constituents as in (39b). It has to be augmented with corresponding "external" positions.

- (39) a. [Og her fremgik det klart], at vi gør en masse på turistområdet, [...] ⁴³
 and here appears it clearly that we do a lot in tourism.area.DEF
 'And here we can see that we do a lot for the tourism but that we don't do enough at all [...]'
 b. Om det bliver i min levetid, [det ved jeg ikke].⁴⁴
 if it is in my life.time that know I not
 'If it is going to be in my life time, I do not know.'

In (39a) the bracketed portion is a V_{front} -clause with a topicalized adverbial *her* ('here'). The coordinating conjunction *og* ('and') is in a separate field preceding the clause (see also Höhle 1986, p. 329–330 for German). Also in (39b) the bracketed portion is a V_{front} -clause with a topicalized pronominal object *det* ('it'). The left-dislocated clause *om det bliver i min levetid* ('if it will be in my life time') is in a field for (left-)dislocated constituents (see also Höhle 1986, p. 330 for German). For ease of exposition we will ignore these additional fields.

Example (39a) repeated below as (40) also illustrates that the topological model needs a field for extraposed constituents.

- (40) Og her fremgik [det] klart, [at vi gør en masse på turistområdet],
 and here appears it clearly that we do a lot in tourism.area.DEF
 'And here we can see that we do a lot for the tourism.'

The pronominal subject *det* ('it') in (40) is a quasi-argument representing the extraposed clause *at vi gør en masse på turistområdet* ('that we are doing a lot for tourism'). Subject clauses are highly degraded in the canonical subject-position within the Sentence Field.⁴⁵ Instead they are

⁴³KorpusDK.

⁴⁴KorpusDK.

⁴⁵It appears that only Free Relative clauses as subjects can appear in the canonical subject position, but authentic examples are rare.

either in the Prefield or extraposed. Contrary to the German clause, the Danish clause does not have a *bracket structure* (*Satzklammer*) where the Verbal Field uniquely determines the end of the Sentence Field and the beginning of the extraposition (the *Nachfeld*). In Danish, extraposition must be determined relative to the ordering of adjuncts and more oblique complements of the verb. This is illustrated in example (41) and (42). In (41), the nominal object *holdninger* ('stances') is to the left of the verbal particle *ud* ('out'). In (42) the clausal object follows the particle *ud* ('out'). Such minimal pairs show that NP-objects and clausal objects linearize differently, i.e. that subcategorized clauses are extraposed.

- (41) [...] så må partiet melde [holdninger] [ud], [...] ⁴⁶
 then must party.DEF make stances clear
 '[...] then the party must make its stances clear, [...]']
- (42) Den danske regering bør snart melde [ud], [at den støtter de amerikanske
 the Danish government must soon make clear that it supports the American
 planer]. ⁴⁷
 plans
 'The Danish government must soon make clear that it supports the American plans.'

The examples in (43a) and (43b) illustrate the linearization of NP-subjects and clausal subjects.

- (43) a. [...], at [resultatet] er utilfredsstillende, [...] ⁴⁸
 that result.DEF is unsatisfactory
 '[...] that the result is unsatisfactory, [...]']
- b. [...], at [det] er utilfredsstillende, [at vi ikke har været i stand til det]. ⁴⁹
 that it is unsatisfactory that we not have been able to that
 '[...] that it is unsatisfactory that we have not been able to do that.'
-
- (i) Det kunne jo være, ræsonerede han, at [hvem der ellers havde mistet den røde bold], ville
 it could you.know be reasoned he that who there ever had lost the red ball would
 sætte en eftersøgning igang efter den [...] ⁴⁶
 initiate a search PART for it
 'It could be, he reasoned, that whoever had lost the read ball, would initiate a search for it.'
 (KorpusDK)

The embedded *at* ('that')-clause in (1), however, can also be an instance of embedded V2 with *hvem der ellers havde mistet den røde bold* ('whoever had lost the red ball') in the Prefield. We do not treat the *at* ('that')-clause in (1) as embedded V2 though, since it is marginal with an adverb following the finite verb:

- (ii) ?? Det kunne jo være, ..., at [hvem der ellers havde mistet den røde bold], ville omgående
 it could you.know be that who there ever had lost the red ball would immediately
 sætte en eftersøgning igang efter den [...] (KorpusDK)
 initiate a search PART for it
 'It could be, he reasoned, that whoever had lost the read ball, would initiate a search for it immediately.'

The fact that free relative clauses do not have to be extraposed as in (2) is further evidence that they are not clauses but NPs headed by the *wh*-word followed by a relative clause.

⁴⁶KorpusDK.

⁴⁷KorpusDK.

⁴⁸KorpusDK.

⁴⁹KorpusDK.

In (43a) the subject *resultatet* ('the result') is in the canonical subject position preceding the finite verb of a V_{base} -clause. In (43b) the clausal subject is extraposed and the pronoun *det* ('it') is in the subject position preceding the finite verb (We will return to the problem of delimiting extraposition in Chapter 7). The topological analysis of (43a) and (43b) is given in the figure below:

Prefield	T/C	Sentence Field			Extraposition
			Verbal Field		
		Resultet (‘the result’)	er (‘is’)	utilfredsstillende (‘unsatisfactory’)	
	at (‘that’)	det (‘it’)	er (‘is’)	utilfredsstillende (‘unsatisfactory’)	at vi ikke ... (‘that we have not ...’)

3.4. Inadequacies of the topological model

For certain constructions the topological model does not provide an adequate framework for their description. One such construction is embedded V2 mentioned in Section 3.3.3.1. Other constructions are VP-topicalization, coordination and Right-Node Raising.

Embedded V2 in Danish (usually) requires the presence of a complementizer. An example is (44), parts of which were already provided as example (4b):

- (44) Efter den sidste fest fortalte en ældre mand, [at tidligere kunne han ikke lide
 after the last party told an elderly man that previously did he not like
 udlændinge], [...] ⁵⁰
 foreigners
 ‘After the latest party an elderly man told me that he used not to like foreigners.’

This structure is very difficult to accommodate in the topological model: If the complementizer is in T/C, the rest of the clause has to go into a single field. The only possibility is to put it in the Extraposition field. But it is not obvious why an embedded V_{front} -clause preceded by a complementizer should be regarded as extraposed while an embedded V_{base} -clause preceded by a complementizer is not, as illustrated in the second row in the table below.

Pref.	T/C	Sentence Field			Extraposition
			Verbal Field		
	at (‘that’)				tidligere kunne han ... (‘previously could he ...’)
	at (‘that’)	han tidligere ikke (‘he previously not’)	kunne lide (‘could like’)	udlændinge (‘foreigners’)	

An alternative analysis could be to say that the matrix construction *en mand fortalte at ...* ('a man told that ...') is attributed secondary status. The main assertion is actually the embedded

⁵⁰<http://www.tværkulturelt-center.dk/SamirBagi.htm>, [13/10 2010].

clause since it exhibits V2 (this is in line with the analysis of embedded V2 in German in Freywald 2008, p. 259). If the embedded clause is the primary clause, the matrix construction would have to be in a slot for left-dislocated constituents, as shown in the figure below.

Left-disloc.	Prefield	T/C	Sentence Field		
				Verbal Field	
en mand fortalte at (‘a man told that’)	tidligere (‘previously’)	kunne (‘could’)	han ikke (‘he not’)	lide (‘like’)	

The problem is that *en mand fortalte at* (‘a man told that’) does not form a constituent (it is not even saturated since the clause that is supposed to follow the complementizer is missing). In addition, the pragmatic function of the left-dislocated constituents is often claimed to be introduction of a new topic (e.g. Lambrecht 2000 and Wöllstein 2010, p. 55). This is not the case in (44). On the contrary, the matrix construction is generally claimed to be secondary information (Freywald (2008, p. 259) for German).

As a third possibility the complementizer *at* (‘that’) can be treated as the German subordinator *denn* (‘because’) which introduces a V2-clause. Höhle (1986) and Wöllstein (2010) suggest that *denn* (‘because’) is of the category PARORD, that is, syntactically it is a coordinator. This is illustrated below.

Pf	T/C	S-field	PARORD	Pf	T/C	S-field
manden (‘the man’)	fortalte (‘told’)		at (‘that’)	tidligere (‘previously’)	kunne (‘could’)	han ikke ... (‘he not like ...’)

The problem is that the first part of the topological model is incomplete since the clausal object of *fortalte* (‘told’) is missing. We would need a theory of when a model can be incomplete and when it cannot. Also this analysis means that we do not have one model for the sentence, but rather one model that can be iterated without introducing a root symbol. Hansen and Heltoft (2011, p. 1589) account for embedded V2 by assuming two T/C-fields (Modal fields in their terminology), but this analysis raises some additional questions. For example it has to be stated when the second T/C-field can be filled and when it cannot. The complementizer *gid* (‘wish’) does not allow embedded V2, i.e. the second T/C-field cannot be filled as shown in (45):

- (45) *_[T/C] Gid det _[T/C] var ikke sådan!
wish it was not so
‘I wish it was not like that!’

A further problem with the topological model is that it has very rudimentary notion of constituency and certain constructions are sensitive to a constituency structure not embodied in the model. VP-topicalization is a case in point. Consider the example in (46).

- (46) [...] _[VP] ruger på deres guld] gør de også.⁵¹
brooding on their gold do they also

‘Sit on their gold to protect it, they also do.’

In (46) a whole VP consisting of the verb *ruge* (‘to broode’) and its locative complement has been topicalized, leaving the T/C-field to be filled by the dummy-verb *gøre* (‘to do’). However, the topicalized VP is no constituent from the point of view of the topological model: a verb and its locative complement do not occupy one slot in the model. In this sense the model does not allow for a straight-forward account of VP-topicalization. In order to account for such examples we would need more internal structure in the model. It is not immediately obvious how this should be done.

Coordinations of clauses and coordinations of VPs are also difficult to represent in the topological model. Cf. the following example.

- (47) [Peter har vasket op] og [jeg har støvsuget].
Peter has washed up and I have vacuum.cleaned
‘Peter has done the dishes and I have vacuum cleaned.’

If the example in (47) is represented in the topological model with the second conjunct is in the extraposition of the first clause we are faced with two problems (the sign # indicates that we do *not* adopt or recommend this solution).

# Prefield	T/C	Sentence Field		Extraposition
		Verbal Field		
Peter Peter	har (‘has’)	vasket (‘washed’)	op (‘up’)	og jeg har støvsuget (‘and I have vacuum cleaned’)

The first problem is that this analysis seems to suggest that the second conjunction is somehow subordinate to the first conjunct. This is not the case. The two clauses are co-ordinated and the second conjunct is not syntactically dependent on the first conjunct. The second problem is that there are no indications that the second conjunct is indeed extraposed (Cf. the discussion in Section 3.3.4 above). The same objections apply to the example in (48) where the second conjunct is not a full clause as in (47), but a participial VP. There are no indications that the second conjunct should be in the extraposition (again # indicates that we *not* adopt this solution).

- (48) Peter har [vasket op] og [støvsuget].
Peter has washed up and vacuum.cleaned
‘Peter has done the dishes and the vacuum cleaning.’

# Prefield	T/C	Sentence Field		Extraposition
		Verbal Field		
Peter Peter	har (‘has’)	vasket (‘washed’)	op (‘up’)	og har støvsuget (‘and has vacuum cleaned’) ...

⁵¹<http://www.fyldepennen.dk/tekster/2193/da-danerme-blev-kristne>, [7/7 2011].

Wöllstein (2010) suggests that the topological model can allow more instances of the model to be coordinated, just like the “paratactic subordinators” mentioned above can “tie” topological models together. This would look like this:

# Pf	T/C	S-field	COORD	Pf	T/C	S-field
------	-----	---------	-------	----	-----	---------

Again, this means that we do not have one model for the clause, but rather one model that can be iterated without introducing a root symbol.

The example in (49), finally, illustrates *Right-Node-Raising*, i.e. the NP *gulvtæppet* (‘the carpet’) is understood as the object of both the verb *støvsuget* (‘vacuum cleaned’) and *vasket* (‘washed’). For this example we have to assume that the verbal field contains the whole coordinated structure. Otherwise the first conjunct would be missing an object.

- (49) Peter har støvsuget og vasket [gulvtæppet]
Peter has vacuum.cleaned and washed carpet.DEF
‘Peter has vacuum cleaned and washed the carpet.’

Prefield	T/C	Sentence Field		
			Verbal Field	
Peter Peter	har (‘has’)		støvsuget og vasket (‘vacuum cleaned and washed’)	gulvtæppet (‘the carpet’)

Concluding it must be said that the topological model has proven to be a useful descriptive tool, but it suffers from not being able to accommodate hierarchical structures in an intuitive way.

3.5. Comparison with German

As noted in the introduction the topological model presented here deviates from previous topological models of Danish by positing a separate Verbal Field which divides the Sentence Field into two parts: the part to the left containing the subject and adjuncts and the part to the right containing the internal complements of the verb as well as adjuncts. Positing a separate verbal field captures the fact that the verbs are all adjacent in V_{base} -clauses. It also allows for a straight-forward comparison of the constituent order in Danish and German. Danish is an SVO language, i.e. the verbal field precedes the object (and other internal complementes). German is a SOV language (Fourquet, 1957; Bierwisch, 1963; Thiersch, 1978; Müller, 2008b; Haider, 2009) i.e. the Verbal Field follows the subject and complements of the verb. This is evident from the topological models of the two languages below.

Prefield	T/C	Sentence Field		
			Verbal Field	
	at (‘that’)	manden ikke (‘the man’) (‘not’)	har set (‘has’) (‘seen’)	filmen (‘the movie’)

Prefield	T/C	Sentence Field	
			Verbal Field
	dass (‘that’)	der Mann den Film nicht (‘the man ’) (‘the movie’) (‘not’)	gesehen hat (‘seen’) (‘has’)

Thus this topological framework captures the basic difference between the constituent order in Danish and German. In Chapter 4 we will show how a host of differences between Danish and German constituent order follows from this basic difference.

3.6. Conclusion

In this chapter we have presented the basic constituent order of Danish and proposed a topological model to serve as a point of reference for the discussion of constituent order phenomena in later chapters. The model allows for a straight-forward comparison of Danish and German constituent order, since it posits the same fields for both languages, but with different ordering. Most of the basic phenomena to be discussed in this book have also been introduced: negated quantifier phrases, object-shift, extraposition, *do*-support, preposed negation and subject extraction. Only passive has no particular bearing on the topological model.

5. Object Shift and Negation Shift

In Chapter 4 we saw that Danish has a basic NP-VP structure. We further saw that the VP is head-initial and that complements of the verb occur inside the VP in a fixed order. In this chapter we will discuss cases in which complements of the verb are not linearized to the right of the verb: the so-called *object shift* and the so-called *negation shift*. Object shift refers to the phenomenon that an unstressed pronoun in a clause with the main verb in initial or second position precedes sentential adverbs rather than follow them. As mentioned this phenomenon is generally referred to as *object shift*, but actually this terminology is somewhat misleading. Not only object-pronouns shift. Also pronouns as predicative complements and (subcategorized) locative adverbial pronouns shift. The phenomenon might more appropriately be called *non-subject shift*. We will, however, stick to the established terminology and refer to the phenomenon as object shift. Object shift has attracted a lot of attention, especially in generative linguistics, while analyses of this phenomenon within HPSG appear to be scarce. In this chapter we will develop an analysis of object shift which crucially relies on the approach to verb-fronting presented in Chapter 4.

The second phenomenon that we look at in this chapter is *negation shift*: inherently negated indefinite objects are linearized to the left of the VP in accordance with their sentential negative force.

5.1. The Phenomenon

5.1.1. Object Shift: The Order of Weak Pronouns

Object shift refers to the phenomenon that personal, reflexive, or locative pronouns in a non-subject function do not occur in the canonical position inside the VP (to the right of sentential adjuncts), but rather outside the VP to the left of sentential adjuncts (including inherently negated quantifier phrases). The examples in (1) show that a full NP *mændene* ('the men') must occur inside the VP to the right of sentential negation. The examples in (2) show that the unstressed pronoun *dem* ('them') occurs outside the VP linearly preceding the sentential adverb *ikke* ('not').¹

- (1) a. Hun tager ikke [mændene] alvorligt.
she takes not men.DEF seriously
'She doesn't take the men seriously.'
- b. *Hun tager [mændene] [ikke] alvorligt.
she takes men.DEF not seriously

¹The negation in (2a) is ambiguous between sentential negation and constituent negation of the adverb *alvorligt* ('seriously'). The preferred reading of the negation in (2a) is sentential negation, though. The negation in (2a) is stressed, while constituent negation is unstressed. Also constituent negation would call for the continuation, *but rather . . .*

- (2) a. Hun tager [dem] [ikke] alvorligt.²
 she takes them not seriously
 'She doesn't take them seriously.'
 b. *Hun tager [ikke] [dem] alvorligt.
 she takes not them seriously

The same is true for negated adverbs like *aldrig* ('never') and sentential adverbs like *heldigvis* ('fortunately') and also for combinations of the negation and sentential adverbs. For instance in (3) we have both the sentential adverb *heldigvis* ('fortunately') and the negation *ikke*. The pronouns have to shift over both adverbials as in (3a). It may not be realized between the two adverbials (3b) or to the right of them (3c).

- (3) a. De solgte [den] heldigvis ikke.
 they sold it fortunately not
 'Fortunately they did not sell it.'
 b. *De solgte heldigvis [den] ikke.
 they sold fortunately it not
 c. *De solgte heldigvis ikke [den].
 they sold fortunately not it

Example (4) gives an example of a pronoun which is a predicative complement of the copula verb *være* ('to be').

- (4) De ser forholdsvis raske ud – men de er [det] ikke.³
 they look fairly healthy PART but they are it not
 'They look fairly healthy, but they are not.'

As was mentioned above, (Danish) object shift exclusively applies to pronominal constituents. But being a pronoun is not a sufficient condition in itself. The pronominal constituents must be minimal (Mikkelsen, 2011b, p. 252). Minimality applies to the phonological status of the pronoun on the one hand and to its syntactic complexity on the other hand. Only unstressed pronominals shift, indeed unstressed pronominals must shift (due to constraints on the VP to be addressed in Section 5.1.1.4.1 below).⁴

In a similar vein an unshifted pronominal must be (contrastively) stressed. This is shown in the examples below, where capital letters indicate stress, and a subscripted zero indicates that the pronoun is unstressed.

²KorpusDK.

³KorpusDK.

⁴This is not true in its full generality. Mikkelsen (2011b) shows that unstressed pronouns which are focal due to inherent properties of the construction do not shift. Her area of interest are specificational copular clauses where the copular complement is inherently focal. In specificational copular clauses the pronoun does not shift even though it is unstressed. This is shown in the following example from Mikkelsen (2011b, p. 257):

- (i) Min løbemaker i fjor var Simon, men min løbemaker i år er (*ham) ikke ham
 my running.partner in last.year was Simon but my running.partner in year is him not him
 'My running partner last year was Simon, but my running partner this year is not him.'

We will briefly return to this problem in Section 5.2.1.

- (5) a. Hun tager [ikke] DEM alvorligt
 she takes not them seriously
 'She doesn't take them seriously.'
 b. Hun tager _odem [ikke] alvorligt
 she takes them not seriously
 'She doesn't take them seriously.'

Apart from stress, the syntactic complexity of the pronominal constituents plays a role.⁵ Only pronominal constituents without any kind of pre- or post-modification shift. Personal pronouns allow pre-modification by focus adverbials as in (6) and post-modification by PPs as in (7) or clauses (relative or appositional). As shown in the examples (6) and (7) such modified pronouns are barred from shifting.

- (6) a. Vi frygter dog ikke [kun ham], men hele det danske landshold.⁶
 we fear however not only him but entire the Danish team
 'We are not just afraid of him, but of the entire Danish team,'
 b. *Vi frygter [kun ham] dog ikke, men hele det danske landshold,
 we fear only him however not but entire the Danish team
 (7) a. Vi hader ikke [dem fra Jugoslavien], vi taler bare ikke med dem.⁷
 we hate not those from Yugoslavia we speak just not with them
 'We don't hate the ones from Yugoslavia, we just do not speak with them.'
 b. *Vi hader [dem fra Jugoslavien] ikke,
 we hate those from Yugoslavia not

Reflexive pronouns also allow post-modification with the intensifier *-self* ('self') and first and second person pronouns allow premodification by adjectives. In those cases the pronouns do not shift either as the examples in (8b) and (9b) show:

- (8) a. og han satte aldrig [sig selv] i første række⁸
 and he put never him self in first place
 'and he never put himself in the first place'
 b. *og han satte [sig selv] aldrig i første række
 and he put him self never in first place
 (9) a. De hjælper ikke [lille mig].
 they help not little me
 'They do not help little me.'
 b. *De hjælper [lille mig] ikke.
 they help little me not

⁵Possibly these complexity constraints can be made to follow from the requirement that shifted pronouns are unstressed. Modified pronouns and coordinated pronouns tend to be stressed.

⁶KorpusDK.

⁷KorpusDK.

⁸KorpusDK.

Finally bare pronouns are barred from shifting when they occur in coordinated structures. Two bare coordinated pronouns cannot shift but have to remain in the canonical object position to the right of sentential adjuncts:

- (10) a. Giv ikke op, og giv ikke [ham eller hende] skylden.⁹
 give not up and give not him or her blame.DEF
 ‘Don’t give up, and don’t blame him or her.’
 b. *Giv ikke op, og giv [ham eller hende] ikke skylden.
 give not up and give him or her not blame.DEF

Thus, we arrive at the generalization that only unmodified, uncoordinated and unstressed personal and reflexive pronouns shift.

Shifted pronouns do not surface in a position to the left of the subject. Instances of Long Object Shift, where the object appears between the (fronted) verb and the subject are reported for Swedish (Erteschik-Shir, 2005, p. 73). Long Object Shift is not observed in Danish, but still there appears to be a difference in acceptability depending on the particular choice of pronoun. Long object Shift is much better with 1st person pronouns, occurring as experiencer arguments as in (11a,b) than with 3rd person pronouns as in (11c).¹⁰

- (11) a. ??Nu interesserer [mig] den nye literatur ikke synderligt
 now interests me the new literature not particularly
 ‘Actually the new literature does not really interest me.’
 b. ?Faktisk gør [mig] de nye regler ikke noget
 actually do me the new regulations not anything
 ‘Actually I am not really opposed to the new regulations.’
 c. ?*Nu så [det] Peter ikke selv
 now saw it Peter not himself
 ‘Now Peter didn’t see it himself.’

The exact restrictions on Long Object Shift are far from clear, and Long Object Shift will not be further discussed here.

Object shift is strictly clause-bound (Vikner, 2006, p. 405). A pronoun can never shift into the matrix construction of an embedding verb. This situation would only obtain in a context with embedded V2, that is, when a verb selects a clause with verb fronting, since object shift is only observed in V1- and V2-clauses (see Section 5.1.1.4.1). In clauses with embedded V2, a pronoun cannot shift across its selecting head into the matrix clause. In the examples in (12), the complement clause is V2 with the object *forretten* (‘the starter’) in the prefield. As (12b) shows the reflexive pronoun *sig* (‘REFL’) cannot occur in the matrix clause.

- (12) a. Jeg ved at forretten brød han [sig] ikke om.
 I know that starter.DEF cared he REFL not about
 ‘I know that he didn’t like the starter.’

⁹KorpusDK.

¹⁰As will be discussed on page 101 in connection to example (39) a similar phenomenon is observed in the *fä*-construction. Here the light pronoun precedes a past participle.

- b. *Jeg ved [sig] at forretten brød han ikke om.
 I know REFL that starter.DEF cared he not about

Object shift not only applies to thematic objects. As noted in Vikner (2006, p. 415) object shift also applies to raised objects, that is, athematic objects of the matrix verb. In (13) the perception-verb *høre* (‘to hear’) selects a non-thematic object *dem* (‘them’) which is interpreted as the subject of the bare infinitive *tale* (‘to speak’).¹¹ The pronoun occurs to the left of the negation *aldrig* (‘never’).

- (13) og jeg hørte [dem] ellers aldrig tale om Gud¹²
 and I heard them otherwise never speak of God
 ‘and otherwise I never heard them speak of God’

Also pronouns which are not subcategorized by the verb at all, shift. In the examples in (14) the pronoun *mig* (‘me’) is an object *iudicantis*, expressing a judgement on the part of the speaker. As shown in (14b) the pronoun occurs to the left of the sentential adverb *faktisk* (‘actually.’)

- (14) a. og frikadellerne var [mig] lidt for bastante – og for kolde¹³
 and meat.balls were me little too heavy and too cold
 ‘and the meat balls were a little too heavy and too cold for my taste’
 b. og frikadellerne var [mig] faktisk lidt for bastante – og for kolde
 and meat.balls were me actually bit too heavy and too cold
 ‘and the meat balls were actually a bit too heavy and too cold for my taste’

We assume that *mig* (‘me’) is subcategorized by the degree adverb *for* (‘too’) as suggested for German in Wegener 1985a, p. 119 and Müller 2009b, Section 2.2. Thus, example (14) illustrates that not only verbal complements are subject to object shift.

5.1.1.1. Shift of Locative Pronouns

As mentioned, the term *object shift* is somewhat misleading since also locative pronouns shift. Shifted pronouns are generally objects, since pronouns canonically have nominal syntactic functions (subject or object). But unstressed locative pronouns functioning as (usually) valency-bound adjuncts shift as well (Haider et al., 1995, p. 20; Vikner, 2006; Josefsson, 1994, p. 117). In example (15) the locative pronoun *her* (‘here’) is linearized in the “shifted” position to the left of sentential negation.

- (15) Obersten er [her] ikke i øjeblikket, sagde en ung soldat i forkontoret¹⁴
 colonel.DEF is here not at moment.DEF said a young soldier in front.office.DEF
 ‘The colonel is not here at the moment said a young soldier in the front office.’

¹¹See also de Geest 1970, p. 45, Kirsner and Thompson 1976, and Müller 2002, p. 63–64 on role assignment of perception verbs.

¹²KorpusDK.

¹³KorpusDK.

¹⁴KorpusDK.

As Engels and Vikner (2012, p. 18) note, this shows that pronoun shift cannot be connected to the presence of morphological case. Hence case-based explanations of the differences in the Scandinavian languages are empirically not correct.

If the locative is not an unstressed pronoun, but a PP or an adverb, it is linearized within the VP.

- (16) a. Obersten er (*på tjeneste) ikke (på tjeneste) i øjeblikket.
colonel.DEF is on duty not on duty at moment.DEF.
'The colonel is not on duty at the moment.'
b. Obersten er (*tilstede) ikke (tilstede) i øjeblikket.
colonel.DEF is present not present at moment.DEF.
'The colonel is not present at the moment.'

In (15) the pronoun is a complement of the copular *være* ('to be'). In other cases the complement status of the adjunct is less clear, but still there are arguments in favour of treating shifting locative pronouns as valency-bound. One such argument is that verbs differ as to whether they allow shifted locative pronouns. The verbs *sove* ('to sleep') and *læse* ('to read') both allow locative adjuncts, but while *sove* ('to sleep') readily occurs with a shifted locative pronoun as in (17), the verb *læse* ('to read') is marginal with a shifted locative pronoun as shown in (18). These data suggest that a locative adjunct must be closely associated with the verb to be allowed to shift, i.e. it must be subcategorized.¹⁵

- (17) Jeg sover [her] ikke i dag.
I sleep here not PREP day
'I don't sleep here today.'
(18) a. Jeg læser ikke [på biblioteket] i dag
I read not in library.DEF PREP day
'I don't read in the library today.'
b. ?*Jeg læser [her] ikke i dag
I read here not PREP day
'I don't read here today.'

¹⁵Recall that the pronoun in (14) was also shown to be subcategorized, albeit not by the verb, but by the degree adverb *for* ('too'). Verbs occurring with shifted locative pronouns are *arbejde* ('to work' – in the sense: 'to be employed'), *blive* ('to remain'), *bo* ('to live'), and *være* ('to be'). All of them can be argued to select an obligatory adverbial. Actually the verb *læse* ('to read') does allow a shifting locative pronoun, but on the specific reading of being enrolled at an educational institution.

- (i) a. Jeg læser ikke på Københavns Universitet.
I read not on Copenhagen University
'I am not enrolled at the University of Copenhagen.'
b. Jeg læser [her] ikke.
I read here not
'I am not enrolled here.'

On this particular reading the locative can count as valency-bound.

An additional argument for treating the pronoun in (17) as a complement and not as an adjunct is that the pronoun can be shown not to be adjoined to the VP. As mentioned in Chapter 4 all adjuncts can left-adjoin to the VP, so *her* ('here') in (17) would not have to undergo object shift to appear in the position before the sentential negation. It could also be left-adjoined to the VP. However, left-adjunction and object shift differ in at least two ways, suggesting that the pronoun in (17) is indeed shifted and not-left-adjoined.

A first difference is that object shift is obligatory, while left-adjunction of a locative to VP is optional and even a marked option in many contexts. In (17) object shift is obligatory. An unstressed locative pronoun cannot occur to the right of the sentential negation as shown in (19a). Left-adjunction of a locative PP, however, is optional as shown in example (19b).

- (19) a. Han sover (_oher) ikke (*_oher).
he sleeps here not here
'He doesn't sleep here.'
b. Han har (i Århus) ikke noget sted at bo (i Århus)
he has in Århus not any place to live in Århus
'He has nowhere to live in Århus.'

A second difference between object shift and left-adjunction is that object shift is possible in contexts where left-adjunction is impossible. Left-adjunction of a locative is only possible if the VP contains other (focussed) material. If the VP is "empty", left-adjunction is impossible. In example (20a) the locative *i restauranten* ('in the restaurant') can left-adjoin to the VP, which contains a focal object. Left-adjunction is not possible in (20b) since the VP contains no focal material (see also the discussion in Section 4.1.3).

- (20) a. Han havde [i restauranten] spist to store portioner pommes-fritter.
he had in restaurant.DEF eaten two huge portions French.fries
'He had eaten two huge portions of French fries in the restaurant'
b. ?*Han havde [i restauranten] spist.
he had in restaurant.DEF eaten
'He had eaten in the restaurant'

An unstressed locative pronoun is required to shift, also in the environment of an "empty" VP as the example in (21) shows.

- (21) Han bor _oher ikke (*_oher).
he lives here not here
'He doesn't live here.'

Since left-adjunction of a locative is subject to different constraints than object shift, we have indication that we are dealing with two different linearization processes with object shift applying to complements and left-adjunction to adjuncts. The locative pronouns under discussion clearly shift, rather than left-adjoin and so they must be treated as complements.

Only locatives such as *her* ('here') and *der* ('there') are subject to object shift. Temporal adjuncts such as the adverb *da* ('then') are barred from shifting. The example in (22b) is only possible on a reading of *da* ('then') as modal particle, not as a temporal adjunct.

- (22) a. Han sov i hvert fald ikke [klokken 8]
 he slept in any case not clock.DEF 8
 'He didn't sleep at 8 o'clock in any case.'
- b. Han sov [_oda] i hvert fald ikke
 he slept then in any case not
 'He didn't sleep then in any case.'

This observation suggests that locative adjuncts are more likely to be valency-bound than temporal adjuncts. Zifonun, Hoffmann and Strecker (1997, p. 1536) argue that locatives tend to belong to the foregrounded information and Pittner (1999, p. 77) notes that verbs subcategorizing locatives are far more frequent than verbs subcategorizing temporals. This may serve as indication that locatives are more closely tied to the verb than temporals and thus that some locatives can be treated as complements. We will consider valency-bound locatives oblique complements.

As a final remark concerning the shifted locative pronouns it has to be noted that the existence of shifted locative pronouns shows that the possibility to shift objects in the Scandinavian languages should not be related to case assignment (Engels and Vikner, 2012, p. 18).

5.1.1.2. Object Shift out of PPs

There are further syntactic constraints on object shift: Object shift only applies to bare pronouns, a pronoun embedded in a PP does not shift, as (23b) shows:

- (23) a. Vi venter ikke på dig.
 we wait not for you
 'We are not waiting for you.'
- b. *Vi venter på dig ikke.
 we wait for you not

Also it is impossible to shift a bare pronoun out of a PP, stranding the preposition as in (24a). So while preposition stranding is possible in general (24b), preposition-stranding is incompatible with object shift.

- (24) a. *Vi venter [dig] ikke [på].
 we wait you not for
 Intended: 'We are not waiting for you.'
- b. [Dig] venter vi ikke [på].
 you wait we not for
 'We are not waiting for you.'

The generalization is that only pronouns which are dependent on the head verb of the clause (or which are selected by a degree-adverb, see example (14)) can shift. A pronoun dependent on a preposition as in (24a) is barred from shifting, even if the object of the preposition can be topicalized independently as in (24b).

5.1.1.3. Multiple Shifted Pronouns

Finally, several pronouns can shift simultaneously. In the ditransitive construction in (25a) two unstressed pronouns, *dem* ('them') and *det* ('it') have shifted to the left of the sentential negation. In (25b) both a pronominal object and a pronominal adverb have shifted.

- (25) a. Han fortalte [dem] [det] ikke.
 he told them it not
 'He didn't tell it to them.'
- b. Jeg lagde [den] [der] ikke selv.
 I put it there not myself
 'I didn't put it there myself.'

In principle even three pronouns can shift in one clause. In (26a) two objects of the ditransitive verb *fortælle* ('to tell') and a locative pronoun have shifted. (26b) shows a variant of this sentence without shifted objects and with a locative PP.

- (26) a. ?? Han fortal₀te ₀hende ₀det ₀der ikke.
 he told her it there not
 'He didn't tell it to her there.'
- b. Han fortalte ikke sin mor sandheden ved familiefesten.
 he told not his mother truth.DEF at family.party.DEF
 'He did not tell his mother the truth at the family party.'

However, examples with three shifted pronouns seem marginal. Presumably there is a phonological reason for the marginality of clauses such as (26a). The clause has four unstressed syllables in a row as indicated in the example, thus we have a prosodic unit with four unstressed syllables.

Note that the sequence of three shifted pronouns obeys the complement ordering IO > DO > Oblique as detailed in Chapter 4. This is also noted for Swedish in Sells 2001.

5.1.1.4. Emptying the VP: Holmberg's Generalization

A pervasive generalization on the constraints on object shift is *Holmberg's Generalization* (Holmberg, 1999a; Vikner, 2006): A pronoun can only shift if it is the left-most element in the VP. An unstressed pronoun can never "cross" another element within the VP. A number of interesting properties of object shift follows from this generalization: we will discuss the position of the finite verb in Section 5.1.1.4.1, the fronting of non-finite verbs in connection with object shift in Section 5.1.1.4.2, and frontings of indirect objects in structures with a shifted direct object in Section 5.1.1.4.3.

5.1.1.4.1. Constraints On the Order of the Finite Verb

First of all object shift is only possible if the clause has verb fronting. In (27) the verb is simplex (past tense) and fronted and so the pronoun must shift (27b):

- (27) a. Han [fortalte] [dem] ikke sandheden.
 he told them not truth.DEF
 ‘He didn’t tell them the truth.’
 b. * Han [fortalte] ikke [dem] sandheden.
 he told not them truth.DEF

Similarly, the examples in (28) contain a fronted, imperative verb and the pronoun must shift (28b):

- (28) a. [Fortæl] [dem] ikke sandheden!
 tell.IMP them not truth.DEF
 ‘Don’t tell them the truth.’
 b. * [Fortæl] ikke [dem] sandheden!
 tell.IMP not them truth.DEF

The pronoun can never shift in a clause with the finite verb in its base position within the VP. Thus object shift hardly ever occurs in an embedded clause (as noted above it is only possible in embedded V2). The example (29) illustrates.

- (29) a. at han ikke [fortalte] [dem] sandheden
 that he not told them truth.DEF
 ‘that he didn’t tell them the truth’
 b. * at han [dem] ikke [fortalte] sandheden
 that he them not told truth.DEF
 ‘that he didn’t tell them the truth’

5.1.1.4.2. Complex Tenses, Passive, AcI, Object Shift, and Partial VP-Fronting

In complex tenses the VP-initial embedded verb blocks object shift. For example, in (30) the participle *fortalt* (‘told’) is initial in the VP and therefore the object cannot be serialized to the left of the negation as (30b) demonstrates:

- (30) a. Han har ikke [fortalt] [dem] sandheden.
 he has not told them truth.DEF
 ‘He hasn’t told them the truth.’
 b. * Han har [dem] ikke [fortalt] sandheden.
 he has them not told truth.DEF

Object shift can only occur in a clause with a complex tense, if the non-finite verb is topicalized. Again the pronoun would be initial in the VP. Note that this is an example of partial VP-topicalization which was claimed not to be possible in Danish in Section 4.1.1.2. Thus, the correct generalization appears to be that partial VP-topicalization is only possible if there is no overt material in the VP as in the example in (31a) from Vikner (2006, p. 407) and in the corpus example in (31b).

- (31) a. [Kysset] har jeg [hende] ikke, bare holdt hendes hånd.
 kissed have I her not only held her hand
 ‘I have not kissed her. I only held her hand.’
 b. men helt [udelukke] kan man [det] da ikke eller hvad¹⁶
 but wholly exclude can you it then not or what
 ‘but you cannot wholly exclude it, can you?’

In addition to the examples with past participles that are discussed in the literature sentences with passive participles are marginally possible:

- (32) a. Jens bliver ikke anbefalet bogen.
 Jens is not recommended book.DEF
 ‘The book is not recommended to Bjarne.’
 b. ?? Anbefalet bliver Jens den ikke.
 recommended is Jens it not
 ‘It is not recommended to Jens.’

As discussed in Holmberg 1999a, Section 3, partial VP topicalization is highly restricted. According to him (p. 12) it is only possible for a participle with an NP object which is a semantic argument of the verb. However, our attested example in (31b) shows that infinitives that depend on modals can be fronted as well. Partial VP-topicalization is highly degraded with infinitives that depend on AcI verbs (33a) and ungrammatical when the non-finite verb itself selects a VP that is not fronted together with the non-finite verb as shown for the perception verb *se* (‘to see’) in the example (33c), selecting a (non-thematic) object and a bare infinitive.

- (33) a. ?* Læse så Jens ham den ikke.
 read saw Jens him it not
 ‘Jens did not see him read it.’
 b. * [Set] har jeg [hende] ikke [ryge].
 seen have I her not smoke
 Intended: ‘I haven’t seen her smoke but I have smelled her breath.’

As Sten Vikner pointed out to Holmberg (1999b, p. 11) in personal communication, a theory that assumes that object shift involving objects of non-finite verbs requires the bare verb to be moved out of the way predicts that (33b) would be grammatical. (33b) would be the result of fronting *set* in (34):

- (34) Har jeg ikke set hende ryge?
 have I not seen her smoke
 ‘Haven’t I seen her smoke?’

It is possible to front the AcI verb together with the raised object and the dependent verb as in (35a) and interestingly it is also marginally possible to front the non-finite AcI verb together with its verbal complement as in (35b):

¹⁵Holmberg (1999a, p. 7) provides a parallel example from Swedish which he attributes to Tarald Taraldsen.

¹⁶<http://hope.pointblog.dk/svaert-at-vide-.html>, [26/3 2012].

- (35) a. Set hende ryge har jeg ikke (men ...).
 seen her smoke have I not but
 'I have not seen her smoke but ...'
 b. ?[Set] [ryge] har jeg [hende] ikke.
 seen smoke have I her not

As Holmberg (1999a, p. 11) noted the fronting of the AcI verb without the dependent verb is ungrammatical independent of object shift.

- (36) * [Set] har jeg ikke Anne [ryge].
 seen have I not Anne smoke
 Intended: 'I haven't seen Anne smoke but I have smelled her breath.'

The generalization seems to be that only verbs with all or without any complements can be fronted, but the fronting of partial VPs that include some of the complements is excluded. This is confirmed by partial frontings involving a ditransitive verb, which are marginally possible, but only if both objects are shifted out of the VP as in (37a) so that there is no material left in the VP. In example (37b) the VP contains a PP, which cannot shift, and so the example is considerably worse than (37a).

- (37) a. ? [Foræret] har Peter [hende] [den] ikke – kun lånt hende den.
 given.as.a.present has Peter her it not only lent her it
 'Peter hasn't given it to her, he only lent it to her.'
 b. ?* [Foræret] har Peter [den] ikke til Luise – kun lånt hende den.
 given.as.a.present has Peter it not to Luise only lent her it
 Intended: 'Peter hasn't given it to Luise, he only lent it to her.'

The fronting of the verb with only a subset of its complements is ungrammatical in Danish: The ditransitive verb cannot be fronted together with its direct object (38a,b) and fronting of the non-finite verb together with the indirect object is excluded as well, as the examples in (38c,d) show:

- (38) a. * Foræret bogen har Peter hende ikke.
 given.as.a.present book.DEF has Peter her not
 'Peter did not give her the book as a present.'
 b. * Foræret bogen har Peter ikke Anne.
 given.as.a.present book.DEF has Peter not Anne
 'Peter did not give Anne the book as a present.'
 c. * Foræret Luise har Peter den ikke.
 given.as.a.present Luise has Peter it not
 'Peter did not give it to Luise as a present.'
 d. * Foræret Luise har Peter ikke bogen.
 given.as.a.present Luise has Peter not book.DEF
 'Peter did not give it to Luise as a present.'

As the examples in (38b,d) show, this is independent of object shift.

Occasionally we do find a kind of object shift, where an unstressed pronoun is linearized to the left of a non-finite verb. Lødrup (1996, p. 84) observes that an unstressed reflexive can intervene between the verb *få* and a perfect participle as in example (39) below.

- (39) og før hun fik [sig] tænkt ordentligt om, havde hun søgt og fået det¹⁷
 and before she got REFL thought carefully PART had she applied and got it
 'and before she had thought carefully about it, she had applied and gotten it'

Lødrup analyses the combination of *få* ('to get') and the past participle as a complex predicate and considers the placement of the reflexive an instance of *clitic climbing*. However, this kind of *clitic climbing* appears only to be possible with the verb *få* ('to get') and not with bona-fide auxiliaries as shown for the auxiliary *have* ('to have') below:

- (40) ?* Han har [sig] vænnet til det.
 he has REFL adjusted to it
 'He has grown accustomed to it.'

We do not consider the preposing of the pronoun *sig* ('him-/herself') in (39) an instance of object shift, since the possibility of preposing *sig* ('him-/herself') is lexically restricted to the verb *få* in combination with a past participle.

In imperative clauses we do find examples of complex tenses where the pronoun appears to have shifted even without fronting the non-finite verb. For instance, in (41) the object pronoun *den* ('it') appears to the left of the main verb *læst* ('read.PASTPART').

- (41) Hav [den] læst til i morgen!
 have it read until tomorrow
 'Make sure you have read it until tomorrow.'

This apparent counter-example to the generalization that only VP-initial pronouns shift rests on the assumption that example (41) does indeed contain a complex verb form. An alternative analysis is that the past participle is a post-modifying resultative participle as also argued for English in Akmajian 1984, p. 11–12. Support for this analysis comes from examples where *have* ('to have') + *det* ('it') + *past participle* is embedded under a modal verb as below.

- (42) men jeg [måtte] [have] [den] læst¹⁸
 but I must have it read
 'But I had to read it.'

Modal verbs with infinitival complements in the perfect tense invite an epistemic reading as in example (43), even though this is only a tendency (Öhlschläger, 1989, p. 245).

- (43) Han [må] [have læst] den.
 he must have read it
 'It must be the case, that he has read it.'

¹⁷KorpusDK.

¹⁸KorpusDK.

The example in (42) only has a deontic reading. This is expected, if *have* ('to have') in example (42) is no tense auxiliary, but a main verb with a direct object and a post-modifying participle.

Moreover this construction is also observed with full NP objects as in (44). Since only bare pronouns shift, example (44) can not be object shift.

- (44) Hav [alt dit hjemmearbejde] lavet.¹⁹
 have all your home.work done
 'Be sure do have done all your home work.'

For these reasons we assume that (41) is not an instance of object shift in a clause with a complex tense.

Thus, object shift in the presence of a non-finite verb is only possible with a topicalized, transitive past participle selected by the auxiliary *have* ('to have') and marginally possible with a passive participle of a ditransitive verb.

5.1.1.4.3. Object Shift in Double Object Constructions

Also other internal complements linearly preceding the unstressed pronoun block object shift (Vikner, 2006, p. 400). As detailed in the discussion of the order of internal complements in Chapter 4, only the ditransitive construction allows a bare NP to be preceded by another complement within the VP (V NP NP).²⁰ It follows that object shift is blocked by an indirect object which is no unstressed pronoun as shown in (45).²¹

- (45) a. Han skænkede ikke [biblioteket] [bogen].
 he donated not library.DEF book.DEF
 'He did not donate the book to the library'
 b. ?* Han skænkede [den] ikke [biblioteket].
 he donated it not library.DEF
 'He didn't donate it to the library.'

If the indirect object is topicalized or if it is a shifted pronoun itself, the direct object is initial in the VP and can undergo object shift:

¹⁹KorpusDK.

²⁰In Swedish a bare NP can also be preceded by a particle, so object shift is also blocked by particles in Swedish (Holmberg, 1999a, p. 2). Vikner (2006, p. 398) gives the following examples:

- (i) a. Peter kastade inte [bort] [den]
 Peter threw not away it
 'Peter did not throw it away.'
 b. *Peter kastade [den] inte [bort]
 Peter threw it not away

²¹The example in (45b) is only possible on a reading where the shifted pronoun is the receiver-argument and the library is the theme-argument.

- (46) a. ? [Maria] fortalte de [det] ikke.
 Maria told they it not
 'Maria they didn't tell.'
 b. ? Hvem frarådede han det ikke?
 whom discouraged he it not
 'Whom didn't he advise against it?'

Erteschik-Shir (2005, p. 62, fn. 18) claims that the examples such as (46b) are ungrammatical in Danish. We haven't found real examples of fronted indirect objects with shifted direct objects and they do appear to be degraded, but not completely impossible.

5.1.1.4.4. Object Shift out of PPs

We already discussed the example (24a) that shows that a pronoun cannot be shifted out of a PP argument. As Holmberg (1999a, p. 2) points out, this also follows from Holmberg's Generalization: Since only VP-initial pronouns may shift and since there is no way to get the preposition out of the way, shifting is blocked.

The generalization that object shift only occurs when the pronoun is initial in the VP is challenged by examples with shifted locatives, where shifting across a direct object in the VP is not as strictly ruled out as with object pronouns:

- (47) a. Grækerne anbragte siden et tempel på den her klippe
 Greeks.DEF placed later a temple on this here rock
 'Later the Greeks placed a temple on this rock.'
 b. Grækerne anbragte her siden et tempel
 Greeks.DEF placed here later a temple
 'Later the Greeks placed a temple here.'

Grammaticality judgements are subtle and in the lack of authentic examples we will assume, that Holmberg's Generalization holds, even though some violations of this generalization appear to be more easily tolerated than others.

5.1.2. Negation Shift: The order of negated quantifier phrases

A basic principle in the preceding discussion has been that complements are within the VP, while adjuncts adjoin to the VP (roughly). Manner adjuncts have been shown to defy this strict separation, since they exhibit both complement and adjunct behaviour (see Footnote ??). Another case in point are inherently negated quantificational phrases. These are phrases headed by the nouns *ingen* ('noone'/'nothing') or *ingenting* ('nothing') or containing the negative determiner *ingen* ('no'). Such phrases are at the same time proposition-related adjuncts (sentential negation) and internal complements (Christensen, 2005, p. 75). They are thus subject to conflicting requirements: as internal complements they should be inside the VP, as negated elements with sentential scope they should be outside the VP since a sentential operator precedes its operand. In Danish, Inherently Negated Quantifier Phrases (IQPs) are linearized as adjuncts outside the VP.

Negation shift refers to objects which are linearized outside the VP and it is difficult to determine whether inherently negated subject NPs are in the canonical subject position or also adjoined to the VP as negations. A disambiguating environment would be the presence of another sentential adjunct, such as *tilsyneladende* ('apparently'). An IQP in subject position would precede this adjunct, while an adjoined subject IQP would follow it. As the examples in (48a) and (48b) show, both orders are possible. So the position relative to sentential adverbs suggests that an inherently negated subject can both be in subject position and adjoined to VP.

- (48) a. Mærkeligt også at [tilsyneladende] [ingen] interesserer sig for hvad der
weird also that apparently noone cares REFL about what there
er blevet af nødhjælpsforsyningerne.
has become of emergency.supplies.DEF
'Weird also that noone seems to care about what has happened to the emergency
supplies.'
(<http://www.kristeligt-dagblad.dk/laeserdebatt/traad/8471>, [27/9 2011].)
- b. Jeg undrer mig over, at [ingen] [tilsyneladende] har set fordelene ved
I wonder REFL about that noone apparently has seen advantage.DEF in
en lille bil
a small car
'I find it strange that noone seems to see the advantage in a small car.'
(<http://www.ezz.dk/868271-renault-twingo-erfaringer>, [27/9 2011].)

Unnegated subjects cannot occur after sentential adverbs.

- (49) * Mærkeligt også at [tilsyneladende] [regeringen] interesserer sig for [...]
weird also that apparently government.DEF cares REFL about
'Weird also that the government apparently cares about [...]'

Alternatively, the sentential adjunct could adjoin to the subject NP as in the example below. We haven't found authentic examples of this, however.

- (50) ? [Tilsyneladende ingen] har set noget
apparently noone has seen anything
'Apparently noone has seen anything.'

We will assume that inherently negated subject-NPs can linearize both in subject position and adjoined to the VP, but we will ignore subject NPs here and concentrate on inherently negated complements. We will refer to the phenomenon where an IQP is linearized in the position of the negation and not in complement position, as *neg shift*.²² Neg-shift is observed in both

²²IQPs can occur in complement position, but the exact conditions are not entirely clear. IQP *in-situ* is observed in conjunction with secondary resultative predicates such as *tilbage* ('back') and *retur* ('in return').

(i) Jeg har nu for over en måned siden sendt penge, [...] og har fået [ingenting] [retur].
I have now for over one month ago sent money and have had nothing in.return
'I have sent the money more than a month ago [...] but I have had nothing in return.'
(<http://www.hardwareonline.dk/traad.aspx?tid=568259&fid=11>, [19/8 2011])

V_{front} -clauses and in V_{base} -clauses, but it is reported to be more frequent in V_{base} -clauses in Christensen 2005, Section 2.2.4.

If the negation and the quantificational element are split, the internal complement is within the VP, while the negation adjoins to VP as expected. The split variant is always possible and the only option, if neg-shift is blocked. Engels (2011, p. 137) notes that neg-shift across a verb is ungrammatical in colloquial speech, thus in colloquial speech the split-variant is the only option.

- (51) Det skal [ikke] være [nogen hemmelighed], [...] ²³
it shall not be any secret
'It shall be no secret [...]'
- (52) Han har [ikke] haft [noget program], endsige politisk vilje til at
he has not had any programme lest political determination PREP to
gennemføre radikale reformer. ²⁴
make radical reforms
'He has not had any programme, lest political determination to carry through radical reforms.'

5.1.2.1. Neg Shift out of PPs

Neg-shift is restricted to IQPs as bare objects, as (53a) demonstrates. Prepositional objects do not allow neg-shift, not even when the preposition is stranded as in (53b).²⁵

- (53) a. * fordi regeringen [imod ingen fare] _i advarede _i
because government.DEF against no danger warned
'Because the government didn't warn against any danger,'

Also IQP *in-situ* is possible with (contrastive) emphasis on the IQP.

- (ii) Og institutionen – de har fået [„ingenting“] for deres penge
and institution.DEF they have had nothing for their money
'And the institution – they have had nothing for their money.'
(<http://www.din-debat.dk/forum/viewtopic.php?f=32&t=13929>, [19/8 2011])

²³KorpusDK.

²⁴KorpusDK.

²⁵Christensen (2005, p. 64–65) gives the following examples though.

- (i) a. Han kunne [ingen] _i snakke med _i.
he could noone talk to
'He couldn't talk to anyone.'
- b. Det kan [af ingen arkivalier] _i bevises _i.
it can by no files prove.INF.PASS
'It cannot be proven by any files.'

We consider the example in (i.a) marginal and would give it two question marks, while the example in (i.b) is more acceptable. The reason could be that *af ingen arkivalier* ('by no files') is an adjunct and most adjuncts can left-adjoin to the VP as discussed in Section 4.1.3.

- b. ?* fordi regeringen [ingen fare]_i advarede imod _{-i}
 because government.DEF no danger warned against
 'Because the government didn't warn against any danger.'

This also applies to object shift as was discussed in Section 5.1.1.4.4. However, there is a difference between object shift and neg shift: Object shift is blocked by intervening elements like finite and non-finite verbs and hence the impossibility to shift elements out of a PP can be explained by referring to Holmberg's Generalization. This is different with neg shift since neg shift can cross verbs, so here the evidence seems to speak for an analysis that does not analyze neg shift parallel to extraction of elements into the prefield.

5.1.2.2. Neg Shift in Double Object Constructions

Neg-shift in double object constructions is very subtle. We have to consider two situations: either the indirect object is an IQP, or the DO is an IQP. IQPs as indirect objects do not undergo Neg-shift as shown in example (54a) and (54b). Thus an existentially quantified indirect object can only be under the scope of negation in the split variant as in example (54c). There is one exception though: if the existentially quantified indirect object is immediately adjacent to sentential negation for independent reasons, it also allows the IQP, as shown in example (54d). This only occurs in V_{front} -clauses with a simplex verb.

- (54) a. *De vil [ingen mennesker]_i give _{-i} en chance til
 they will no people give a chance more
 Intended: 'They will give no one a second chance.'
- b. *fordi de [ingen mennesker]_i giver _{-i} en chance til
 because they no people give a chance more
 'because they give no one a second chance'
- c. De giver [ikke] [nogen mennesker] en chance til
 they give not any people a chance more
 'They don't give anyone a second chance.'
- d. De giver [ingen mennesker] en chance til
 they give no people a chance more
 'They give no one a second chance.'

If the DO of a double-object construction is an IQP, it can undergo neg-Shift under two circumstances: It can undergo neg-shift if it crosses an overt verb as in (55).

- (55) a. ?Jeg har [ingen penge]_i [lånt] min bror _{-i}
 I have no money lend my brother
 'I have not lend my brother any money.'
- b. ?fordi jeg [ingen penge]_i [låner] min bror _{-i}
 because I no money lend my brother
 'because I am not lending my brother any money'

- c. nej vores lærer har intet givet os.²⁶
 no our teacher has nothing given us
 'No, our teacher didn't give anything to us.'
- d. Men den kommende viceborgmester i Mariager Fjord Kommune har [intet]
 but the future vice.mayor in Mariager Fjord municipality has nothing
 fortalt sin partiformand, der nu venter på en forklaring²⁷
 told his party.leader who now waits for an explanation
 'But the future vice mayor in Mariager Fjord municipality has not told his leader
 in the party anything and he is now waiting for an explanation'

This differs from object shift where shift over the finite verb is impossible (see Section 5.1.1.4 on Holmberg's Generalization). Engels (2011, p. 140) calls this shifting over the finite verb the *Inverse Holmberg Effect*.

The DO can also neg-shift if it independently occurs in a position adjacent to the negation, because the indirect object has shifted to the position before the sentential adjuncts as in (56a) (Christensen, 2005, p. 164). In this latter case the Neg-shift is string-vacuous: you cannot tell from the sequence of words whether the IQP is in the position of the negation or in complement position within the VP. However, since an IQP is impossible – or extremely marked – in complement position (see example (56b)), we have strong indications that the IQP *ingen penge* ('no money') in example (56a) has indeed undergone neg-shift.

- (56) a. De lånte [hende]_i faktisk [ingen penge]_j _{-i} _{-j}
 they lend her actually no money
 'Actually they didn't lend her any money.'
- b. ?*Jeg låner min bror [ingen penge]
 I lend my brother no money
 'I am not lending my brother any money.'

If neither of these two conditions is met, an IQP as a DO cannot undergo neg-Shift as shown in (57).

- (57) *Jeg låner [ingen penge] [min bror]
 I lend no money my brother
 'I am not lending my brother any money.'

A neg-shifted complement cannot contain any post-nominal modifiers (Christensen, 2005, p. 91). The shifted constituent must be syntactically light. Neg-shifting strands post-nominal modifiers in the canonical position of the complement. Interestingly stranding of post-nominal modifiers is generally not possible outside neg-shifting contexts. In (58a) the object *ingen indflydelse* ('no influence') has shifted leaving the PP-modifier *på de beslutninger* ('on those decisions') within the VP. Example (58b) shows that the PP cannot shift along with the object and example (58c) shows, that post-nominal PPs cannot be stranded outside neg-shift, e. g. if the head-noun is topicalized.

²⁶<http://www.studieportalen.dk/forums/Thread.aspx?id=724844>, 8/4 2012

²⁷<http://www.bt.dk/krimi/viceborgmester-i-slagsmaal-med-doermand>, 8/4 2012

- (58) a. fordi vi så slet [ingen indflydelse]_i ville få _{-i} [på de beslutninger],²⁸
 because we then at.all no influence would have on these decisions
 ‘because we wouldn’t have any influence on the decisions.’
 b. *fordi vi så slet [ingen indflydelse på de beslutninger]_i ville få _{-i}
 because we then at.all no influence on these decisions would have
 ‘because we wouldn’t have any influence on the decisions’
 c. ??[Nogen indflydelse]_i ville vi ikke få _{-i} på de beslutninger
 any influence would we not have on these decisions
 ‘We wouldn’t get any influence on the decisions.’

Adverbials (NPs or PPs) containing IQPs also occur to the left of the VP. This is of course expected since this position is open to all adjuncts. However, inherently negated adverbials *must* occur to the left of the VP, even though they are temporal adjuncts as in (59a) or locational adjuncts as in (60a). Temporal and locational adjuncts preferably occur to the right of the VP (see Section 4.1.3). Again the negative force of the IQP prevails.

- (59) a. De var [på intet tidspunkt] i livsfare.²⁹
 they were at no time in danger
 ‘they weren’t in danger at any time.’
 b. *De var i livsfare [på intet tidspunkt].
 they were in danger at no time
 ‘they weren’t in danger at any time.’
 (60) a. Da den begyndte, stod [ingen steder] skrevet, at magten ville
 when it began stood no place written that power.DEF would
 tilfalde socialisterne³⁰
 devolve.upon socialists.DEF
 ‘When it began it didn’t say anywhere that the power would go to the socialists.’
 b. *Da den begyndte, stod skrevet [ingen steder], ...
 when it began stood written no place
 ‘When it began it didn’t say anywhere, ...’

5.1.2.3. Raising and Control

The negated object may shift over several verbs, provided they are raising verbs, that is, verbs that do not assign a semantic role to the arguments that are raised. The examples in (61a,c) are raising verbs and those in (61d,e) are control verbs. The control verbs assign a semantic role to one of their arguments that is coreferential with the subject of the embedded verb. As the examples (61d,e) show, neg shift over such controlled verbs is not grammatical.³¹

²⁸KorpusDK.

²⁹KorpusDK.

³⁰KorpusDK.

³¹Engels (2011, p. 144) reports that some varieties of Danish do allow neg-shift out of infinitival clauses and provides the following example:

- (61) a. fordi han ingenting plejer at sige
 because he nothing uses.to to say
 b. fordi han intet syntes at have lavet
 because he nothing seems to have done
 c. fordi vi ingenting må lave selv
 because we nothing are.allowed.to make ourselves
 d. *fordi han intet overtalte ham til at lave
 because he nothing persuaded him PREP to do
 e. *fordi han ingenting lover at lave
 because he nothing promises to do

The case of (61c) may be controversial since one could assume that *må* assigns a semantic role to the one that is not allowed to do anything. We assume that this follows from general inferences and is not due to the assignment of a semantic role by the verb. Evidence for such a treatment comes from examples like (62) in which a weather verb is embedded under *må*:

- (62) Det må gerne sne
 it may GERNE snow
 ‘It is all right if it snows’

5.1.2.4. Neg Shift and Partial Fronting

Neg shift differs from object shift in not allowing partial frontings:

- (63) *Læst har he ingen eventyr, men hørt har han mange.
 read has he no fairy.tales but heard has he many
 ‘He did not read fairy tales, but he heard many.’

To sum up this section: Inherently negated quantifier objects are linearized as adjuncts but subject to constraints on their internal structure (no post-modification) and to the presence of other internal complements. An IQP as a direct object can only shift across a verb within the VP or if the direct object is initial in the VP.

5.1.3. Parasitic Gaps and Locality

As we have seen in Section 3.3.3.2 the constituent in the prefield can belong to a deeply embedded head. The extraction of the prefield element was therefore modeled as non-local dependency in Section 4.2.3. The question now is whether reorderings of pronouns should be treated with the same mechanisms. There is evidence against analyses that treat shifting parallel to extractions of the prefield filling kind: For instance, Holmberg (1999a, p. 18) and Vikner (2006) discussed

- (i) Han har [ingen kager]_i lovet at købe _{-i}.
 he has no cookies promised to buy
 ‘He hasn’t promised to buy any cookies.’

We have not found authentic examples of this, however, and consider the example very marginal. We would mark it with two question marks.

shifted pronouns and argued that they do not license parasitic gaps. Extracted elements like *hvad for en bog* ('which book') in (64a) licence a second gap in an adjunct as for instance the phrase *uden at læse først* ('without reading first') (see Vikner 2006, p. 11 for a discussion of the examples in (64)). In example (64a) the fronted *wh*-constituent *hvad for en bog* ('which book') is co-indexed with a gap in the object position of the verb *stille* ('to put'). This gap, in turn, licenses the second gap (the object of *læse* ('to read')). If shifted pronouns would leave a trace inside the VP, we should expect them to be able to license parasitic gaps. However, in example (64b) the shifted object *den* ('it') is co-indexed with the first gap, and here the second gap (the object of *læse* ('to read')) is not licensed.

- (64) a. [Hvad for en bog]_i stillede alle _i hen på reolen uden at læse _i først?
 which book put all onto bookcase.DEF without to read first
 'Which book did everyone put on the shelf without reading first?'
 b. * Alle stillede den_i straks _i hen på reolen uden at læse _i først.
 all put it immediately onto bookcase.DEF without to read first
 'Everyone put it on the shelf without reading it first.'

Similarly the shifting of a negated object does not licence a parasitic gap in the adjunct:

- (65) Peter har [ingen bog]_i stillet _i hen på reolen uden at læse _i først.
 Peter has no book put onto bookcase.DEF without to read first
 'Peter did not put any book on the shelf without reading it first.'

This suggests that there is a fundamental difference between object shift and extraction to the prefield. That there is a difference is also confirmed by the fact that negation shift is clause bound as the following example shows:³²

- (66) * fordi han [ingen penge]_i sagde, at de havde _i
 because he no money said that they had
 'because he said that they had no money'

If negation shift would be possible we would expect that the negated object of *havde* can attach to the verb phrase in the matrix clause, that is, that it can appear to the left of *sagde* ('said'), but as (66) demonstrates this is excluded.

However, IQPs do seem to be allowed to cross sentence-boundaries in the environments where also sentential negation is allowed to cross a sentence boundary while having scope over the embedded clause. The case in point are neg-raising environments such as sentences with the verbs *tro* ('to think') and *mente* ('to think'). In the examples in (67) the IQPs appear in the matrix construction and not in their canonical position in the embedded clause.³³

³²That object shift is clause bound cannot be shown by parallel examples, since object shift does not cross verbs and hence there is no way for an object to be shifted to a higher clause.

³³These examples are challenging for approaches to neg-raising, claiming that it is neither extraction nor raising, but rather a matter of interpretation as in Sailer 2006, p. 378–385. The Neg-QPs in (67a) and (67b) are not independently licensed by the matrix verb *tro* ('to think') the way the purely modificational *ikke* ('not') is. The matrix verb does not select a direct object in addition to a complement clause. There must be a syntactic dependence between the IQP in the matrix clause and the missing object of the embedded verb. This is not captured by a purely interpretational mechanism. We do not pursue this matter further here, but we suspect that this should be captured by a construction-specific rule for neg-raising as suggested for preposed negation in Chapter 10.

- (67) a. og han mente [ingen hindring]_i der var _i for en kassekredit.³⁴
 and he thought no hindrance there was for an overdraft.credit
 'and he thought there was no hindrance for an overdraft credit.'
 b. Jeg troede [ingen ende]_i det ville få _i.
 I thought no end it would get
 'I thought it would never stop.'

5.2. The Analysis

As was explained in Section 1.2.1 and Section 4.2, arguments are represented on a list called ARG-ST. There is a language type-dependent mapping from this list to the valence features SPR and COMPS. The analysis for object shift and negation shift that we want to propose here assumes that shifted elements are mapped to SPR rather than to COMPS. If this difference in mapping is taken together with some constraints on the position of verbs in shifting situations, everything else follows. We start explaining the analysis of object shift with a simple example involving a transitive verb in Section 5.2.1, then turn to double object constructions in Section 5.2.2, explain why shifting out of PPs is excluded in Section 5.2.3, turn to object shift construction in perfect and passive sentences and partial VP fronting in Section 5.2.4, and finally explain how Acl verbs interact with object shift in Section 5.2.5.

5.2.1. Shifting as Mapping to SPR

In Section 4.2 we provided the following constraint for mapping arguments from the ARG-ST list to the valence features:

- (68) Mapping from ARG-ST to valence features:

$$\left[\begin{array}{l} \text{SYNSEM|LOC|CAT} \\ \text{SPR} \quad \boxed{1} \\ \text{COMPS} \quad \boxed{2} \\ \text{ARG-ST} \quad \boxed{1} \oplus \boxed{2} \end{array} \right]$$

For Danish we assumed that the specifier list contains the subject, that is, $\boxed{1}$ is a list of exactly one element. However, it is not necessary to restrict the length of the list to exactly one. We can assume that the SPR list has at least one element. In addition we allow other complements to be mapped to SPR. The mapping augmented with the language specific constraint looks as follows:

- (69) Mapping from ARG-ST to valence features with constraint for Danish:

$$\left[\begin{array}{l} \text{SYNSEM|LOC|CAT} \\ \text{SPR} \quad \boxed{1} \\ \text{COMPS} \quad \boxed{2} \\ \text{ARG-ST} \quad \boxed{1} \oplus \boxed{2} \end{array} \right] \wedge \boxed{1} = \langle \boxed{} \rangle \oplus \text{list of shifted elements}$$

If this constraint is applied to the lexical item for *læse* ('to read') that was given as (??) on page ?? and is repeated here as (70) one gets (71) in addition to the canonical mapping, in which the subject is mapped to SPR and the object to COMPS.

³⁴<http://www.amino.dk/forums/t/57572.aspx>, [19/8 2011].

(70) CAT value for *læser* ('to read'):

$$\left[\begin{array}{l} \text{ARG-ST } \langle \text{NP}, \text{NP} \rangle \end{array} \right]$$

(71) CAT value for *læser* ('to read') with both arguments mapped to SPR:

$$\left[\begin{array}{l} \text{SPR } \boxed{1} \oplus \boxed{2} \\ \text{COMPS } \langle \rangle \\ \text{ARG-ST } \boxed{1} \langle \text{NP} \rangle \oplus \boxed{2} \langle \text{NP} \rangle \end{array} \right] \wedge \boxed{2} = \text{list of shifted elements}$$

(71) has an empty COMPS list and two elements in the SPR list. The first element in the SPR list is the subject and the second one is the object. The object is further constrained to be a shifted element. We will return to the exact constraints on shifted elements below.

In Section 4.2.6 we suggested the analysis in Figure 5.1 for V2 clauses. The verb *læser* is

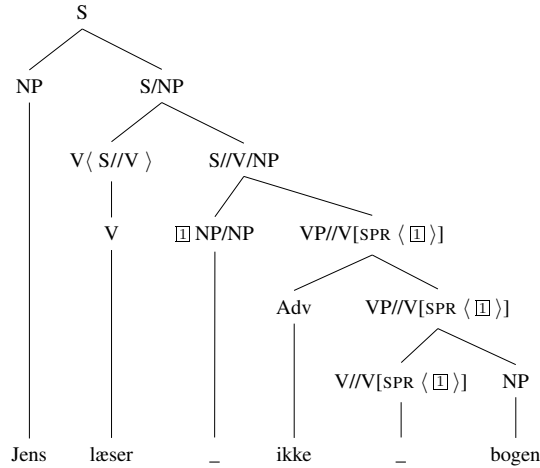


Figure 5.1.: Analysis of the V2 sentence *Jens læser ikke bogen*.

mapped into a verb that selects for a saturated verbal projection (an S) that contains a verbal trace (represented as 'V'). The DSL feature that is used to represent information about the missing verb is a head feature and hence the information is percolated through the tree to the verb trace. In the verb trace the DSL value is shared with the LOCAL value of the trace and hence the verb trace has the same LOCAL value as the verb in initial position. In the case of our example this means that the verb trace selects for an NP via COMPS and for another one via SPR. The verb trace forms a VP with its complement. This VP is modified by *ikke* ('not') and afterwards combined with its subject in a *head-specifier-phrase*. The subject is a trace and the information about the missing constituent is percolated up to the mother nodes until it is finally bound off by the element in the prefield.

The example with a shifted pronoun is parallel. The only difference is that the object is not realized as a complement but as a specifier. The respective analysis is shown in Figure 5.2. The

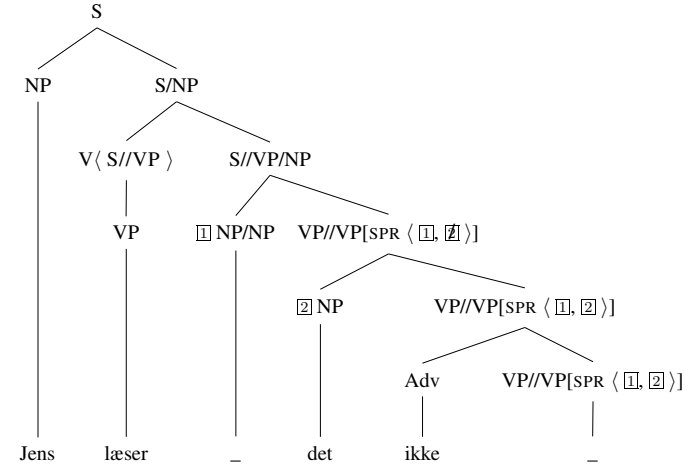


Figure 5.2.: Analysis of the sentence *Jens læser det ikke*. with object shift with a transitive verb

fact that *læser* starts out as a VP may seem strange to some readers, but remember that VP is just a shorthand for a verbal object with an empty COMPS list. As was shown in (71), *læser* has both arguments in the SPR list. The V1 rule licences a verbal item that selects for a fully saturated clausal projection with a verbal trace that has the properties of *læser*, that is, a verbal trace with two elements in the SPR list and an empty COMPS list. Since the information about the missing verb is a head feature it is present at the verbal trace as well and it is ensured that the verbal trace has the right properties. The adverb *ikke* selects for a VP and the combination of adverb and verbal trace can be combined with the two specifiers. The first specifier is the shifted object and the second specifier is a trace of the subject, which is bound off later in a head-filler structure.

It remains to be explained why the adverb cannot combine with a projection that consists of the VP and one specifier as in Figure 5.3 on the following page. This structure is ruled out by the requirement of VP adjuncts that the projection they attach to has to have a COMPS list with realized arguments and a SPR list with unrealized arguments (see Section 4.2.4). Since the shifted pronoun is marked as realized in the SPR list already, the negation cannot combine with this projection.

As was noted in the data section, object shift is possible in V1 and V2 sentences only. This means that the finite verb has to be fronted in object shift constructions. We formulate this constraint as follows:³⁵

³⁵This corresponds to the surface filter that Holmberg (1999a, p. 8) discusses:

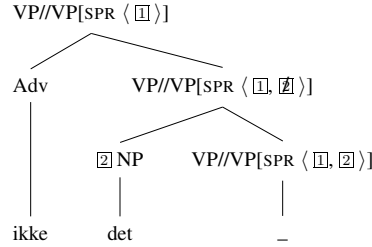


Figure 5.3.: A structure that is ruled out by the specification of the adverb

- (72) Verb fronting in object shift constructions:

$$\left[\begin{array}{l} \text{SYNSEM|LOC|CAT|SPR } ne_list \oplus \langle pro \rangle \\ \text{head-specifier-phrase} \end{array} \right] \Rightarrow \left[\begin{array}{l} \text{SYNSEM|LOC|CAT|HEAD|DSL } local \end{array} \right]$$

This constraint says: If the SPR list of a linguistic object of type *head-specifier-phrase* contains at least two elements and the last element is a (shifted) pronominal, then the DSL value of this linguistic object has to be of type *local*. Since overt verbs have the DSL value *none* rather than *local*, the constraint above ensures that the linguistic object contains a verbal trace. This means that the verb is in fronted position.

5.2.2. Double Object Constructions

As was discussed in the data section, ditransitive verbs allow shifting the indirect object or both the indirect object and the direct object. If both objects are shifted their relative order stays the same, that is, the indirect object precedes the direct one. This is directly accounted for by our proposal: For a ditransitive verb we have three possible mappings:

- (73) a. *give* with canonical mapping:
- $$\left[\begin{array}{l} \text{SPR} \quad \langle NP_{[1]} \rangle \\ \text{COMPS} \quad \langle NP_{[2]}, NP_{[3]} \rangle \\ \text{RELS} \quad \left\langle \begin{array}{l} \text{AGENT } [1] \\ \text{GOAL } [2] \\ \text{THEME } [3] \end{array} \right\rangle \right]$$

(i) *Obj Adv X° t_0 , unless X° is phonologically empty.

t_0 stands for the object trace in the movement-based approaches that Holmberg discusses. Note that this filter does not ensure that frontings over non-finite verbs are ruled out. For such cases one would have to mention two empty elements, one for the finite and one for the non-finite verb. We will return to these cases on page 121.

- b. *give* with shifted indirect object:

$$\left[\begin{array}{l} \text{SPR} \quad \langle NP_{[1]}, NP_{[2]} \rangle \\ \text{COMPS} \quad \langle NP_{[3]} \rangle \\ \text{RELS} \quad \left\langle \begin{array}{l} \text{AGENT } [1] \\ \text{GOAL } [2] \\ \text{THEME } [3] \end{array} \right\rangle \right]$$

- c. *give* with shifted indirect and direct object:

$$\left[\begin{array}{l} \text{SPR} \quad \langle NP_{[1]}, NP_{[2]}, NP_{[3]} \rangle \\ \text{COMPS} \quad \langle \rangle \\ \text{RELS} \quad \left\langle \begin{array}{l} \text{AGENT } [1] \\ \text{GOAL } [2] \\ \text{THEME } [3] \end{array} \right\rangle \right]$$

Since the SPR list has to be a prefix of the ARG-ST list it is impossible to have a SPR list $\langle NP_{[1]}, NP_{[3]} \rangle$ and hence it is explained why the direct object cannot shift without the indirect object being shifted as well. The example (45b) repeated here as (74) is therefore correctly excluded.³⁶

- (74) ?* Han skænkede [den] ikke [biblioteket].
 he donated it not library.DEF
 'He didn't donate it to the library.'

The lexical item in (73b) can be used in the analysis of (75a), which is given in Figure 5.4 on the next page. The lexical item in (73c) with the subject and both objects in the SPR list is used in the analysis of (75b), which is given in Figure 5.5 on page 117.

- (75) a. Jens giver ham ikke bogen.
 Jens gives him not book.DEF
 'Jens is not giving him the book.'
 b. Jens giver ham den ikke.
 Jens gives him it not
 'Jens is not giving it to him.'

³⁶ As Sten Vikner (p. c. 2012) pointed out the sentence can be repaired by inserting the preposition *til* before *biblioteket*.

(i) Han skænkede [den] ikke til [biblioteket].
 he donated it not to library.DEF
 'He didn't donate it to the library.'

This is predicted by our analysis, since we assume that sentences with trivalent verbs that govern a prepositional object involve different lexical items than those in which the trivalent verb governs two NPs. We assume two lexical items for the stem *skænk-* that are related by a lexical rule. The PP object in (i) is the most oblique argument of *skænkede* and hence our analysis correctly predicts that the DO can shift as in (i).

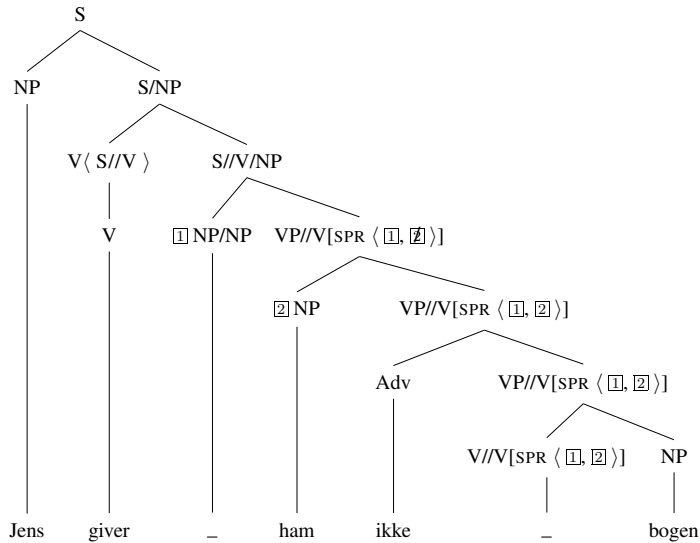


Figure 5.4.: Analysis of the sentence *Jens giver ham ikke bogen*. with object shift with a ditransitive verb and the indirect object shifted

The fact that the order in (76) is ungrammatical is explained by assuming that the non-head daughter in a head-specifier phrase is the most oblique element of the SPR list of the head daughter that is not realized yet.

- (76) *Jens giver den ham ikke.
Jens gives it him not

So, for Danish the Head-Complement Schema combines with the least oblique element of the COMPS list first and the Head-Specifier Schema with the most oblique one. This ensures that we have the same order of complements in the preverbal and the postverbal area.

The informed reader will have noticed that we did not explain the analysis of sentences like (77) so far:

- (77) Anne giver Jens den ikke.
Anne gives Jens it not
'Jens does not give it to Anne.'

In (77) the indirect object is positioned in the prefield and the direct object is shifted. In order to analyse (77) we need a lexical item for *giver* that has the subject and the direct object in the SPR list. But the mapping that we have defined so far does not allow for this, since the SPR list has to be a prefix of the ARG-ST list. The problem immediately goes away if one assumes

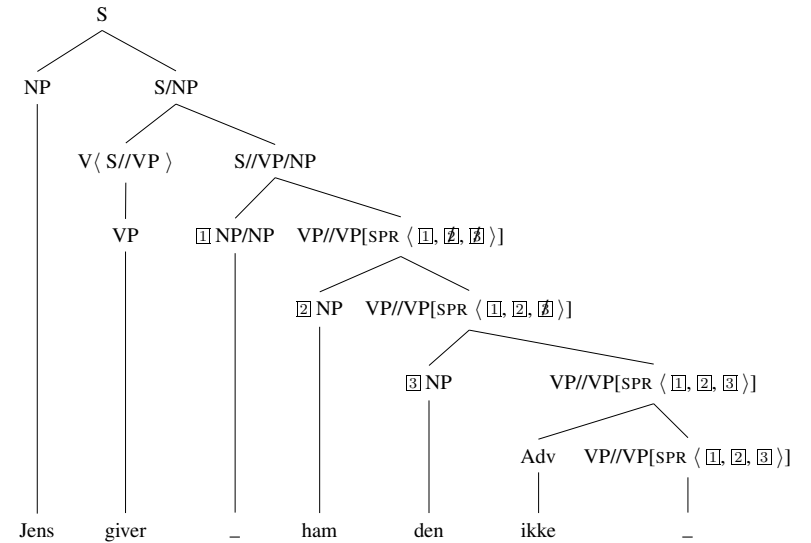


Figure 5.5.: Analysis of the sentence *Jens giver ham den ikke*. with object shift with a ditransitive verb and both objects shifted

that extracted elements are not mapped to valency features but to SLASH features as it was suggested by Bouma, Malouf and Sag (2001). However, we do not follow this approach since it comes with a lexical introduction of unbounded dependencies. This is problematic in a number of ways: It requires lexical selection of adjuncts, which causes scope problems in coordinated structures. See Levine and Hukari 2006a for an extensive discussion of the proposal and Chaves 2009 for an attempt to fix the scope problems in coordination data. So instead of assuming that the extracted argument is mapped to SLASH right away, we assume that it is mapped to the COMPS list as usual but that its LOCAL value is coindexed with the element in the SLASH list. This has the effect that a trace is the only object that can be combined with the argument and hence extraction is enforced. (78) shows the lexical item that is needed for the analysis of (77).

(78) *giver* with shifted direct object and extracted indirect object:

$$\left[\begin{array}{l} \text{SPR} \langle \text{NP}_{[1]}, \text{NP}_{[2]} \rangle \\ \text{COMPS} \langle \text{NP}[\text{LOC } [4], \text{SLASH } [4]_{[3]}] \rangle \\ \text{RELS} \langle \begin{bmatrix} \text{AGENT } [1] \\ \text{GOAL } [2] \\ \text{THEME } [3] \end{bmatrix} \rangle \end{array} \right]$$

give

The analysis of (77) is shown in Figure 5.6. The verbal trace combines with the trace of the

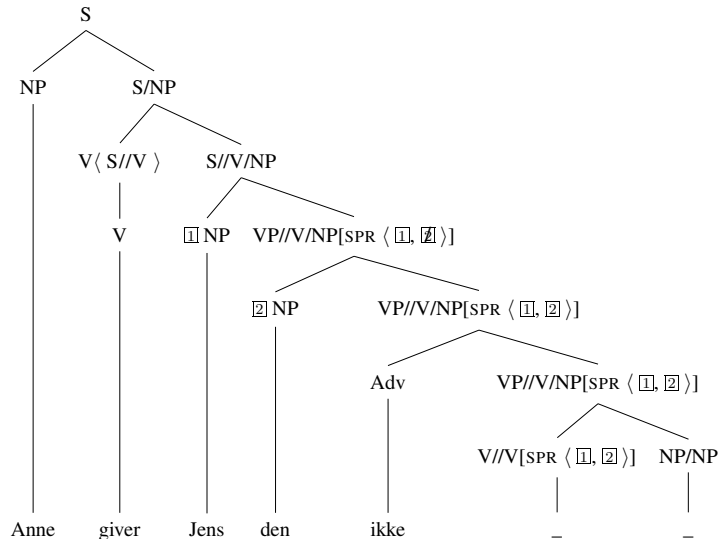


Figure 5.6.: Analysis of the sentence *Anne giver Jens den ikke*. with object shift with a ditransitive verb and the direct object shifted

extracted indirect object. The subject and direct object are mapped to the SPR list and hence the combination of the verbal trace and trace of the indirect object form a VP, that is, a linguistic object with a saturated COMPS list. This VP can be combined with the negation *ikke* and then the modified VP combines with its specifiers *den* (the direct object) and *Jens* (the subject).

5.2.3. Shifting and Prepositional Objects

As was noticed in Section 5.1.1 prepositional objects do not shift and neither do NPs inside of prepositional objects. This is explained by our analysis, since apart from the subject only light pronominals can be mapped to the SPR list.³⁷ So for the verb *arbejder* ('to work') there is only one mapping possible:

$$(79) \left[\begin{array}{l} \text{SPR} \quad [1] \langle \text{NP} \rangle \\ \text{COMPS} \quad [2] \langle \text{PP}[p\acute{a}] \rangle \\ \text{ARG-ST} \quad [1] \langle \text{NP} \rangle \oplus [2] \langle \text{PP}[p\acute{a}] \rangle \end{array} \right]$$

Since complements have to be realized to the right of the verb (or verb trace), it is clear that full PPs cannot precede the verb or the negation. This explains the ungrammaticality of (23b) which is repeated here as (80) for convenience:

- (80) * Vi venter p\acute{a} dig ikke.
 we wait for you not
 Intended: 'We are not waiting for you.'

For the same reasons sentences like (24a), repeated here as (81), are ruled out: There is no way for the NP object of the preposition to get into the SPR list of the verb and hence it cannot be realized to the left of the negation. The NP argument of the preposition can be extracted but then it has to be realized in a Head-Filler configuration in the prefield.

- (81) * Vi venter [dig] ikke [p\acute{a}].
 we wait you not for
 Intended: 'We are not waiting for you.'

5.2.4. Shifting and Auxiliary Verbs: Partial VP-Fronting

We assume passive and perfect auxiliaries to be raising verbs that just take over the SPR list of the verb that they embed. We assume the following argument structure for the auxiliaries:³⁸

- (82) argument structure of the passive and perfect auxiliaries:
- $$\left[\text{ARG-ST } [1] \oplus \langle \text{VP}[\text{SPR } [1]] \rangle \right]$$

This argument structure is mapped to SPR and COMPS in the following way:

³⁷It remains an open question why PPs cannot shift in Icelandic. Icelandic does allow shifting of full NPs and therefore a constraint on weakness could not be assumed to rule out the shifting of PPs (Engels and Vikner, 2012, p. 19). Engels and Vikner (2012, p. 76) suggest an OT constraint *STAYBRANCHNOCASE* that says that branching constituents that do not get case must not be moved. This is basically a stipulation of the observable facts and of course we can stipulate an analogous constraint.

³⁸The lexical item is a simplification. The raised specifiers have to be marked as raised. This is done by a relational constraint, which will be discussed below in the context of Acl verbs. The version of (82) that incorporates the relational constraint is given in (i):

$$(i) \left[\text{ARG-ST } \text{raise}([1]) \oplus \langle \text{VP}[\text{SPR } [1]] \rangle \right]$$

(83) argument structure and valence of the passive and perfect auxiliaries:

$$\left[\begin{array}{l} \text{SPR} \quad \boxed{1} \\ \text{COMPS} \quad \langle \text{VP}[\text{SPR} \boxed{1}] \rangle \\ \text{ARG-ST} \quad \boxed{1} \oplus \langle \text{VP}[\text{SPR} \boxed{1}] \rangle \end{array} \right]$$

The example in (31a), which is repeated as (84) for convenience, can then be analyzed as shown in Figure 5.7 on the facing page.

(84) Kysset har jeg hende ikke.
kissed have I her not
'I have not kissed her.'

In (84) the object of *kysset* ('kissed') is shifted. This means that the analysis of (84) involves a lexical item for the participle that has an empty COMPS list and two elements on the SPR list. As far as the valence features are concerned, this is parallel to the lexical item for *læser* with a shifted object that was given in (71) on page 112. The difference between *læser* and *kysset* is that the former is a finite verb and hence has the VFORM value *finite*, while the latter is a perfect participle and therefore has the VFORM value *perf*. The respective specification of *kysset* is provided in (85):

(85) CAT value for perfect participle *kysset* ('kissed') with both arguments mapped to SPR:

$$\left[\begin{array}{l} \text{HEAD} \quad \left[\begin{array}{l} \text{VFORM } \textit{perf} \\ \textit{verb} \end{array} \right] \\ \text{SPR} \quad \boxed{1} \oplus \boxed{2} \\ \text{COMPS} \quad \langle \rangle \\ \text{ARG-ST} \quad \boxed{1} \langle \text{NP} \rangle \oplus \boxed{2} \langle \text{NP} \rangle \end{array} \right] \quad \wedge \boxed{2} = \text{list of shifted elements}$$

The perfect auxiliary *have* ('to have') selects for a VP with the VFORM value *perf*.

Since the lexical item for *kysset* has no unrealized elements on its COMPS list, it can function as a filler in a filler-gap dependency and hence be realized in the prefield. The VP in the prefield is connected to an extraction trace that functions as the complement of the verb trace. The verb trace has the same syntactic properties as the auxiliary in initial position, that is, it selects for a VP and attracts the SPR list from this VP in the way that was depicted in (83). The result of combining the verb trace and the VP trace is a VP that has two elements in its SPR list. This VP is combined with the negation and after this the two specifiers are realized.

Note that the prefield is filled by a maximal projection. In theories that stick to $\bar{X}$ Theory this is required for fronted elements. We do not follow the assumption that $\bar{X}$ Theory is universal. For instance, for German we allow for non-maximal projections to be fronted (Müller 1996b; 2002; Meurers, 2000; Kathol, 2001). That the fronted element is a maximal projection is not enforced by constraints on head-filler structures but by selectional constraints on the governing head: In Danish the governing heads embed full phrases (heads with all members of their COMPS list realized) and in languages like German verbal complexes can be formed, which allows heads to combine with non-maximal projections.

On page 113 we discussed the constraint in (72) that ensures that the finite verb is fronted in object shift constructions. In order to ensure Holmberg's Generalization also for non-finite

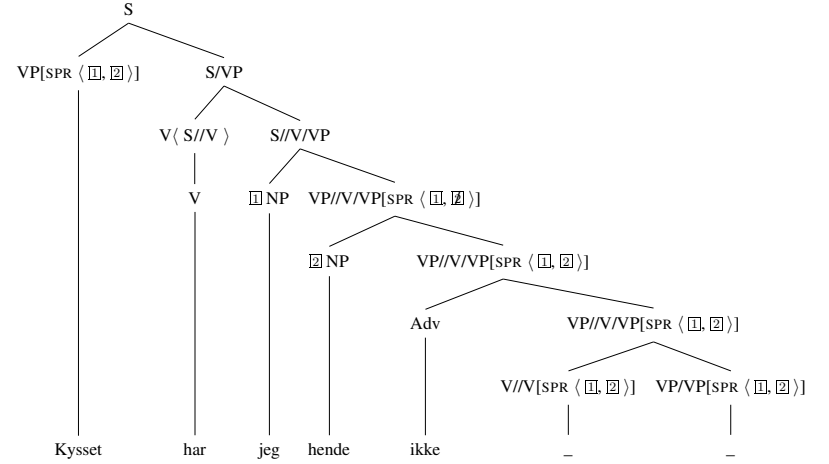


Figure 5.7.: Object shift with perfect tense and partial VP fronting

verbs, we need another constraint, since non-finite verbs are not affected so far, and without an explicit constraint, we would admit sentence like (86), in which the non-finite verb is realized to the right of the negation:

(86) *Jeg har hende ikke kysset.
I have her not kissed

The constraint in (87) ensures that a VP complement of an auxiliary verb with shifted objects on the specifier list is extracted, since the only way to fulfill the constraints in the consequence of the implication in (87) is to combine the verb with an extraction trace.

(87) Fronting of non-finite verbs in object shift constructions:

$$\left[\begin{array}{l} \text{SYNSEM|LOC|CAT} \quad \left[\begin{array}{l} \text{HEAD} \quad [\text{AUX} +] \\ \text{SPR} \quad \textit{ne_list} \oplus \langle \textit{pro} \rangle \\ \text{COMPS} \quad \langle \text{VP} \rangle \end{array} \right] \end{array} \right] \Rightarrow \left[\begin{array}{l} \text{head-argument-phrase} \\ \left[\text{NON-HEAD-DTRS} \left\langle \left[\text{SYNSEM} \left[\begin{array}{l} \text{LOC} \quad \boxed{1} \\ \text{NONLOC|INHER|SLASH} \quad \langle \boxed{1} \rangle \end{array} \right] \right] \right\rangle \right] \end{array} \right]$$

The restriction to auxiliary verbs in the antecedent of the implicational constraint in (87) is necessary since otherwise examples with AcI verbs in which the embedded verb is not extracted could not be analyzed. We will return to this issue in the next section.

The constraints in (72) and in (87) together account for Holmberg's Generalization, that is, they ensure that the finite verb is fronted and for cases that involve non-finite verbs, that the non-finite verb is extracted. It would be desirable to have one single constraint that rules out object shift when the object is not left peripheral in the VP, but there does not seem a straight-forward way to represent this

Having explained the interaction between perfect and object shift, we now turn to passives: (88b) shows the passive variant of the active sentence in (88a) and (88c) is the object shift version of this passive variant:

- (88) a. Anne anbefaler ikke Jens bogen.
Anne recommended not Jens book.DEF
'Anne did not recommend the book to Jens.'
- b. Jens bliver ikke anbefalet bogen.
Jens is not recommended book.DEF
'Jens was not recommend the book.'
- c. ?Anbefalet bliver Jens den ikke.
recommended is Jens it not
'It is not recommended to Jens.'

We assume that passive is analyzed with a lexical rule that suppresses the subject (the first element on the ARG-ST list with structural case, see Chapter 8 for details). The direct object is then the first element on the ARG-ST list and can be mapped to the SPR list. The ARG-ST list of *anbefalet* and the linking of the arguments is shown in (89):

- (89)
$$\left[\begin{array}{c} \text{SYNSEM|LOC|CAT} \\ \left[\begin{array}{c} \text{HEAD} \\ \left[\begin{array}{c} \text{VFORM } pass \\ verb \end{array} \right] \\ \text{ARG-ST} \langle NP_{[1]}, NP_{[2]} \rangle \end{array} \right] \end{array} \right] \left[\begin{array}{c} \text{RELS} \langle \left[\begin{array}{c} \text{AGENT} \\ \text{PATIENT } [1] \\ \text{THEME } [2] \\ recommend \end{array} \right] \rangle \end{array} \right]$$

The agent argument is not contained in the ARG-ST and hence there is no linking of an ARG-ST element to the agent role. The result of the mapping is parallel to the mapping we saw for (85), the only difference between the items is the value of the VFORM feature:

- (90) CAT value for *anbefalet* ('recommended') with both remaining arguments mapped to SPR:
- $$\left[\begin{array}{c} \text{HEAD} \\ \left[\begin{array}{c} \text{VFORM } pass \\ verb \end{array} \right] \\ \text{SPR} \quad [1] \oplus [2] \\ \text{COMPS} \quad \langle \rangle \\ \text{ARG-ST} \quad [1] \langle NP \rangle \oplus [2] \langle NP \rangle \end{array} \right] \wedge [2] = \text{list of shifted elements}$$

The analysis of (88c) is completely parallel to the analysis of the *kysset* example with perfect tense and object shift that was illustrated in Figure 5.7 and therefore will not be explained further.

5.2.5. Acl Verbs and Object Shift

As was discussed on page 93, the raised objects of Acl verbs also undergo object shift. This follows immediately from the analysis that is assumed here, if it is combined with the analysis of raising that is standardly assumed in HPSG (Pollard and Sag, 1994, Section 3.5). Parts of the lexical item for the verb *se* ('to see') are provided in (91):

- (91) Lexical item for *se* ('to see'):
- $$\left[\begin{array}{c} \text{SYNSEM|LOC|CAT|ARG-ST} \langle NP_{[1]}, [2], VP[\text{SPR} \langle [2] \rangle] : [3] \rangle \\ \text{RELS} \langle \left[\begin{array}{c} \text{EXPERIENCER } [1] \\ \text{SITUATION } [3] \\ se \end{array} \right] \rangle \end{array} \right]$$

The canonical mapping for this lexical item is shown in (92):

- (92) CAT value for *se* ('to see') with canonical mapping:
- $$\left[\begin{array}{c} \text{SPR} \quad \langle NP \rangle \\ \text{COMPS} \quad \langle [2], VP[\text{SPR} \langle [2] \rangle] \rangle \\ \text{ARG-ST} \quad \langle NP, [2], VP[\text{SPR} \langle [2] \rangle] \rangle \end{array} \right]$$

The least oblique argument of *se* (its subject) is mapped to the SPR list, all other arguments are mapped to the COMPS list. The subject of the embedded verb is therefore raised to object of the matrix verb. With this mapping to SPR and COMPS we can analyze (93) as in Figure 5.8 on the next page.

- (93) at Jeg aldrig så manden le
that I never saw man.DEF laugh
'that I never saw the man laugh'

The verb *så* ('saw') selects for an object and a VP. The object is identical with the specifier of the VP ([2]). It is combined with the object first and the resulting verbal projection is combined with the VP argument ([3]). Since both complements of *så* are saturated, the result is a VP that can be modified by *aldrig*. The result is a VP again. This VP is combined with the subject ([1]) and the result is a complete sentence which can function as the complement of the complementizer.

We now turn to a different mapping that can be used in object shift constructions: since the specifier of the embedded VP is raised to the ARG-ST list of the Acl verb, it can be mapped to the SPR list of *se*. The respective mapping is shown in (94):

- (94) CAT value for *se* ('to see') with raised object mapped to specifier:
- $$\left[\begin{array}{c} \text{SPR} \quad [1] \oplus [2] \\ \text{COMPS} \quad [3] \\ \text{ARG-ST} \quad [1] \langle NP \rangle \oplus [2] \langle [4] \rangle \oplus [3] \langle VP[\text{SPR} \langle [4] \rangle] \rangle \end{array} \right] \wedge [2] = \text{list of shifted elements}$$

The analysis of (95) is shown in Figure 5.9 on page 125.

- (95) Jeg så dem aldrig le.
I saw them never laugh
'I never saw them laugh.'

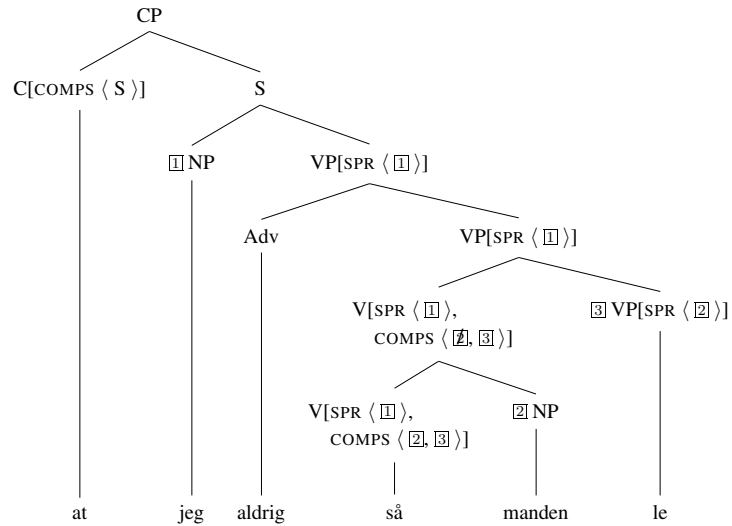


Figure 5.8.: Analysis of a sentence with AcI verb

The verb *så* as used in the analysis of (95) selects for a VP and two specifiers. This information is shared via the DSL values along the head path and identified with the LOCAL value of the verbal trace. The verbal trace combines with the VP of *le* ('laugh'). The VP selects for a specifier and this specifier ([2]) is identified with the object of *så* on its ARG-ST list. Since the object was mapped to the SPR list, the specifier of *le* is the second specifier of *så*. After the combination of the verbal trace and the VP the combination proceeds as usual, that is, the projection is combined with the two specifiers, the first one, which is the subject, is extracted.

It is important to note that the constraint in (87) does not apply to AcI verbs. If it would apply, the sentence in (95) would be ruled out since the VP argument is not extracted.

The example in (33a), repeated here as (96), is ruled out because of the specification of the lexical entry for the AcI verb *så* in (91): the verb selects a VP with exactly one element in the SPR list. In order to analyze (96) *så* would have to be combined with a verb that has two elements in its SPR list: the raised subject and the object. This is excluded by the lexical specification for AcI verbs.

- (96) ?* Læse så Jens ham den ikke.
 read saw Jens him it not
 Intended: 'Jens did not see him red it.'

Alternatively one could assume that AcI verbs pattern with auxiliaries in attracting arbitrarily many specifiers from the embedded verb and claim that (96) is excluded due to its high process-

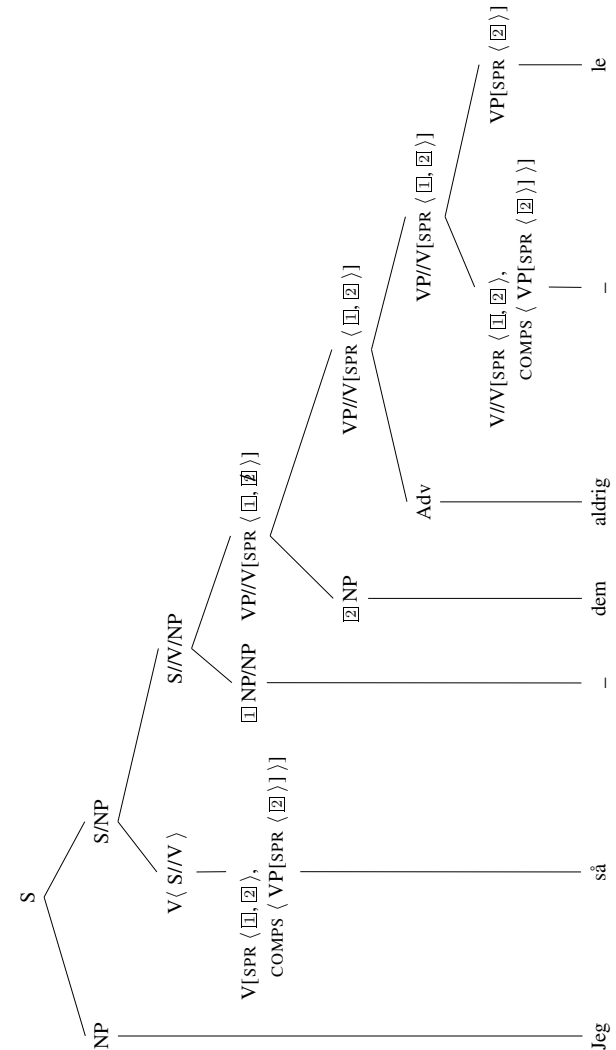


Figure 5.9.: Object shift of the raised object of an AcI verb

ing load. We decided however to incorporate a constraint into the grammar.

The sentence (97), repeated here as (97) can be analyzed as shown in Figure 5.10 on the next page.

- (97) ? Set ryge har jeg hende ikke.
 seen smoke have I her not
 'I have not seen her smoke.'

The SPR element of *ryge* ('to smoke') is attracted by *set* ('seen') and from there it is attracted to *har*. As specifier of *har* it can be serialized before the negation.

5.2.6. Parasitic Gaps and Locality

As was pointed out in Section 5.1.3 with respect to example (98), shifted pronouns do not licence parasitic gaps:

- (98) * Alle stillede den_i straks _{-i} hen på reolen uden at læse _{-i} først.
 all put it immediately onto bookcase.DEF without to read first
 'Everyone put it on the shelf without reading it first.'

Parasitic gaps are licensed by constituents which have undergone movement to a non-argument position. On the analysis of parasitic gaps in HPSG developed by Pollard and Sag (1994, Section 4.5) a string as the one in (98) would be predicted to be well-formed if the object pronoun is indeed extracted out of the VP into the shifted position. The ungrammaticality of (98) is explained if the "shifted" pronoun has not shifted at all, that is, if it is in no derived position outside the VP. In that case there is no dislocated element and no trace inside the VP at all to license a parasitic gap. The subject is extracted and so this is the only gap that could licence the gap in the adjunct, but note that the selectional restrictions for the subject of *stillede* ('to put') and the object of *læse* ('to read') differ and hence the subject gap cannot licence the object gap in the adjunct and the ungrammaticality of (64b) is therefore expected.

The impossibility of parasitic gaps with shifted pronouns (and shifted negated objects) is explained if the "shifted" position (to the left of sentential adjuncts) is no dislocated position at all. If *shifted* elements are not displaced at all, we also have a straight-forward explanation why *shifting* is clause-bound. The pronouns are locally licensed in two different positions within the clause.

5.2.7. Neg Shift

5.2.8. Spurious Ambiguities

5.3. Alternatives

In this section we will discuss alternative proposals to object shift: Section 5.3.1 discusses analyses that assume that object shift is a kind of cliticization. Section 5.3.2 discusses analyses that assume that the object pronouns are moved to VP-initial positions and either adjoined to the VP or inserted in specifier positions. A linearization-based analysis that employs flat linearization

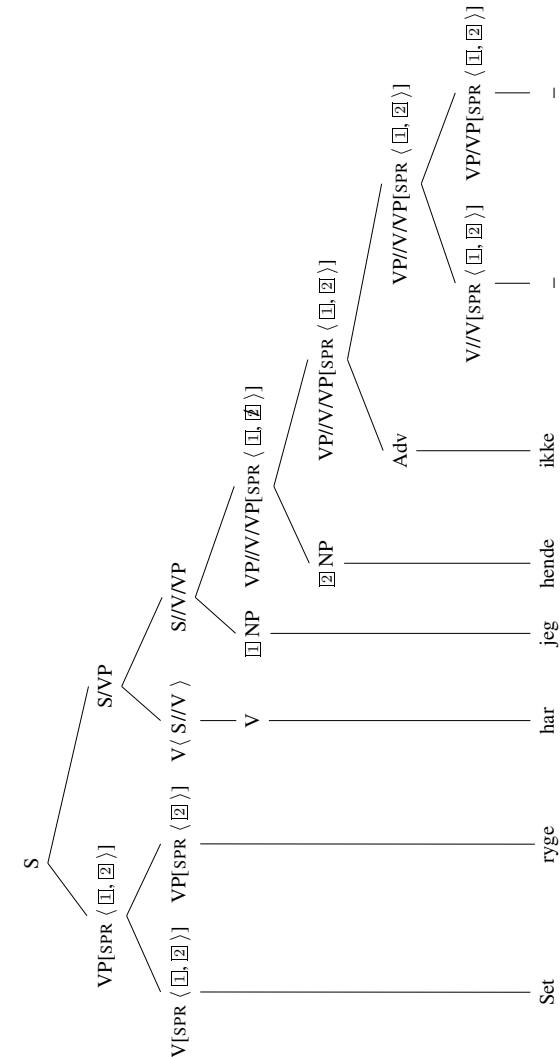


Figure 5.10.: Object shift with AcI verb and partial VP fronting of a complex VP

domains together with ordering constraints similar to those that are suggested in topological field approaches will be discussed in Section 5.3.3.

5.3.1. Phonological Incorporation

The phenomenon of object shift is reminiscent of cliticization in Romance languages, where pronominal objects and PPs incorporate into their selecting verb (Monachesi, 1998). Romance cliticization even allows incorporation of several pronominals just like Danish allows more objects to shift (as in example (25a) on page 97). If the shifted pronoun is a clitic, we have an explanation why the pronoun has to be syntactically and prosodically minimal. Syntactic phrases do not cliticize. Also, cliticization would explain why the pronoun appears to “move along” with the finite simplex verbs when the verb is fronted in V2-clauses. However, as shown by Vikner (2006, p. 418) and Erteschik-Shir (2005, p. 53), the shifted pronoun cannot have cliticized onto the verb: In V1-clauses and V2-clauses with non-subject topicalization the pronoun is separated from the verb by the subject. This is unexpected if the shifted pronoun has cliticized onto the verb. If the pronoun were a clitic on the verb, the example in (99a) should be good, but it is not. Example (99b) is a V1-clause and the shifted pronoun is separated from the verb by the subject.

- (99) a. *Kender [hende] Peter ikke?
 knows her Peter not
 ‘Doesn’t Peter know her?’
 b. Kender Peter [hende] ikke?
 knows Peter her not
 ‘Doesn’t Peter know her?’

Adjacency with the main verb is only observed in clauses without subject-verb inversion, that is, when the subject is in the Prefield.

Erteschik-Shir (2005) assumes that shifting pronouns are weak pronouns. Weak pronouns are special in that they cannot be pronounced on their own. They must phonologically incorporate into a host in order to be pronounced. A full DP on the other hand can be pronounced on its own and does not need to incorporate into a host. The string in (100) is unpronounceable: The weak object *den* (‘it’) cannot incorporate into the adjunct *ikke* (‘not’), since adjuncts (by stipulation) cannot serve as hosts for prosodic incorporation (p. 52). This explains the ungrammaticality of example (100).

- (100) *Peter læser ikke+den.
 Peter reads not+it
 ‘Peter doesn’t read it.’

In example (101) illustrating object shift, the weak pronoun *den* (‘it’) has incorporated into the verb (and moves with the verb to the V2-position), while the weak adverb *ikke* (‘not’)³⁹ prosodically incorporates into the cluster consisting of the verb and the weak pronoun.

³⁹A weak adverb is an adverb that cannot occur in the Prefield or clause-finally (Erteschik-Shir, 2005, p. 57). Erteschik-Shir gives the example *ikke* (‘not’) and *ofte* (‘often’). The latter, however, can both occur in the Prefield and clause finally.

- (101) Peter læser+den+ikke.
 Peter reads+it+not
 ‘Peter doesn’t read it.’

In example (102) the weak pronoun *den* (‘it’) phonologically incorporates into the subject DP *Peter*, which acts as a host for the weak pronoun. The adverb *ikke* (‘not’) phonologically incorporates into the cluster consisting of the subject DP and the weak pronoun.

- (102) Læser Peter+den+ikke?
 reads Peter+it+not
 ‘Doesn’t Peter read it?’

When no V2 applies, i.e. in V_{base} -clauses, the weak pronoun can prosodically incorporate into the verb (and the adverb *ikke* (‘not’) incorporates into the subject DP).

- (103) fordi han+ikke kender+hende
 because he+not knows+her
 ‘because he doesn’t know her’

The example in (104) where the adverb phonologically incorporates into the cluster of verb and weak pronoun is ruled out, because a weak pronoun must incorporate into the first available position (Erteschik-Shir, 2005, p. 60–61). The first available position for the weak adverb is incorporation into the subject DP as in (103).

- (104) *fordi han kender+hende+ikke
 because he knows+her+not
 Intended: ‘because he does not know her’

To sum up: On the analysis in Erteschik-Shir 2005 a pronoun shifts because it cannot phonologically incorporate into an adverb. It must incorporate into a verb or a DP. As Holmberg (1999a, p. 28, Footnote 26) pointed out while discussing Hellan’s analysis of object shift in Norwegian, the analysis in Erteschik-Shir (2005) fails to explain why a weak pronoun also has to shift in the presence of a PP-adjunct. In the examples in (105) and (106) the sentential adjunct is syntactically a PP with a preposition and a DP object or a VP object. In both cases we should expect the pronoun to be able to incorporate into the DP *stor sandsynlighed* (‘great probability’) or the V *at dømme* (‘to judge’) of the prepositional complement, given that DPs and verbs are possible hosts for phonological incorporation. But the pronoun does not incorporate into these constituents, instead it shifts.

- (105) a. Hun kender [ham] [med stor sandsynlighed] ikke.
 she knows him with big probability not
 ‘It is most likely that he doesn’t know him.’

(i) Ofte æder snegle og fugle de spirende kimblade af ærter og bønner på friland, (KorpusDK)
 often eat snails and birds the germinating seed.leaves of peas and beans on open.land
 ‘Often snails and birds eat the germinating seed leaves of field-grown peas and beans’

- b. *Hun kender [med stor sandsynlighed] [ham] ikke.
 she knows with big probability him not
 Intended: 'It is most likely that he doesn't know him.'
- (106) a. Hun kender [ham] [efter alt at dømmen] ikke.
 she knows him after everything to judge not
 'Judging by everything, he doesn't seem to know him.'
- b. *Hun kender [efter alt at dømmen] [ham] ikke.
 she knows after everything to judge him not
 Intended: 'Judging by everything, he doesn't seem to know him.'

To account for these data on the analysis in Erteschik-Shir 2005 we would have to assume that the PPs are reanalyzed as adverbs and that adverbs cannot be the host for phonological incorporation. Erteschik-Shir (2005, p. 70) does consider such an analysis for *uden tvivl* ('beyond doubt'), but the PPs in (105a) and (106a) allow for very complex internal modification as in (107), making an analysis as a reanalyzed adverb seem implausible.

- (107) Hun kender [ham] [efter alt hvad hun har sagt på det sidste at dømmen]
 she knows him after everything what she has said in the last.time to judge
 ikke særlig godt.
 not very well
 'Judging by everything she has been saying lately, she doesn't know him very well.'

In addition, if *med stor sandsynlighed* (lit. 'with big probability') and *efter alt at dømmen* (lit. 'after everything to judge') are adverbs, we have no explanation why the negation *ikke* ('not') is licensed, since adverbials cannot serve as hosts for prosodic incorporation in Danish (Erteschik-Shir, 2005, p. 52). So if the DP *sandsynlighed* ('probability') and the verb *dømme* ('to judge') are hosts for the negation in (105a) and (106a), there is no reason why they should not also be able to act as hosts for the weak pronoun. And yet (105b) and (106b) are ungrammatical.

As Mikkelsen (2011b) shows, the incorporation analysis also does not account for cases where a weak pronoun fails to incorporate into a verb or an NP due to information structural properties. Specificational copular clauses only allow unshifted pronouns, since the predicative complement is inherently focal. Thus, the weak, unstressed pronoun remains *in-situ*. An example of this was provided in footnote 4 on page 90. Only weak, non-focal pronouns shift, so phonological properties of the pronouns do not seem to be the only determining property for object shift.

Finally, Holmberg (1999b, p. 27) pointed out another problem for the clitic analysis: it does not extend to object shift in Icelandic and Faroese that allow for complete NPs to undergo object shift.

5.3.2. Movement-Based Approaches to Object Shift

In this section, we discuss movement-based approaches to object shift. We start by discussing problems with the order of pronouns that arise in approaches that assume that the object moves to the left periphery of the projection under consideration (Section 5.3.2.1). The discussion of parasitic gaps in Section 5.2.6 shows that approaches that involve direct movement of pronouns are not empirically adequate. As Holmberg (1999b, p. 34) pointed out, the parasitic gap data

would not be a problem for remnant movement analyses of the kind suggested by Kayne (1994). We discuss remnant movement analyses in general in Section 5.3.2.2. Holmberg's proposal is discussed in Section 5.3.2.3 and Section 5.3.2.4 discusses an OT approach.

5.3.2.1. Adjunction to VP or Movement to Specifier Positions

Vikner (2006) and Mikkelsen (2011b) assume that shifted pronouns adjoin to VP, while Sells (2008, 2001) assumes that they adjoin to I. Johnson (1991, p. 607) and Collins and Thráinsson (1996, p. 392) (for Icelandic) in turn assume that shifted pronouns are in a specifier position. We will consider each of these possibilities in turn.

There are two properties of object shift that are difficult to reconcile with an adjunction analysis: The shifted pronouns precede all (left-adjoined) adjuncts and multiple shifted pronouns obey a strict ordering in accordance with the obliqueness hierarchy.

If a shifted pronoun adjoins to VP, it is not clear what would prevent a shifted pronoun from occurring between sentence adverbials as in (3b), which is repeated here as (108b) for convenience.

- (108) a. De solgte [den] heldigvis ikke.
 they sold it fortunately not
 'Fortunately they did not sell it.'
- b. *De solgte heldigvis [den] ikke.
 they sold fortunately it not
 'Fortunately they did not sell it.'

If the pronoun *den* ('it') is adjoined to a VP containing the sentence adverbial *ikke* ('not') in example (108b), it is not clear what would prevent the sentence adverb *heldigvis* ('fortunately') from adjoining to a VP containing an adjoined pronoun and a sentence adverbial. But as (108b) shows, this is impossible. Shifted pronouns must precede all adjuncts adjoined to the VP. Thus we would need a stipulation to the effect that an adjunct cannot adjoin to a VP to which a pronoun has already adjoined.

There is a second problem related to the analysis of shifted pronouns as adjunction to a higher projection. If two pronouns shift, a strict ordering of the objects is still observed. The indirect object must precede the direct object as predicted by the Complement Principle from Chapter 4.

- (109) a. Han forklarede [hende] [det] ikke.
 he explained her it not
 'He didn't explain it to her.'
- b. *Han forklarede [det] [hende] ikke.
 he explained it her not
 'He didn't explain it to her.'

It is not clear how this strict ordering is obtained under a (movement-based) analysis of shifted pronouns as adjunction to VP (or another projection). If the indirect object moves first and adjoins to the VP we should expect the direct object to adjoin to a VP already containing the indirect object. Thus we would get the opposite order of the one actually observed as shown

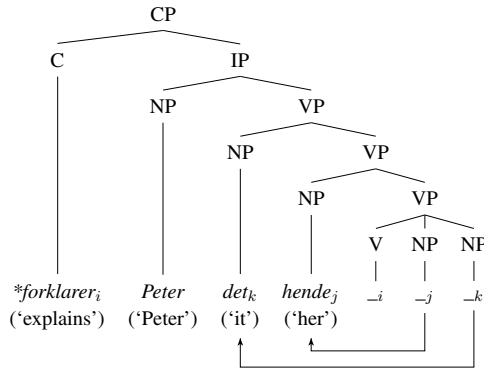


Figure 5.11.: The movement-based analysis of object shift wrongly predicts an order in which the direct object *de* precedes the indirect object *hende*

in Figure 5.11. An object can only shift, if the object is initial in the VP. In Figure 5.11 the verb *forklarer* ('to explain') has moved to C leaving the trace $_{-i}$. Next, the indirect object *hende* ('her') moves, adjoins to VP, and leaves the trace $_{-j}$. Now the direct object pronoun *de* ('it') is initial in the VP and can move and adjoin to VP. But this gives the wrong ordering of the objects, since the direct object precedes the indirect object.

If one alternatively assumes that object shift is not adjunction but movement to a specifier position as was suggested by Johnson (1991, p. 607) and Collins and Thráinsson (1996, p. 392) for Icelandic, one runs into similar problems. Vikner (2006) points out some problems in trying to give West Germanic Scrambling and Object Shift a uniform analysis as movement to a specifier position. In that case the specifier analysis must foresee up to three specifier positions for the case that three pronouns shift (see example (26a) on page 97). This is no problem if one assumes an appropriate number of functional projections, but again we have to make sure that the shifted pronouns observe the right order. This means that an indirect object must move to a higher projection than the direct object (thereby by-passing the specifier position of an intermediate projection), since the indirect object precedes the direct object. The question is what should motivate the existence of three possible landing sites for shifted pronouns outside the context of shifting pronouns and how the ordering restriction should be enforced.

5.3.2.2. Remnant Movement

As was discussed in Section 5.1.3, a further problem of analyses that assume movement of the shifted pronouns is that they predict that parasitic gaps are licenced. As Holmberg (1999b, p. 34) pointed out, the parasitic gap data would not be a problem for remnant movement analyses of the kind suggested by Kayne (1994). Holmberg discusses the derivation of object shift in Icelandic. In Icelandic it is possible to shift complete NPs, not just pronouns. Holmberg first discusses the analysis of sentences like (110) in which the object is not shifted:

- (110) Ég les aldrei nýjar bækur.
I read never new books
'I never read new books.'

In a Kayne-style analysis the definite object is moved out of the VP (111a), then the adverb is combined with the resulting verbal projection (111b), and in a final step the VP that contains the subject and the main verb is moved to the left periphery resulting in the observable string:

- (111) a. [[nyjar bækur]_i [VP ég les t_i]] (Move indefinite DP out of VP)
b. [aldrei [[nyjar bækur]_i [VP ég les t_i]]] (Merge the adverb)
c. [[VP ég les t_i]_j [aldrei [[nyjar bækur]_i t_j]]] (Move VP)

If one assumes that the object does not have to move out of the VP as in (111a) then the analysis in (113) for the example in (112) becomes possible.

- (112) Ég les þessar bækur aldrei.
I read these books never
'I never read these books.'

The complete VP including subject, verb, and object is moved to the left of the adverb:

- (113) [[VP ég les þessar bækur]_j [aldrei t_j]]

The interesting thing that was pointed out by Holmberg is that this is a movement-based analysis, but the object is not moved: it is moved inside the complete VP. Hence such a remnant movement analysis would not have any problems with parasitic gaps.

Holmberg criticised this analysis on various grounds involving examples with verb fronting and double object constructions. We do not want to repeat this criticism here, but instead comment on more standard analyses that need remnant movement for the analysis of partial frontings: in order to front the non-finite verb as in (31a), the VP has to be emptied by movement operations: First the pronoun moves out of the VP as in (114a) and then the VP remnant that contains only the bare verb can be fronted as in (114b):

- (114) a. har jeg hende_i ikke [VP kysset $_{-i}$],
have I her not kissed
'I have not kissed her.'
b. [VP Kysset $_{-i}$] har jeg hende_i ikke,
kissed have I her not

As Holmberg (1999a, p. 8) pointed out, such analyses are problematic since they involve a violation of Holmberg's Generalization: The pronoun has to move over the verb *kysset* in (114a) for the VP to be ready for moving to the initial position in (114b). If one wants to insist on a remnant movement analysis one has to formulate the respective constraints as a surface filter. Such a surface filter was suggested by Engels and Vikner (2012). The proposal will be discussed in Section 5.3.2.4 in more detail.

Before we turn to this analysis, we want to discuss remnant movement in general: Remnant movement analyses were also suggested for German by den Besten and Webelhuth (1990) and G. Müller (1998). Haider (1993, p. 281), De Kuthy (2002, Chapter 4.2.5), De Kuthy and Meurers

(2001, Section 2), and Fanselow (2002) argued against such remnant movement analysis on various grounds. We will repeat one of Haider's arguments here briefly and refer the reader for more arguments against remnant movement analyses to the references cited above.

Haider pointed out that *w*-indefinites do not scramble in German:

- (115) a. dass wer wen mit was traktiert hat
that who whom with what maltreated has
'that who maltreated whom with wat'
b. *dass wer mit was wen traktiert hat
that who with what whom maltreated has
'that who maltreated whom with wat'

So, if there is a VP in (115a), there is no way to empty it by movement of the *w* elements, but nevertheless the following example with partial fronting is possible:

- (116) Traktiert hat er wen mit was?
maltreated has he whom with what

The data is unproblematic for argument composition approaches that were first developed in Categorical Grammar (Geach, 1970) and are commonly assumed in the framework of HPSG (Hinrichs and Nakazawa, 1994; Meurers, 1999a, 2000; Müller, 1996b, 1999a, 2002). In such an approach the auxiliary attracts the arguments of the embedded verb and therefore they can be realized in the *Mittelfeld* even if the main verb is fronted.

Fanselow (2002) argued that remnant movement is not needed to account for the data. The only phenomenon that he identified as requiring a remnant movement analysis is the problem of multiple frontings (see Müller 2003 for an extensive discussion of relevant data, Bildhauer 2011 on a large accessible data base of annotated corpus examples, and Bildhauer and Cook 2010a; Müller, Bildhauer and Cook 2012 for information structural conditions on multiple frontings). Müller (2005a,b) develops an alternative analysis of these multiple frontings which uses an empty verbal head in the *Vorfeld* (the position before the finite verb in root clauses), but does not assume a remnant movement analysis for partial fronting. Instead of the remnant movement analysis the mechanism of argument composition that we also used in our analysis was used to account for partial frontings. Müller (Submitted) argued that a theory that uses less tools has to be preferred over others and grounds of parsimony and since recent Minimalist grammars use both remnant movement and argument composition (see for instance Chomsky 2007, p. 20) the proposal presented here has to be preferred over movement-based approaches not just on empirical ground and but also on theoretical grounds.

5.3.2.3. Stylistic Movement

Holmberg (1999b) argues for a separate component of syntax: Stylistic Syntax. He assumes a full derivation of the clause based on Move and Merge in the Minimalist Program and then assumes that there are additional processes that apply after this basic construction. (117a) shows the basic structure of his Swedish example before movement. In (117b) the subject has moved to the specifier position of IP, the finite verb has moved to C, and the main verb has moved to the specifier position of CP. In (117c) has shifted to the position preceding the negation.

- (117) a. Infl [inte har [VP jag [V' kysst henne]]]
not have I kissed her
b. [CP kysstv [C' har_{aux} [IP jag_s Infl inte t_{aux} [VP t_s [V' t_V henne]]]]]
c. [CP kysstv [C' har_{aux} [IP jag_s Infl henne_o inte t_{aux} [VP t_s [V' t_V t_o]]]]]

This analysis avoids the problems of remnant movement-based approaches by building the complete structure first and applying 'normal' movements first and delaying object shift till the very end of the derivation. As Engels and Vikner (2012, p. 92) point out, the analysis faces theory internal problems. In GB/Minimalism it is assumed that only full phrases can be fronted and hence fronting a single word violates common assumptions. Apart from this the pronoun is inserted into a position that is low in the tree. That is: an existing tree has to be taken apart for putting something into the middle. Usually movement operations target the left or right periphery of an existing object.

Moreover, Engels and Vikner (2012, p. 92) point out empirical problems of Holmberg's proposal: While object shift is optional in Swedish as is shown in (118), it is obligatory when the verb is fronted, as (119) shows:⁴⁰

- (118) a. Jag kysste inte henne.
I kissed not her
'I did not kiss her.'
b. Jag kysste henne inte.
I kissed her not
(119) a. *Kysst har jag inte henne.
kissed have I not her
b. Kysst har jag henne inte.
kissed have I her not

This is not predicted by Holmberg's analysis since V° topicalization is independent of object shift. In the analysis presented here the facts follow since the object has to be mapped to SPR, since only VPs, that is, verbal projections with an empty COMPS list can be fronted. As Engels and Vikner (2012, p. 93) also point out simple V° topicalization would also allow the following frontings, which are ungrammatical:

- (120) a. Jeg har ikke smidt den ud.
I have not thrown it out
b. *Smidt har jeg den ikke ud.
thrown have I it not out
(121) a. Jeg har ikke stillet det på bordet.
I have not put it on table.DEF
b. *Stillet har jeg det ikke på bordet.
thrown have I it not on table.DEF

⁴⁰The examples in (118a,b) are due to ?, p. 59 and Holmberg (1999b, p. 7), respectively.

Furthermore, the analysis has a certain cost: It is necessary to assume an additional level where such stylistic movements take place. The processes that are assumed to play a role in the analysis of object shift are ordered in a certain way. The problem with such proposals is that it is not easy to see how they can be combined with performance models. By now we know about linguistic processing, that it is fast and starts immediately as soon as the words are heard (Tanenhaus et al., 1995, 1996). It is not easy to see how this can be reconciled with models that assume that a complete structure is build first and then mapped to another structure. Of course proponents of such analyses point out that their models are competence models, but still competence models should be compatible with and augmentable by performance models (Sag and Wasow, 2011). Since Holmberg emphasises the fact that his analysis is derivational rather than representational as his earlier analyses, his analysis has to be rejected on these grounds.

In comparison to Holmberg's analysis our analysis is constraint-based and representational. When a speaker hears an element at the beginning of a sentence followed by a finite verb he or she can form the hypothesis that these elements correspond to positions in the clause that will follow. The analysis is surface oriented and hence easily combinable with performance models. Intermediate levels and constraint orderings are not involved.

5.3.2.4. OT Surface Filters

?Engels and Vikner (2012)

5.3.3. Linearization-Based Analyses

Bjerre (2006) presents an analysis of object shift in the frame-work of linerization-based HPSG (Reape, 1994; Kathol, 2000; Müller, 1995b, 1996a, 1999a, 2002, 2004). Linearization-based Syntax separates constituency from linear order. Information on the constituents is represented as the value of the DOM(ain)-feature and constraints on linear order are defined as constraints pertaining to the order of elements on the DOM-list. Consider the analysis for the sentence in (122) which is given in Figure 5.12 on the next page:

- (122) at Jens læser bogen
that Jens reads book.DEF
'that Peter reads the book'

The domain objects are complex linguistic objects that are similar to the ones that we are using here. In the figure only the PHON values are given. Every lexical item comes with a domain object that represents its phonological, syntactic, and semantic properties. When a complex object is build, the domain objects of the daughters are inserted into the domain of the mother node. As Figure 5.12 shows, we end up with a flat representation of all constituents at the top-most node in the tree.

Bjerre (2006) suggests that syntactic functions are assigned to syntactic positions (by means of an appropriate type hierarchy) and that linear precedence is stated in terms of these syntactic positions. The type *verbal* is assigned to the position *m* (corresponding to the *fronted* position) and the position *V* (the *base* position within the VP). The syntactic function *object* is assigned to the positions *I* and *N*, saying that an object can occur in position *I* (the position for shifted

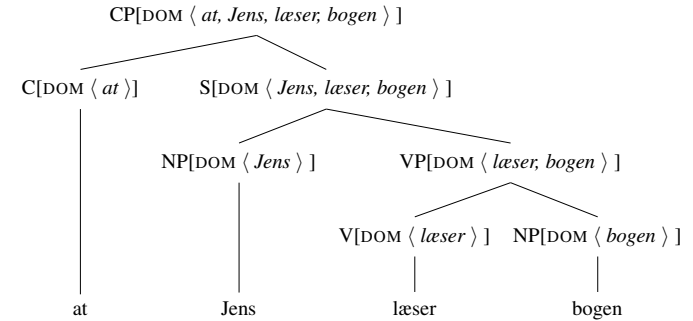


Figure 5.12.: Linearization-based analysis of Danish clauses

objects) or in the position *N* (the position of full NP objects within the VP). *n* is the field for the subject and *al* the field for VP adjuncts. *F* is the field that corresponds to the prefield. The order of elements on the DOM list is constrained by precedence rules of the following (simplified) kind.

- (123) $F < m < n < I < al < V < N$

Figure 5.13 shows our example augmented with the negation *ikke* and with the topological field assignment. The interesting case is now the analysis of object shift, which has the same structure

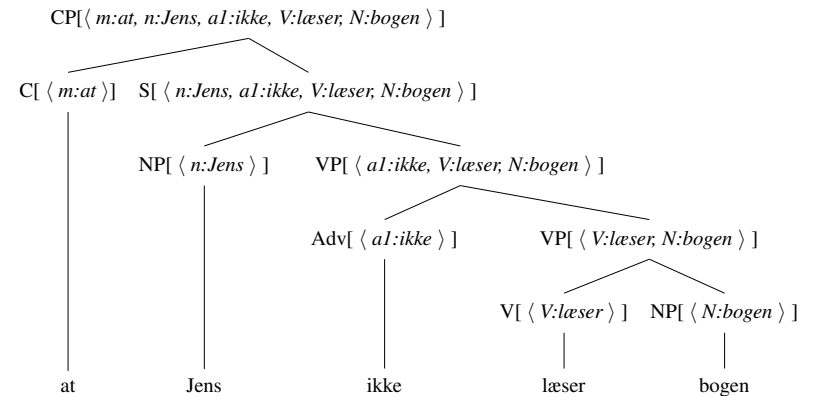


Figure 5.13.: Linearization-based analysis of Danish clauses with topological labels

as the non-shifted example but a different linearization. The analysis is given in Figure 5.14.⁴¹ The object pronoun is assigned to the field *I* rather than *N* and hence is linearized to the left of

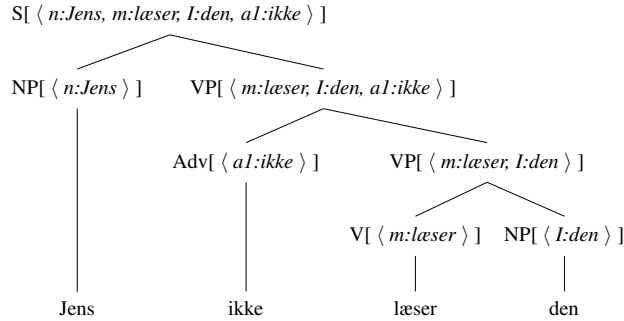


Figure 5.14.: Linearization-based analysis of object shift

the adverb. Since the verb is assigned to the field *m* it precedes both the shifted pronoun and the adverb. It should be clear from the pictures that in linearization-based analyses the dominance structure is independent of the actual serialization of components. In particular discontinuous constituents are allowed in such models.

In order to regulate the assignment of topological fields and to impose further restrictions, Bjerre formulates four constraints:

1. Full objects cannot occur in the position *I*
2. Objects cannot precede their verbal head
3. IO must precede DO independent of their appearance in the positions *I* and/or *N*
4. Unstressed pronominal objects cannot occur in position *N* unless preceded either by an instantiated *V* or a full NP in *N*

These constraints are implemented by the following principles:

1. No full object in the position *I*:

$$I \Rightarrow \left[\begin{array}{l} \text{PHON} \langle [\text{STRESSED } \textit{unstressed}] \rangle \\ \text{SYNSEM|LOC|CAT|HEAD } \textit{pron} \end{array} \right]$$

⁴¹Bjerre assumes that objects that are positioned in the prefield are licenced there in head-filler structures. Probably he would apply this to subjects as well. Figure 5.14 would have to be augmented with a trace in the subject position and a Head-Filler combination at the top of the structure. However, this would not change the DOM values and assignment of topological fields, since traces are assumed to not contribute any domain objects.

2. Indirect objects precede direct objects in *I* or in *N*:⁴²

$$\begin{array}{l} \text{head-complement-phrase} \Rightarrow \\ \left[\begin{array}{l} \text{SYNSEM|LOC|CAT} \left[\begin{array}{l} \text{SUBJ} \quad [1] \\ \text{COMPS} \quad \langle \rangle \end{array} \right] \\ \text{HEAD-DTR|SYNSEM|LOC|CAT} \left[\begin{array}{l} \text{SUBJ} \quad [1] \\ \text{COMPS} \quad \langle [2], [3] \rangle \end{array} \right] \\ \text{NON-HEAD-DTRS} \langle [4] [\text{SYNSEM} [2]], [5] [\text{SYNSEM} [3]] \rangle \end{array} \right] \wedge \text{compaction}([4], [6] \langle \textit{obj} \rangle) \wedge \\ \text{compaction}([5], [7] \langle \textit{obj} \rangle) \wedge \\ \left[\text{DOM} \langle [V] < [6] < [7] \rangle \right] \end{array}$$

3. An unstressed object can only occur in *N* if preceded by an NP or by a verb in *V*

$$\begin{array}{l} \left[\text{DOM } \textit{list} \circ \left\langle \left[\begin{array}{l} \text{PHON} \langle [\text{STRESS } \textit{unstressed}] \rangle \\ \dots | \text{HEAD } \textit{pron} \\ N \end{array} \right] \right\rangle \right] \Rightarrow \\ \left[\text{DOM } \textit{list} \circ \left\langle \left[\begin{array}{l} \dots | \text{HEAD } \textit{noun} \\ N \end{array} \right], \left[\begin{array}{l} \text{PHON} \langle [\text{STRESS } \textit{unstressed}] \rangle \\ \dots | \text{HEAD } \textit{pron} \\ N \end{array} \right] \right\rangle \right] \vee \\ \left[\text{DOM } \textit{list} \circ \left\langle \left[\begin{array}{l} [V], \\ \dots | \text{HEAD } \textit{pron} \\ N \end{array} \right] \right\rangle \right] \end{array}$$

The first principle defines a constraint for the domain-type *I* to the effect that only unstressed objects are allowed. The second constraint regulates the order of indirect and direct objects. The indirect object is defined to precede the direct object. However the order is only defined for the order in the content field for objects following the verb within the VP (*V*). In order to also apply to the nexus field (*I*) (the shifted position) the type of the first item should be (*verbal*) which is defined to be the supertype of both *m* (the position of the verb in *V_{front}* clauses) and *V* (the position of the verb in *V_{base}*-clauses). This would ensure that the order of IO before DO is observed both for shifted and unshifted pronouns. The third constraint is a constraint on a DOM list containing an unstressed object in *N* (the content field).⁴³ Such a list is only licenced if the unstressed object is preceded by an NP in the canonical object position *N* or if it is preceded by a verb in the *V* position (inside the content field, that is, if the clause is a *V_{base}*-clause).

Bjerre (2006) does not discuss *shift* of unstressed adverbial pronouns, but this could be accounted for by ensuring that not only objects are compacted into the positional domains *I* or

⁴²It is unclear, how the schema for head-complement phrases presented here should account for verbs that are not ditransitive. The constraint can be reformulated as an implicational constraint on head complement phrases with two elements in the COMPS list. See for instance (87) on page 121 for an implicational constraint with a complex antecedent.

⁴³The shuffle operator was defined by Reape (1994). It combines two lists into a new list. The relative order of the elements of each list may not be changed, but elements of the second list can be interspersed between elements of the first list.

N, but also locative obliques. This would require an appropriate subtyping of pronouns though. Also Bjerre (2006) does not account for modified and coordinated pronouns which fail to shift. As mentioned in footnote 5 on page 91, however, their linearization possibly follow from the constraint that shifted pronouns are unstressed (given a theory of the percolation of stress-assignment).

On the analysis in Bjerre 2006, object shift is entirely a matter of linearization of objects: object shift is analyzed as alternative linearization of elements in DOM lists that is regulated via LP-constraints. Such an analysis does not have to decide on the phrase structure of shifted objects, that is, whether they are adjoined to higher categories or whether they are particular extraction structures.

For V2 clauses Bjerre assumes a Head-Filler Schema that is similar to the one we are using here. The fronted constituent is compacted and inserted as a single object into the linearization domain. The inserted element is assigned the topological type *left-peripheral*, which resolves to either *F* (the prefield) or *m* (the position of complementizers and fronted verbs). The domain insertion of extracted elements as single domain objects leaves the partial fronting examples that we analyzed in Section 5.2.4 unexplained. The problem with sentences like (31a), repeated here as (124a), is that the fronted VP is a opaque object. Therefore pronouns like *hende* are not separate domain objects. One could combine *kysset* and *hende*, but this would result in a VP in which *hende* is trapped (124b):

- (124) a. Kysset har jeg hende ikke.
 kissed have I her not
 ‘I have not kissed her.’
 b. [Kysset hende] har jeg ikke.
 kissed her have I not
 ‘I have not kissed her.’

It may be possible to come up with theories involving partial compaction as was suggested by Kathol and Pollard (1995) for extraposition. Such theories assume that a linguistic object contributes two or more objects to a linearization domain. But due to the contrast in (125) such a partial compaction would have to be specific to object shift, which makes such an approach rather stipulative and unattractive.

- (125) a. Læst har Bjarne den ikke.
 read has Bjarne it not
 ‘Bjarne did not read it.’
 b. *Læst har Bjarne ikke bogen
 read has Bjarne not book.DEF
 ‘Bjarne did not read the book.’

The problem with (125) is that the order of *bogen* relative to *ikke* is normal, but the non-finite verb may only be extracted when its object is a shifted pronoun. If we allow partial compaction in order to allow for the object to be serialized in the sentential domain, the fact that (125a) is grammatical while (125b) is not remains mysterious. Similarly one can not simply allow for alternative serializations of bare verbs, since this would also admit the ungrammatical strings in (120b) and (121b) on page 135.

What all models have to capture somehow is that there is a relation between the verb and its pronominal argument that differs from a relation between a verb and a full NP argument. We capture this by claiming that the pronouns are specifiers and hence have to be serialized to the left of the negation, while the full NPs are complements, which are serialized inside of the VP and hence to the right of the verb and to the right of the negation. The difference between (125a) and (125b) is that the prefield in (125a) is filled by a maximal phrase, that is, a VP that does not require any complements, since both *Bjarne* and *den* are specifiers in our analysis. In (125b), on the other hand, *læst* is not a maximal VP, since *bogen* is a complement. Since only maximal projections are allowed as filler daughters in head-filler phrases, (125b) is ruled out.

5.4. Problems

While our analysis makes the right predictions for Danish, it seems to be possible to have partial frontings like the one in (126a) in Swedish (example from Fox and Pesetzky 2005, p. 25):

- (126) a. ?Get henne har jag den inte.
 given her have I it not
 b. *Get den har jag henne inte.
 given it have I her not

The fronting of a verb together with the indirect object is marginally possible, while the fronting together with the direct object as in (126b) is ungrammatical. In Danish it is impossible to front a verb with one complement unless the full VP is fronted and hence the analogs of both (126a) and (126b) are ungrammatical. However, if we transferred our analysis to Swedish, it would predict that (126a) is ungrammatical and (126b) is grammatical. This is due to the fact that the least oblique element (the IO) can be mapped to the SPR list and then be realized to the left of the negation. Our explanation of the ungrammaticality of the shifting of a DO over the IO was related to the order of the elements on the ARG-ST list in Section 5.2.2. Only a prefix of this list can be mapped to the SPR list. An inclusion of the Swedish data in (126) in an analysis of object shift seems to require a relaxation of the prefix constraint. The consequence would be that one would allow for both orders in (127) in principle and would also admit sentences like (74) on page 115. One would therefore need to formulate additional constraints that enforce the respective IO < DO serializations. The problem with such linearization rules is that they do not apply to local trees and not even to head domains but to the complete clausal domain: the position of a pronoun inside a fronted partial VP is compared to a pronoun in the remainder of the clause. How such linearization constraints can be formalized is an open issue which we leave to further research.

Furthermore we do not have an analysis for the object *iudicantis* in (14b), which is repeated here as (127):

- (127) og frikadellerne var [mig] faktisk lidt for bastante – og for kolde
 and meat.balls were me actually bit too heavy and too cold
 ‘and the meat balls were actually a bit too heavy and too cold for my taste’

This is a general problem: the dative *iudicantis* in German allows scrambling and we do not know of any HPSG account of this.

5.5. Conclusion

In this chapter we have presented an analysis of object shift in Danish without assuming any kind of movement or dislocation and without reducing object shift to a mere linearization phenomenon. We have suggested that lexical pronouns are members of the SPR list of *fronted* verbs, provided that they are not preceded by less oblique non-pronominal constituents or by their verbal head. Projecting pronouns in turn are members of the COMPS-list. This accounts for the different linearization of the objects and it accounts for the strict ordering of indirect objects before direct objects among both shifted and unshifted objects.

6. Copula Constructions

6.1. The Phenomenon

Research on copula structures has a long tradition (see Mikkelsen 2011a for an overview). One important question is the question of how many copulas are needed for the observable syntactic patterns and the respective meanings that can be expressed. We follow recent research in assuming that there are basically three types of copula constructions, two of which are order variants of each other (Section 6.1.1). Section 6.1.2 discusses V2 languages like Danish and German and compares English and Danish to German, which has rather free constituent order in general. Section 6.1.4 shows that one of the copula constructions is a raising construction and Section 6.1.5 discusses the formation of predicate complexes.

6.1.1. Equational, Predicational, and Specificational Constructions

Recent research on predication distinguishes three types of copula structures: equational, predicational, and specificational structures (Mikkelsen, 2011a, Section 2). In equational structures two expressions of the same type are equated. Examples of this type are given in (1):

- (1) a. Cicero is Tully.
- b. That must be her.
- c. Honest is honest.

In (1a) two proper nouns are equated: that is, it is expressed that the referents of the two referential NPs are identical. Similarly, two pronouns are equated in (1b) and two adjectives in (1c).

Mikkelsen gives the following examples for predicational constructions:

- (2) a. Harvey/my brother/the guest of honor/she/everyone/noone was [happy].
- b. Sylvia is [from Seattle].
- c. Sylvia is [an architect].
- d. Sylvia is [the architect on that project].
- e. Sylvia is [my friend].
- f. Sylvia is [mayor of Seattle].

As the examples show, the predicate complement can be an AP, PP, NP or a noun with a complement. Mikkelsen (2011a, p. 1809) claims that (2f) is an instance of an $\bar{N}$ predicate (NP in her terminology), but the class of such predicates is smaller: It is basically nouns with their complements, but without modifiers:¹

¹Examples like (i) can be found though. See Section 6.2.2 for a suggestion how such cases can be accommodated.

(i) Former Leftist Rebel Is Elected Mayor of Bogotá (WSJ, 30.10.2011)

- (3) * He is new mayor of Seattle.

In English there seems to be a uniqueness restriction on determinerless predication. Sentences like those in (4) are ungrammatical:

- (4) * He is senator/teacher.

In comparison, the equivalents of (4) are possible in German:

- (5) Er ist Lehrer.
he is teacher
'He is a teacher.'

As Mikkelsen (2005, p. 70–72) points out, question tags agree with the subject in predicational constructions in gender as they do in non-predicational structures:

- (6) a. The guest of honor was happy, wasn't she/he/*it?
b. The guest of honor spoke after dinner, didn't she/he/*it?

Apart from equational and predicative constructions a third type is identified in the literature. Mikkelsen gives the following example for what she calls a specificational construction:

- (7) a. The director of *Anatomy of a Murder* is Otto Preminger, isn't it?
b. The director of *Anatomy of a Murder*, that's Otto Preminger.

Here the post-copular NP is a proper name, that is, clearly referential. The pre-copular constituent contributes the predication. Interestingly, the pronoun *it* is used in question tags and the pronoun *that* in left dislocation structures. This shows that the subject in (7) is not referential, but rather predicational. Specificational structures can be regarded as a variant of predicational structures with the predicational NP realized in pre-copula position.

While predicational structures are possible with verbs like *consider*, specificational and equational structures require the copula to be present (Rothstein, 1995, p. 32):

- (8) a. I consider [Sylvia my best friend]. (predicational)
b. I consider [my best friend *(to be) Sylvia]. (specificational)
c. I believe [that/her *(to be) Sylvia]. (equational)

6.1.2. German, English, Danish: Specificational Constructions, Question Tags, and Left Dislocation

Evidence from question tags was used to argue for a special type of copula construction in English: Specificational constructions. The situation is more complicated in a language like Danish: Danish is a V2 language, so the orders with a predicative element in pre-copula position could be derived by fronting the predicate rather than the subject of a canonical predicational construction. However, there is a test that helps to identify which element is the subject: The negation attaches to the VP. For subordinate and main clauses we get the following structures:

- (9) a. subject negation verb complements (subordinate)

- b. verb subject negation complements (main clause, V1)

A V2 clause is derived from (9b) by fronting one constituent. Given this background we can show that Danish also has specificational structures in which the subject of the clause is the predicate. Since the post-negation position in (10b) is filled by *Max*, *vinderen* has to be extracted from the pre-negation position and hence, it has to be the subject of the clause.

- (10) a. Max_i er $_i$ ikke vinderen, er han vel. (Max = Subj, vinderen = Comp)
Max is not winner.DEF is he not
'Max is not the winner.'
b. $Vinderen_i$ er $_i$ ikke Max, er det vel. (Max = Comp, vinderen = Subj)
winner.DEF is not Max is it not
c. $Vinderen_i$ er Max ikke $_i$, er han vel. (Max = Subj, vinderen = Comp)
winner.DEF is Max not is he not

Note that this also corresponds to the question tags used in the sentences.

German differs from both English and Danish in being a language with rather free constituent order, so a test like the position of negation cannot be used for German. However, predicative elements can still be distinguished from referential ones: In left dislocation structures *das* is used for predicational elements and the genus agreeing *der/diedas* for referential elements.

- (11) a. Klug / ein Mörder, das / *der ist Peter. (predicational element)
smart a murderer that that is Peter
'Peter is smart / a murderer.'
b. Ja, aber Peter, der ist ein Mörder / nicht Klaus. (referential element)
Yes, but Peter that is a murderer not Klaus
'Yes, but Peter is a murderer / not Klaus.'

So, we can identify predicational and equational constructions in German but specificational structures cannot be identified.

6.1.3. Constraints on Specificational Structures

As was pointed out by Gerbl (2007, p. 102, 190–191) for English the post-copular element cannot be extracted from specificational structures. We provide Danish examples in (12): While the extraction of objects and predicates in postverbal position is possible in Danish (12a,b), the extraction of the post-copula element in specificational constructions like (12c) is ungrammatical (12d).

- (12) a. $Bogen_i$ tror han, at Max læser $_i$.
book.DEF thinks he that Max reads
'He thinks that Max reads the book.'
b. $Klog_i$ tror han, at Max er $_i$.
smart thinks he that Max is
'He thinks that Max is smart.'

- c. Han tror, at vinderen er Max.
he thinks that winner.DEF is Max
'He thinks that the winner is Max.'
- d. *Max_i tror han, at vinderen er _{-i}.
Max thinks he that winner.DEF is
'He thinks that the winner is Max.'

This has interesting consequences for V2 sentences, since it avoids spurious ambiguities: The prohibition of extraction out of and of the post-copular element ensures that there is just one structure for (13):

- (13) Max er vinderen.
Max is winner.DEF
'Max is the winner.'

Without this constraint (13) could be a specificational construction with the structure in (14):

- (14) Max_i [er_j [vinderen [_{-j} _{-i}]]].

Max would be the extracted complement of the (moved) copula (_{-j}) and *vinderen* would be the specifier. Since the extraction of the underlying subject is prohibited, (14) is ruled out and the only legitimate structure for (13) is the predicational one in (15):

- (15) Max_i [er_j [_{-i} [_{-j} vinderen]]].

6.1.4. Raising

The predicative copula is usually analyzed as a raising predicate that does not contribute semantically, except for tense information in the case of finite forms of the copula (Paul, 1919, p. 41). One property of raising verbs is that they are not sensitive to the type of their arguments, for instance they allow for expletive subjects, which is – of course – compatible with the fact that they do not assign semantic roles to their arguments. An example for an adjective that allows for an expletive subject is *laut* ('loud'):

- (16) In der Mensa ist es laut.
in the commons is it.EXPL loud
'It is loud in the commons.'

The adjective *laut* also has a non-expletive version, and (16) is actually ambiguous between the expletive and the non-expletive reading. With the expletive predicate, (16) means that the people, machines, or whatever, in the commons are loud, whereas in the non-expletive reading the *es* ('it') could refer to a child.

German is a language that has subjectless verbs and adjectives. Müller (2002, p. 72–73) discusses the following examples:²

- (17) a. weil schulfrei ist
because school.free is
'because there is no school'

²(17c) is quoted from Haider 1986a, p. 18.

- b. weil ihm schlecht ist
weil him.DAT bad is
'because he is sick'
- c. Für dich ist immer offen.
for you is always open
'It is always open for you.'

Again such data is consistent with a raising analysis that raises the subject of an embedded predicate if there is one but does not rule out embedded predicates that do not have a subject at all.

6.1.5. Predicate Complex Formation

Certain verbs form a predicate complex in languages like German, Dutch, Persian, and Hindi. The arguments of the verbs that are involved in complex formation can be scrambled according to the general rules of the respective language. In addition parts of the predicate complex can be fronted while arguments of the fronted heads may be left behind. Adjuncts in pre-complex position can scope over different elements of the predicate complex. An industrial-strength overview of the phenomenon in German can be found in Bech 1955. Bech coined the term coherent construction for verbal complexes. Analyses of the data in the framework of Transformational Grammar/GB can be found in Evers 1975, Haider 1993, Chapter 9, G. Müller 1998 and HPSG analyses can be found in Hinrichs and Nakazawa 1994, Kiss 1995, Bouma and van Noord 1998, Meurers 2000, Kathol 2000, and Müller 1999a, Chapter 14, 17, 18, 2002, Chapter 2. Müller (2002, Chapter 2) extended the verb complex analysis to verb adjective combinations. Since the focus of this chapter is predicational constructions, we exclusively discuss copula constructions and other predication structures here.

As within coherent combinations of verbs, different scopings can also be observed in copula constructions:

- (18) weil ihr der Mann immer treu sein wollte
because her.DAT the man.NOM always faithful be wanted.to
'because the man always wanted to be faithful to her'
'because the man wanted to be always faithful to her'

The sentence in (18) has the two readings that are indicated in the translation, but here the situation is less clear since the two readings may be due to the ambiguity between the modification of the copula and the modal. However, there are sentences like (19) where the adjective is fronted together with the adverbial.

- (19) Immer treu wollte er ihr sein.
always faithful wanted.to he.NOM her.DAT be
'He wanted to be faithful to her forever.'

Due to the existence of such sentences, the possibility of adverbs modifying adjectives directly cannot be ruled out in general. Note furthermore, that the sentence in (19) is not ambiguous. The reason for this is that *immer treu* forms one topological unit and adverbials in this unit cannot scope over verbs or adjuncts in other topological units.

So, while it is not entirely clear whether the two readings of (18) are due to the attachment of the adverbial to the two verbs rather than to the adjective and the modal, it is clear that the phrase *ihr immer treu* in (18) and (20) cannot be a closed AP in the wide scope reading since then the scoping of the adverb over a predicate outside the domain of the AP could not be explained.

- (20) weil der Mann ihr immer treu sein wollte
 because the man.NOM her.DAT always faithful be wanted.to
 'because the man always wanted to be faithful to her'
 'because the man wanted to be faithful to her forever'

The example in (18) also shows that the subject of the adjective, which is also the subject of the modal, can appear between the adjective and its complement (*ihr* ('her')). The alternative order in (20) is also possible. See also den Besten 1985, p. 60 on this point.

The examples discussed so far show that copula constructions with adjectives fulfill the criteria for so-called coherent constructions: Adjuncts can scope over predicates in the predicate complex, predicates can be fronted without their arguments, arguments of several heads can be scrambled with respect to each other. However, Müller (2002, p. 69) pointed out that there are also examples that are reminiscent of incoherent constructions: In (21) the adjectives are not adjacent to the copula but intraposed in the Mittelfeld:

- (21) a. Sie wuchsen in einem gesellschaftlichen Klima auf, das freier in Deutschland
 they grew in a social climate PART(up) that freer in Germany
 nie war.³
 never was
 'They grew up in a social climate that was freer than ever in Germany.'
 b. daß ausschlaggebend für die Interpretation abgeleiteter Verben bestimmte
 that decisive for the interpretation derived verbs certain
 semantische Interpretationsmuster sind, die sich [...] ⁴
 semantic interpretation.models are which self
 'that certain semantic interpretation models that are [...] are decisive for the interpretation of derived verbs'

Due to space limitations the discussion of the data remains sketchy here, but a thorough discussion of the data can be found in Müller 2002, Chapter 2.1.9.

Müller (2002, Chapter 2.2.7) focussed on adjectival predication, but of course the copula can be combined with predicative NPs and PPs as well. In contrast to adjectival predication, predicative NPs and PPs do not enter the predicate complex in the sense that the noun or preposition forms a complex with the copula. Instead nouns and prepositions that are used predicatively have to form full phrases and hence can be intraposed (that is, scrambled) (Hoberg 1981, p. 92; Müller 1999a, p. 173):

- (22) a. Auch bei Newton war der entscheidende Schritt die Erkenntnis gewesen, daß ...⁵
 also at Newton was the decisive step the insight been that
 'The insight that [...] was the decisive step for Newton too.'

³taz, 01.07.1995, p. 10.

⁴In the main text of Kaufmann, 1995, *Konzeptuelle Grundlagen semantischer Dekompositionsstrukturen*, p. 162.

⁵Hoberg 1981, p. 92.

- b. wiegen wir uns heute in dem Glauben, daß das Happening wir sind.⁶
 rock we us today in the believe that the happening we are
 'we lull ourselves into believing today that we are the happening'

This section showed that predicative constructions can take part in cluster formation (primary and resultative predication with adjectives) but that there are also cases in which no complex formation takes place (primary predication with NPs and PPs, and resultative predication with PPs). An analysis should provide a unified account of these phenomena.

6.2. The Analysis

6.2.1. The Copula as Raising Verb

Before we turn to the analysis of a concrete example, we have to provide the lexical entry for the copula. (23) shows the lexical entry for the copula that is analogous to the ones assumed by Pollard and Sag (1994, p. 147) and Bender (2000, p. 48):⁷

(23) Preliminary entry for the predicative copula for Danish and English:

ARG-ST	[1] ⊕	HEAD	[PRD +] [SUBJ [1]]
		SPR	⟨ ⟩
		COMPS	⟨ ⟩
		CONT	[IND [3]] [LTOP [4]]
CONT		[IND [3]] [LTOP [4]]	
RELS		⟨ ⟩	
HCONS		⟨ ⟩	

The copula selects a predicative phrase (PRD +) and takes over the referential index ([1]) and the LTOP value ([4]) from the embedded predicative phrase. The copula does not contribute semantically, hence the RELS list is empty. The copula enters inflectional lexical rules and these rules introduce relations that provide information about tense. The arguments of the respective relations are of type *event*.⁸ Therefore, the INDEX value of the copula in (23) is specified by the inflectional rule to be of type *event* and hence the INDEX value of the embedded predicate has to be of type *event* as well. The requirement that the predicative element is of type *event* will play an important role in Section 6.2.8 on raising nouns in English.

⁶taz berlin, 10.07.98, p. 26.

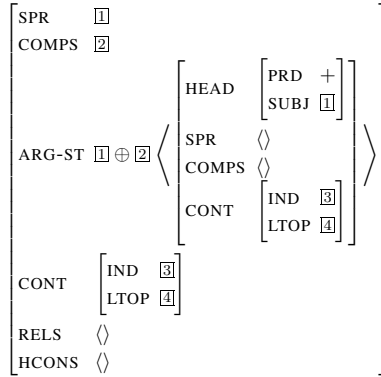
⁷We omitted the SYNSEM and CAT features in order to keep things readable. See page 162 for the final version of the copula with full feature specification.

⁸*event* is to be understood as the most general type referring to situations. The only thing that is important here is that the type differs from the type used to refer to objects.

The SUBJ value of the predicative phrase ($\boxed{1}$) is raised to the ARG-ST of the copula. We assume that SUBJ is not a valence feature (Pollard, 1996b; Kiss, 1992). In configurational languages like Danish and English the subject of verbs is mapped to SPR. For non-configurational languages the subject of finite verbs is mapped to the COMPS list and the one of non-finite verbs is mapped to SUBJ, since it is never combined with the verb directly. The subject of the predicative APs, NPs, and PPs is represented under SUBJ.

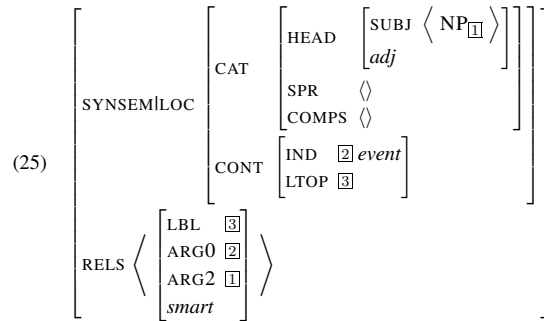
The actual length of the SUBJ list is not specified in (23), so in principle the value of SUBJ could be the empty list. However, in Danish and English all predicates have to have a subject, so it follows from the specification of other lexical items that the SUBJ list always contains at least one element. For a one-element SUBJ list we get the following mapping from ARG-ST to SPR and COMPS:

(24) The predicative copula with mapping to SPR and COMPS:



The predicative argument is mapped to COMPS and its subject to SPR.

(25) shows the lexical item for the predicative adjective *klog* ('smart'):



The subject of the adjective is represented under SUBJ and the referential index of the subject ($\boxed{1}$) is linked to the theme role of the adjective (ARG2).

With these lexical items for the copula and the adjective we can now explain Figure 6.1, which shows the analysis of (26).

- (26) Han er klog.
he is smart

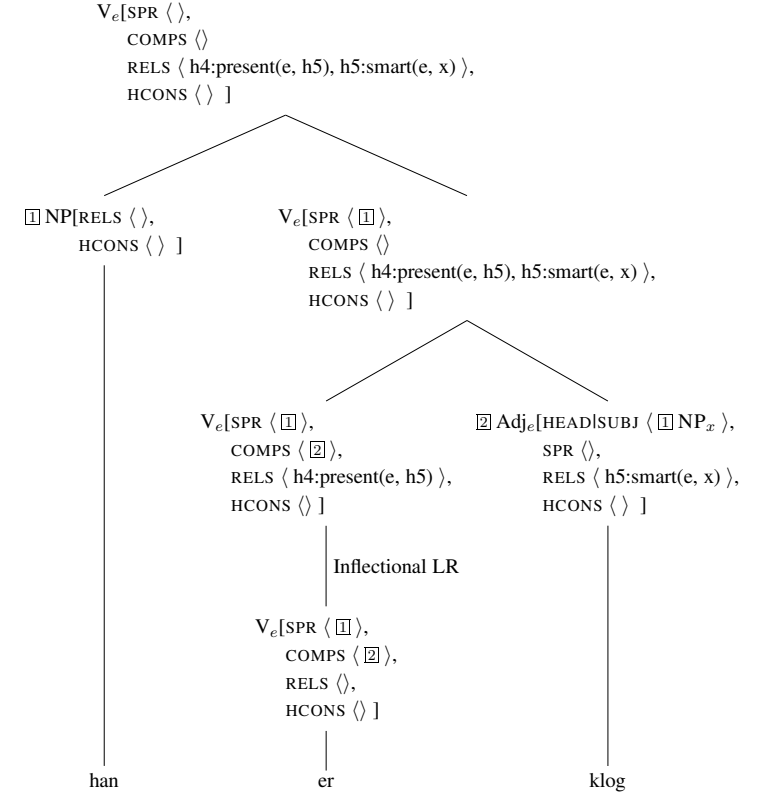


Figure 6.1.: Analysis of *Max er klog*. 'Max is smart.'

The subject of the adjective is NP_x . It is linked to smart(e,x) in the lexical item for *klog*. (The linking is expressed by the structure sharing $\boxed{1}$ in (25).) The copula selects for the adjective ($\boxed{2}$)

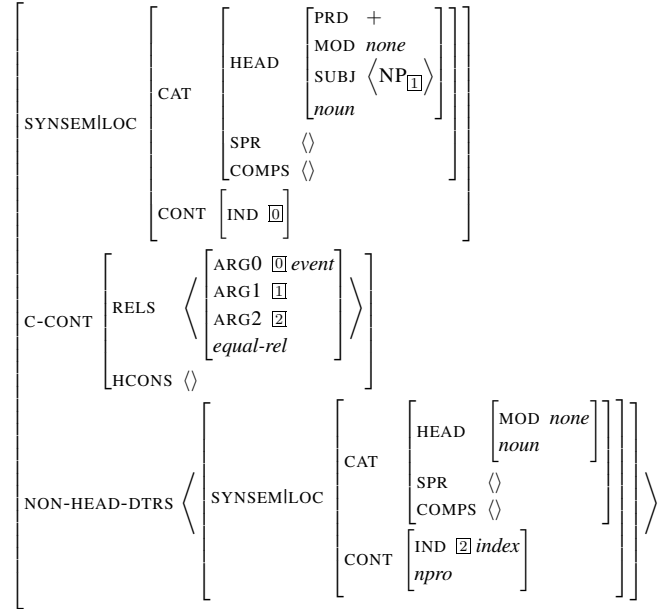
and takes its subject over to its SPR list. The copula is inflected, which adds the *present'* relation to the RELS list. After combination with the adjective, the copula is combined with the subject by the Head-Specifier Schema.

6.2.2. Predicative NPs

We assume that predicative NPs have the same internal syntactic and semantic structure as non-predicative NPs. They only differ with respect to their external distribution, that is, the way they can be used in sentences. We follow Müller 2009b in assuming the unary branching Schema 4, which licences a predicative NP from a non-predicative one.⁹

Schema 4 (Predicative NP Projection Schema)

np-pred-phrase ⇒



This unary projection applies to a full NP and licences the predicative NP (PRD+) with an appropriate SUBJ value. The referential index of the subject NP ([1]) and the referential index of the daughter NP ([2]) are arguments of the relation *equal-rel'*. This relation is introduced constructionally via C-CONT (see Section 1.3.2 on semantic composition and C-CONT). The unary branching rule cannot apply to its output since the daughter NP has to have an IND value of type *index* and the resulting sign has an IND value of type *event*.

⁹Gerbl (2007, p. 241–242) independently suggested a similar solution. See also Partee 1987.

We now can analyze (27) as is shown in Figure 6.2.

- (27) Han er en klog mand.
he is a smart man

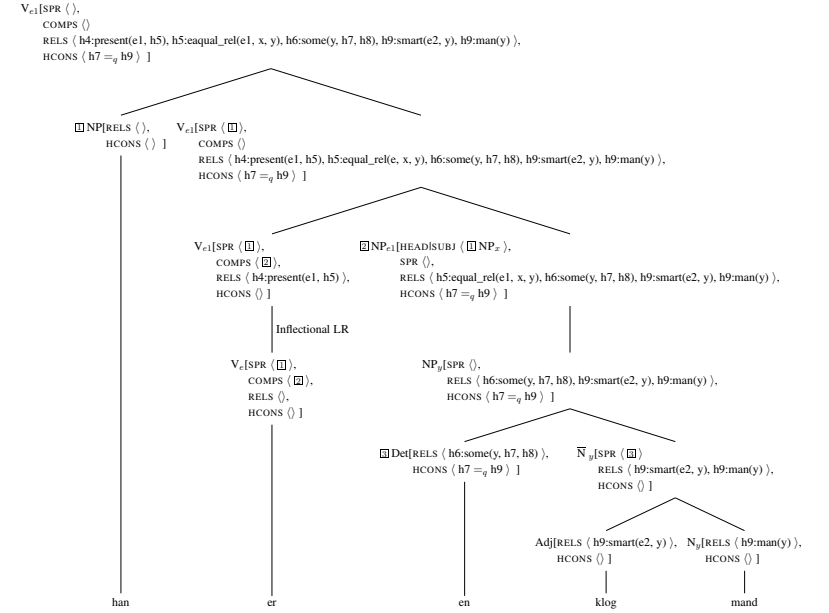


Figure 6.2.: Analysis of *Han er en klog mand*. ‘He is a smart man.’

The NP *en klog mand* is analyzed as described in Chapter 2: Adjective and noun form an $\bar{N}$, which is then combined with the determiner into an NP. The referential index of the noun *mand* is y . This index is projected along the head path to the full NP. Schema 4 projects the referential NP _{y} into a predicative phrase. The predicative phrase has a singleton list containing an NP as the value of the head feature SUBJ. The referential index of the NP in the SUBJ list is one argument of the relation *equal-rel'* and the other argument is the referential index of the NP *en klog mand*, that is y . The index of the predicative NP is the event variable that belongs to the relation *equal-rel'*. As was specified in (23), the index of the embedded predicate is identified with the index of the copula. The item in (23) is the specification of a root. Roots have to be inflected before being usable in syntax. Inflectional lexical rules that apply to verbs add tense information. In the case of *er* a relation for present tense is added. The copula has the SUBJ list of the embedded predicate as a prefix of its ARG-ST list. As was shown in (24), this prefix

is mapped to SPR. In Figure 6.2 the SUBJ list of the embedded predicate and hence the SPR list of the copula contains the NP_x. After the combination of copula and predicative phrase the resulting VP is combined with the missing specifier. The RELS and HCONS values are always the concatenation of the respective values of the daughters, with the exception of the projection from NP_y to NP_e, where h5:equal_rel(e, x, y) is contributed by the C-CONT of Schema 4.

Note that this analysis allows us to keep most parts of the analysis constant for examples that involve a predicative NP rather than a predicative adjective.

The analysis with the special predication schema changes the semantic type of an NP and its syntactic properties. It is interesting to note that a similar analysis is necessary for temporal NPs: As Flickinger (2008, p. 91–92) points out, it is not just simple NPs that can act as modifiers of verbs. The time nouns can be embedded inside of a more complex NP, as (28) shows.

- (28) a. Kim disappears those days.
b. Kim disappears some of those days.

Therefore a treatment in which the time noun has a MOD value that allows it to modify a verb is not appropriate. Further evidence for an analysis as unary projection is provided by parallel German examples:

- (29) a. Er arbeitete den größten Teil der Nacht.
he worked the.ACC largest part.of.the.GEN night
'He worked almost all night.'
b. Er arbeitete die halbe Nacht.
he worked the.ACC half.ACC night
'He worked half of the night.'

In (29a) the time expression *der Nacht* is genitive but the whole NP is accusative. This accusative is called a semantic case. It is connected to the function of the NP and is not assigned by the verb. It is clear from data like (29a) that an analysis like the one suggested by Müller (2007b, p. 226) that assigns both function (i.e. MOD value) and case lexically cannot explain the data in (29a). Hence we have evidence from another area of grammar that type shifting phrasal schemata are needed.

In addition to the unary branching Schema 4 one needs a similar schema or lexical rule for sentences with determinerless predication like (2f), repeated here as (30).

- (30) Sylvia is mayor of Seattle.

The noun *mayor* is mapped to a predicative version. This predicative version can be combined with its arguments but since the index is of the wrong type it cannot be combined with adjuncts. Hence, it is explained why (31) is excluded:

- (31) *Sylvia is new mayor of Seattle.

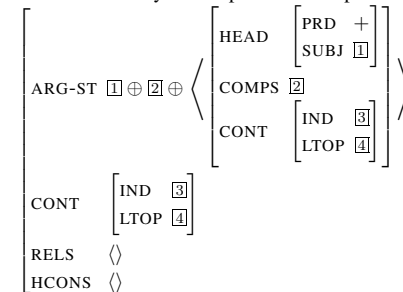
If one wants to admit the *elected major of* examples, one could assume a version of our predication schema that maps an $\bar{N}$ onto a predicative NP. This schema would introduce the semantic content of the missing determiner and appart from this be parallel to Schema 4.

6.2.3. Generalizing the Copula for German

The previous sections showed how predication copula constructions can be analyzed in Danish and this analysis is equally applicable to English. However, German allows for the formation of predicate complexes and in order to capture this, the lexical entry for the copula has to be generalized. As was argued in Section 6.1.5, German adjective copula combinations should be analyzed as complex predicates, that is, the copula and the adjective form a unit and the arguments of the adjective are combined with the resulting complex in later steps. Parallel analyses have been suggested for the verbal complex in German by Hinrichs and Nakazawa (1989, 1994), Kiss (1995), Müller (1996b, 1999a, 2002), and Meurers (1999a, 2000). They use the technique of argument composition or argument attraction that was first developed by Geach (1970) in the framework of Categorical Grammar.

The generalized version of the lexical item for the copula in (23) is given in (32):

(32) Generalized entry for the predicative copula for German, Danish, and English:



The difference between (32) and the earlier entry is that the COMPS list of the embedded predicate is raised to the ARG-ST of the copula. This is similar to what Müller (2002, p. 103) suggested. For a discussion of Müller's proposal see Section 6.3.3.

Note that nothing is said about the actual members of the lists. It is therefore possible to handle the cases in (33) as well as the subjectless examples that were given in (17).

- (33) a. weil er auf seinen Sohn stolz ist
because he.NOM on his son proud is
'because he is proud of his son'
b. weil er klug ist
because he.NOM smart is
'because he is smart'

In the analysis of (33a), $\boxed{1}$ contains the subject (*er*) and $\boxed{2}$ the PP (*auf seinen Sohn*). In the analysis of (33b), $\boxed{1}$ contains the subject (*er*) and $\boxed{2}$ is the empty list. In the analysis of (17b) – repeated here as (34a) –, $\boxed{1}$ is the empty list and $\boxed{2}$ contains the dative object *ihm* ('him').

- (34) a. weil ihm schlecht ist
weil him.DAT bad is
'because he is sick'

- b. weil schulfrei ist
because school.free is
'because there is no school'

In the analysis of (17a) – repeated here as (34b) –, both $\boxed{1}$ and $\boxed{2}$ are the empty list.

As was discussed in Section 1.2.4, we assume that all arguments of finite verbs are mapped to the COMPS list in German. The analysis of (33a) is depicted in Figure 6.3. The adjective and

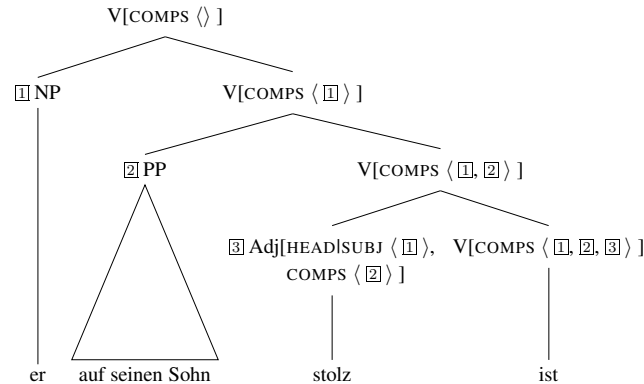


Figure 6.3.: Analysis of *er stolz auf seinen Sohn ist* 'He is proud of his son'

the copula are combined with the Schema 5:

Schema 5 (Predicate Complex Schema)

head-cluster-phrase $\Rightarrow$

$$\left[\begin{array}{l} \text{SYNSEM} \\ \text{HEAD-DTR} \\ \text{NON-HEAD-DTRS} \end{array} \left[\begin{array}{l} \text{LOC|CAT|COMPS } \boxed{1} \\ \text{SYNSEM|LOC|CAT|COMPS } \boxed{1} \oplus \langle \boxed{2} \rangle \\ [\text{SYNSEM } \boxed{2} [\text{LEX } +]] \end{array} \right] \right]$$

This schema differs from the Head-Complement Schema in allowing unsaturated signs that are compatible with the LEX+ requirement to be combined with their selecting head. Schemata like the Head-Specifier Schema, the Head-Complement Schema, the Head-Adjunct Schema, and the Head-Filler Schema licence signs that have the LEX value – and hence would not qualify as daughters in the predicate complex.¹⁰

Since the adjective *stolz* ('proud') selects for a PP via COMPS and has an NP on its SUBJ list, the ARG-ST of the copula is instantiated to a list that contains the subject NP of *stolz*, the PP

¹⁰This is a simplification. Some phrasal signs actually are allowed in the verbal complex. See Müller 1999a, Chapter 14.3, Chapter 17.5 for an analysis of the so-called Third Construction and Verb Projection Raising.

object of *stolz* and a description of the adjective *stolz* itself. All arguments are mapped to the COMPS list of the copula. Copula and adjective are combined via the Predicate Complex Schema and the resulting complex is combined with the remaining arguments via the Head-Complement Schema. Since German is a language with rather free constituent order, the Head-Complement Schema allows the combination of the head with any of its arguments and hence orders in which the PP is placed before the subject as in (35) are accounted for:

- (35) weil auf solche Kinder niemand stolz ist
because on such children nobody proud is
'because nobody is proud of such children'

The lexical item in (32) can also be used for Danish and English if one assumes that head-complement phrases require their non-head daughter to be saturated. If this assumption is made, it follows that the COMPS list of the predicative argument ($\boxed{2}$) has to be the empty list if this argument is used in a head-complement phrase. Hence, nothing but the subject is raised from the predicative element. German and Dutch differ from English and Danish in allowing complex formation. When predicate complexes are formed, $\boxed{2}$ can be non-empty, since the predicate complex schema does not impose any restrictions on the length of the COMPS list of its non-head daughter.

6.2.4. Raising and Complex Formation

There is another important aspect regarding the lexical item in (32) and the Predicate Complex Schema: The predicate is selected via COMPS rather than VCOMP or XCOMP as it was suggested in earlier proposals by Chung (1993), Rentier (1994), Müller (1997), and Kathol (1998) (see Section 6.3.3). With a uniform selection of verbal complements via COMPS it is possible to treat optionally coherent verbs like *versuchen* ('to try') with one lexical item (Kiss, 1995, p. 178), rather than with two lexical items as in the analyses of Kathol (2000, p. 195) and Müller (1999a, p. 340–341; 2002, p. 100–101). The matrix verb does not specify whether it forms a verbal complex with the embedded verb or not. It does not mention the LEX value of the embedded verbal element. Because of this we can analyze examples with a predicate complex as in (36a) and examples like (36b) with so-called intraposition:

- (36) a. Karl hat das Buch nicht [zu lesen versucht]. (Predicate Complex S.)
Karl has the book not to read tried
'Karl did not try to read the book.'
b. Karl hat [das Buch zu lesen] nicht versucht. (Head-Complement S.)
Karl has the book to read not tried
'Karl did not try to read the book.'

The combination of *zu lesen* and *versucht* in (36a) is licensed by the Predicate Complex Schema and the combination of *das Buch zu lesen* with *versucht* in (36b) is licensed by the Head-Complement Schema.

In contrast to the optionally coherent verb *versuchen* ('to try'), verbs like *scheinen* ('to seem') or modals, that obligatorily construct coherently, select a verbal complement that is LEX+. Consequently they do not allow for intraposition of a VP complement, but require complex formation.

Müller (2002, p. 112) criticized Kiss's analysis of optional coherence because it also licences unwanted structures like (37) and hence results in spurious ambiguities.

- (37) weil Karl das Buch [[dem Mann zu geben] verspricht]
because Karl the book the man to give promises
'because Karl promises to give the book to the man'

In (37) *versprechen* is combined with a partly saturated verbal projection *dem Mann zu geben* and the non-saturated argument *das Buch* is raised and combined with *dem Mann zu geben verspricht* in a later step. However, this structure is excluded if arguments are required to be saturated and elements of the predicate complex are required to be LEX +.¹¹

With the new treatment of predicate selection via COMPS, it is not required that predicative PPs are part of the predicate complex as was suggested by Müller (2002, p. 241) for PPs in resultative constructions. Instead PPs like NPs can be analyzed as complements in head-complement structures, while adjectives can take part in complex formation or adjective phrases can be part of head-complement structures. The crucial difference between nouns and prepositions on the one hand and adjectives on the other hand is the direction of government: verbs and adjectives govern their arguments to the left, while nouns and prepositions take their arguments to the right. Only those dependents that govern their arguments to the same side as their governing heads can form a complex with their head.

Returning to the copula, it allows the embedding of fully saturated phrases like predicative APs, NPs, and PPs but also allows for the formation of a predicate complex consisting of adjective and copula. Since coherence is optional we can explain so-called focus movement of adjectives as in (21) – repeated here as (38) –, something that was noted by Müller (2002, p. 69) but not treated in his analysis.

- (38) a. Sie wuchsen in einem gesellschaftlichen Klima auf, das freier in Deutschland
they grew in a social climate PART(up) that freer in Germany
nie war.¹²
never was
'They grew up in a social climate that was freer than ever in Germany.'
- b. daß ausschlaggebend für die Interpretation abgeleiteter Verben bestimmte
that decisive for the interpretation derived verbs certain
semantische Interpretationsmuster sind, [...] ¹³
semantic interpretation.models are
'that certain semantic interpretation models [...] are decisive for the interpretation of derived verbs'

6.2.5. German, English, Danish: Specificational Constructions, Question Tags, and Left Dislocation

The difference between specificational and predicational structures is best captured by generalizing the German lexical item for the copula even further: Instead of using the append operator

¹¹This is a simplification as was already noted in footnote 10.

¹²taz, 01.07.1995, p. 10.

¹³In the main text of Kaufmann, 1995, *Konzeptuelle Grundlagen semantischer Dekompositionsstrukturen*, p. 162.

($\oplus$) to concatenate two lists as in (32), the more general version of the copula uses the shuffle operator ($\odot$):

- (39) ARG-ST value for the predicational and specificational copula:

$$\left[\text{ARG-ST } (\boxed{1} \oplus \boxed{2}) \odot \left\langle \left[\begin{array}{c} \text{HEAD} \left[\begin{array}{c} \text{PRD } + \\ \text{SUBJ } \boxed{1} \end{array} \right] \\ \text{COMPS } \boxed{2} \end{array} \right] \right\rangle \right]$$

The shuffle operator was introduced by Reape (1994, p. 152–153) to combine two lists. The resulting list has to contain all elements of the two lists that are combined and the relative order of the respective lists has to be maintained. If we shuffle the two lists $\langle 1, 2, 3 \rangle$ and $\langle 4, 5 \rangle$, for instance, we get all lists in which 1 is before 2 and 2 is before 3 and 4 is before 5. But 4 and 5 may appear before or between the elements in the first list. $\langle 4, 1, 5, 2, 3 \rangle$ is part of the result of the shuffle operation. For the lexical item above this means that the predicative argument can be linearized before, between or after the elements of its SUBJ and COMPS list.

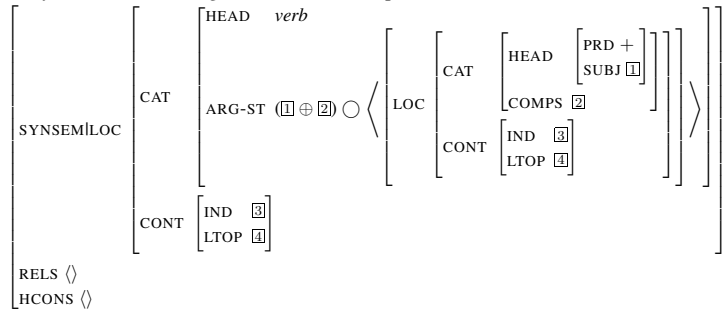
Since English and Danish do not form predicate complexes there is just the Head-Specifier Schema and the Head-Complement Schema, which require arguments to be fully saturated. Hence $\boxed{2}$ is instantiated as the empty list. $\boxed{1}$ is a list containing exactly one element, since neither English nor Danish allows for subjectless constructions. Shuffle combines the elements of two lists in any order provided the order of the elements in the respective lists is preserved. In the example above we have a trivial case: Two lists with exactly one element are shuffled. The result is that the predicative argument is ordered first or last. When it is ordered last we get a lexical item as in (23) with a mapping to SPR and COMPS as in (24). The respective analysis was already explained in Section 6.2.1. If the predicative argument is shuffled to the initial position on the ARG-ST list it will be mapped to SPR and the subject of the predicate will be mapped to COMPS as in (40).

- (40) The copula with the specificational mapping to SPR and COMPS:

$$\left[\begin{array}{c} \text{SPR } \boxed{2} \\ \text{COMPS } \boxed{1} \\ \text{ARG-ST } \boxed{2} \left\langle \left[\begin{array}{c} \text{HEAD} \left[\begin{array}{c} \text{PRD } + \\ \text{SUBJ } \boxed{1} \end{array} \right] \\ \text{COMPS } \langle \rangle \\ \text{CONT} \left[\begin{array}{c} \text{IND } \boxed{3} \\ \text{LTOP } \boxed{4} \end{array} \right] \end{array} \right] \right\rangle \oplus \boxed{1} \\ \text{CONT } \left[\begin{array}{c} \text{IND } \boxed{3} \\ \text{LTOP } \boxed{4} \end{array} \right] \\ \text{RELS } \langle \rangle \\ \text{HCONS } \langle \rangle \end{array} \right]$$

The analysis of (41) is given in Figure 6.4 on the following page.

(47) Entry for the Danish, English, and German copula (final version):



Languages with free constituent order restrict the lexical item for the copula further in requiring the combination between the predicate and the raised elements to be appended rather than shuffled. That is, they restrict (47) to (32).

6.2.7. Raising and Nonlocal Dependencies

The treatment of raising in the lexical entry for the copula in (47) differs in an interesting way from the characterization of raising as it is given in Ginzburg and Sag (2000, p. 22). Ginzburg and Sag assume the following constraint:

$$(48) \text{ [ARG-ST } \langle \text{ [LOC } \boxed{1} \text{] , [SUBJ } \langle \text{ [LOC } \boxed{1} \text{] } \rangle \text{] }] }$$

This version of raising differs from earlier proposals in that only *LOCAL* values are shared instead of whole *synsem* objects. The reason for this treatment is that one would get problems with the lexical *SLASH* amalgamation that was suggested by Bouma et al. (2001): if the whole *synsem* object was shared, there would be *SLASH* amalgamation in the subject and in the phrase from which the subject is raised, an unwelcome result (Ginzburg and Sag, 2000, p. 21, fn. 8). The problem with (48) is that it is too specific. As was discussed above, the value of *SUBJ* could be the empty list. A solution seems to be the disjunctive specification of raising verbs that allows for an empty *SUBJ* list as in (49):

$$(49) \text{ [ARG-ST } \langle \text{ [LOC } \boxed{1} \text{] , [SUBJ } \langle \text{ [LOC } \boxed{1} \text{] } \rangle \text{] }] \vee \text{ [ARG-ST } \langle \text{ [SUBJ } \langle \rangle \text{] }] }$$

But such a disjunction is not sufficient for German since complements are raised as well and the number of elements on the *COMPS* list is restricted by performance factors only (Müller, 2004, p. 220). So if one were to assume an amalgamation account of nonlocal dependencies for German, one would be forced to use a relational constraint that walks through lists and produces a copy of the list that contains elements that share the *LOCAL* values with the elements of the list from which they are raised. The *ARG-ST* of raising verbs would then look as follows:

$$(50) \text{ ARG-ST list for German with SUBJ and COMPS raised with a special relational constraint: } \text{ [ARG-ST raise}(\boxed{1}) \oplus \text{raise}(\boxed{2}) \oplus \langle \text{ [SUBJ } \boxed{1} \text{ , COMPS } \boxed{2} \text{] } \rangle \text{] }$$

Where *raise* is defined as follows:

$$(51) \text{ raise}(\langle \rangle) := \langle \rangle. \\ \text{raise}(\langle \text{ [LOC } \boxed{1} \text{] | Rest } \rangle) := \langle \text{ [LOC } \boxed{1} \text{] | raise(Rest) } \rangle$$

Note that this is only part of what would be necessary. As in Ginzburg and Sag's original proposal a lot of things are unspecified: What happens with other features outside of *LOCAL* (for instance *LEX*, see Müller 1996b)? Are they shared? If so, this has to be made explicit. If not, what is the value of these features? In model theoretic approaches unspecified values of features can have any possible value. This would result in spurious ambiguities or wrong analysis in structures that involve raising, unless one stipulates values.

So, rather than complicating the analysis of raising, we will drop the amalgamation analysis and return to an analysis that introduces nonlocal dependencies in syntax. This can be done through a trace or a unary branching projection. In Chapter 11 we assume a trace.¹⁴ As Bouma, Malouf and Sag (2001, p. 29) point out, the amalgamation analysis is not necessary to account for extraction path marking phenomena, one of the highlights of the Bouma, Malouf, Sag paper. If adjuncts are registered at a head (either in an adjunct as dependents analysis or via a mechanism of the kind suggested by Levine and Hukari (2006a, Chapter 3.7.2)), a pathway marking element can attach to the head and check its *INHER|SLASH* value and the *SLASH* values that are contributed by the elements in the *COMPS* list and the *SLASH* values of the registered adjuncts.

6.2.8. Predicative Raising-Nouns

Doug Arnold brought the following kind of predicative noun phrases to our attention:

- (52) a. He is a dead cert/a certainty to win.
b. This is a cinch to prise off.

These nouns are raising nouns and can only be used predicatively:

- (53) a. * A dead cert/a certainty to win came into the room.
b. * A cinch to prise off came into the room.

We assume the lexical entry in (54) for a noun like *cert*.

¹⁴See Bender 2000, Müller To appear, and Sag, Wasow and Bender 2003, p. 463–464 for arguments that empty elements actually simplify grammatical descriptions.

6.3.1. Pollard and Sag 1994 and Sag and Ginzburg 2000

Pollard and Sag (1994, p. 360) sketch the lexical rule in (56) that takes nouns as used in normal referential NPs like *a teacher* in (57a) and maps them onto another lexical item that can be used predicatively like in (57b).

$$(56) \quad N[-\text{PRD}, \text{SUBJ } \langle \rangle]:[\text{RESTRICTION } \{\langle \rangle\}]_{\langle \rangle} \mapsto N[+\text{PRD}, \text{SUBJ } \langle \text{XP}_{\langle \rangle} \rangle]:\langle \rangle$$

- (57) a. A teacher laughs.
b. John is a teacher.

Ginzburg and Sag (2000, p. 409) give the following variant of the rule in (56):

(58) Singular Predicative Noun Lexical Rule:

$$\left[\begin{array}{l} \text{SS|LOC|CAT|HEAD } n \\ \text{ARG-ST } \langle \langle \rangle \rangle \oplus \langle \text{A} \rangle \\ l_x \end{array} \right] \Rightarrow_{LR} \left[\begin{array}{l} \text{SS|LOC|CAT} \left[\begin{array}{l} \text{HEAD } \left[\begin{array}{l} \text{AGR|NUM } sg \\ \text{PRED } + \end{array} \right] \\ \text{SPR } \langle \langle \rangle \rangle \\ \text{SUBJ } \langle \langle \rangle \rangle \end{array} \right] \\ \text{ARG-ST } \langle \langle \langle \rangle, \langle \rangle \rangle \rangle \oplus \langle \text{A} \rangle \\ \text{word} \end{array} \right]$$

The lexical rule in (56) adds a subject to the valence features of the noun and by doing so makes it parallel to predicative adjectives. The copula and verbs like *seem* and *consider* are treated as raising verbs that raise the element in SUBJ and make it their own subject or – in the case of *consider* – object.

Pollard and Sag suggest that the element in the set of restrictions of the noun in the input of the rule is represented as the main semantic contribution of the resulting noun. So the contribution of *teacher* in (57b) is *teacher'*($\langle \rangle$), while it is $\langle \langle \rangle \{ \text{teacher}'(\langle \rangle) \} \rangle$ for (57a).¹⁵ As Pollard and Sag point out, this analysis does not extend to proper nouns like those in (1a) – repeated here as (59) – for semantic reasons.

- (59) Cicero is Tully.

Like most researchers Pollard and Sag (1987, p. 66) distinguish between the *be* of predication and the *be* of identity, and hence the lexical rule does not have to account for cases with two proper names or two pronouns.

As Kasper (1995) pointed out in unpublished work¹⁶, the lexical rule-based analysis fails for examples that contain modifiers in the predicative phrase:

- (60) He is a good candidate.

The classical analysis of adjuncts assumes that nominal modifiers attach to an $\bar{N}$ and identify their referential index with the referential index of the noun. But if the semantic contribution of

¹⁵The curly brackets around $\langle \rangle$ in the input are missing in Pollard and Sag's version of the lexical rule.

¹⁶See also Gerbl 2007, p. 241.

candidate is a predicate rather than an index, modification cannot apply as usual.¹⁷ This problem is solved by our analysis. The NP *a good candidate* has the normal NP internal syntax and only the complete NP is mapped onto a predicative NP.

6.3.2. Van Eynde 2008, 2009

Van Eynde (2008, p. 264–265) suggests the following alternative to the raising analysis: Lexical items for *seems* as in (61a) are constrained by (62) and items like the one that is needed for *consider* in (61b) are constrained by (63).

- (61) a. John seems a nice guy.
b. Bob considers his brother a genius.

$$(62) \quad \text{a1-pred-lex} \Rightarrow \left[\begin{array}{l} \text{ARG-ST } \langle \text{NP}_{\langle \rangle} (, \text{PP}_{\langle \rangle}), \text{Z}_{\langle \rangle} \rangle \\ \text{SS|LOC|CONT|NUCL} \left[\begin{array}{l} \text{EXPERIENCER } \langle \rangle \\ \text{SOA-ARG|NUCL} \left[\begin{array}{l} \text{INST } \langle \rangle \text{ index} \\ \text{THEME } \langle \rangle \text{ index} \\ \text{coref-rel} \end{array} \right] \end{array} \right] \end{array} \right]$$

$$(63) \quad \text{a2-pred-lex} \Rightarrow \left[\begin{array}{l} \text{ARG-ST } \langle \text{NP}, \text{NP}_{\langle \rangle}, \text{Z}_{\langle \rangle} \rangle \\ \text{SS|LOC|CONT|NUCL} \left[\begin{array}{l} \text{SOA-ARG|NUCL} \left[\begin{array}{l} \text{INST } \langle \rangle \text{ index} \\ \text{THEME } \langle \rangle \text{ index} \\ \text{coref-rel} \end{array} \right] \end{array} \right] \end{array} \right]$$

By assuming these constraints on lexical entries Van Eynde can analyze the sentences in (61) with normal nouns without having to assume a separate predicative lexical item for the predicative usage of the noun or a unary schema that maps non-predicative NPs onto predicative ones. The referential NP is compatible with the specification $\text{Z}_{\langle \rangle}$ and the referential index of the NP will be linked to the theme role of the *coref-rel'* relation.

Van Eynde (2008, p. 265) assumes that all predicate selectors contribute such semantic information and explicitly includes the copula *be* here. He argues that the dative of judgment depends on the copula, which he takes as evidence for its relational status:

- (64) Es ist mir zu kalt.
it is me.DAT too cold
'It is too cold for me.'

However, traditionally it is said that this dative depends on the *zu* rather than on the copula¹⁸ and there is evidence that casts doubts on Van Eynde's analysis. In the following examples we

¹⁷This may not be an issue if an MRS semantics (Copestake et al., 2005b) is assumed. However, one would have to be willing to claim that the type of the index of *candidate* is not changed by the predication lexical rule.

¹⁸How this is captured in HPSG is a different question. The analysis is not trivial since dative and *zu* can be discontinuous as in (i):

have *mir zu warme* and *mir zu kalte*, with *zu* present but in a prenominal context in which copulas are never present:

- (65) a. bis auf das mir zu kalte Ziel Spitzbergen¹⁹
 until on the me.DAT too cold goal Spitzbergen
 'except for the goal Spitzbergen, which is too cold for me'
 b. die mir zu warme Book-Unterseite²⁰
 the me.DAT too warm bottom.of.the.Book
 'the bottom of the Book, which is too warm for me'

In order to have a uniform analysis Van Eynde would have to assume an empty copula in prenominal position that takes an inflected adjective as argument. This is highly implausible, since the copula is hardly ever realized prenominaly and never with inflected adjectives (66b).

- (66) a. *ein klug seiender Mann
 a smart being man
 b. *ein kluger seiender Mann
 a smart being man
 c. schon länger her seiender Herbsturlaub²¹
 already longer ago being fall.holiday

Interestingly, examples like (66c) with *seiender* can be found, but here the adverb *her* ('ago') cannot be inflected and the only way to realize *her* prenominaly rather than as part of postnominal relative clause is to use the adjectival form of the copula. In any case, even (66c) is marked, which is probably also the reason for the non-standard orthography that can be found at the web page: *schon-länger-her-seiender-Herbsturlaub*.

So, the examples with *zu* are not good examples to support Van Eynde's theory, but there are also examples of copula constructions with a dative but without a degree word like *zu* ('to') or *genug* ('enough') being present:

- (67) Du bist mir ja ein schöner Vorsitzender!
 you.NOM are me.DAT PART a nice chair
 'You are a nice chair to me.'

Van Eynde provides parallel Dutch examples. Such sentences are used to express that the speaker thinks that the addressee does not have all properties that are usually assigned to the predicative noun. Such datives should be handled as scopal modifiers that encapsulate the meaning of the predication similar to the semantic representation that was suggested by Van Eynde in (62). But the respective semantic representation is the result of combining a copula construction with an adjunct rather than being part of the specification of the copula that takes a dative as complement.

Another example of datives in copula constructions is shown in (68):

- (i) Das Bier ist den Gästen oft zu warm.
 the beer is the guests.DAT often too warm
 'Often the beer is too warm for the guests.'

¹⁹<http://agora2.arte.tv/forum/showthread.php?t=7286>. 07.10.2012.

²⁰<http://www.macuser.de/forum/f10/coolbook-220786/index6.html>. 07.10.2012.

²¹<http://www.schwedenforum-neu.de/showthread.php?t=6664>. 08.10.2012.

- (68) Er war dem König ein treuer Diener.
 he.NOM was the king.DAT a faithful servant
 'He was a loyal servant of the king.'

We would argue that such datives are adjuncts as well. They are of the type we see in (69):

- (69) Er bemalt dem König den Tisch.
 he.NOM paints the king.DAT the table.ACC
 'He paints the table for the king.'

The verb *bemalen* ('paint') is a transitive verb and the dative is a modifier that can be used to express the benefactive/malefactive of the event (Wegener, 1985a).²²

Van Eynde's analysis works for the examples he discusses in his paper, but the argumentation against the raising analysis is not convincing. In addition, the identity analysis faces several problems.

The first problem is that pronouns and proper names cannot be used as predicates in such constructions:

- (70) a. *He seems him.
 b. *He seems John Malkovich.

Here the copula has to be used:

- (71) a. He seems to be him.
 b. He seems to be John Malkovich.

The same is true for gerunds and infinitives if the subject of the infinitive is not realized as the subject of *seems*:

- (72) a. *The greatest pleasure on earth seems eating oysters
 b. *His main worry now seems to get rid of his detractors.
 c. The greatest pleasure on earth seems to be eating oysters
 d. His main worry now seems to be to get rid of his detractors.

This difference is captured by an analysis that treats *seem* as a raising verb and assumes that there is an equational copula *be*. Since *seem* does require a phrase of type *event* as complement, gerunds and infinitives are excluded and since the identity copula can be combined with gerunds and infinitives, examples like (72c,d) are well-formed.

Secondly, there seems to be no way to account for the differences in question tags and pronouns in left dislocation structures that were discussed in Section 6.1.1. In the type shifting analysis we have predicative NPs and they combine with the pronoun *it/det/das* in question tags or left dislocation structures rather than with *he, she/han, hun/er, sie*. But in Van Eynde's analysis the work is done by the copula and there are no different NP types, hence there is no explanation for question tag formation and left dislocation.

In addition there is a very general problem of the analysis: It does not extend to predicates with an expletive subject as in (16) – repeated here as (73a) – or predicates that do not have a subject at all as for instance (17) – (17a) is repeated here as (73b).

²²Since such datives interact with the dative passive (Müller, 2006, p. 860), they are probably licensed by a lexical rule that adds the dative to the argument list of a verb.

- (73) a. In der Mensa ist es laut.
in the commons is it.EXPL loud
'It is loud in the commons.'
b. weil schulfrei ist
because school.free is
'because there is no school'

In both cases there is nothing present that could be “coreferential” with the adjectival predicate. Van Eynde (presentation at HPSG 2009) suggests that the THEME role of the *coref-rel* is optionally filled: that is, in the case of expletives there is no index linked to THEME. He argues that this is parallel to cases like (74):

- (74) a. He eats pizza.
b. He eats.

In (74b) the object of *eats* remains implicit. Note that this analysis introduces a disjunction in the lexical item for the copula, namely a disjunction between referential and expletive indices of the subject NP. In addition one would need another disjunction that accounts for the fact that the subject can be missing altogether. Therefore one would have to have three versions of the copula: one for clauses with referential subjects, one for clauses with expletive subjects, and one for clauses without subject. The big problem for such a proposal is that it has to be ensured that the right copula is used with the right embedded predicate. For instance it is impossible to use (17b) with a subject:

- (75) * weil der Mann ihm schlecht ist
because the man.NOM him.DAT sick is

Similarly, expletives are impossible in normal prediative constructions:

- (76) Es ist klug.
it is smart
'He/she is smart.'

(76) does not have a reading in which nobody is smart or there is generic smartness. The *es* has to be referential and it has to refer to something that has neuter gender as for instance *Mädchen* ('girl') or *Bürschlein* ('boy'). This means that the subject of the copula has to be expletive if and only if the embedded predicate requires for an expletive. It can be missing if and only if the embedded predicate does not require a subject. This is best captured by a raising analysis.

6.3.3. Müller 2002

Some authors have suggested using a special valence feature called XCOMP or VCOMP for the selection of an argument that enters predicate complex formation (see Chung 1993 for Korean, Rentier 1994 for Dutch, and Müller 1997, 2002 and Kathol 1998; 2000, Chapter 8 for German). Müller (2002, p. 103) extended the verb complex analysis of other authors to copula constructions and resultative secondary predicates. He gave the following lexical item for the copula:

- (77) *sein* (predicative copula, according to Müller (2002, p. 103)):

$$\left[\begin{array}{l} \text{SUBCAT } [\bar{1} \oplus \bar{2}] \\ \text{XCOMP } \left\langle \text{ADJ}[\text{MOD } \textit{none}, \text{PRD } +, \text{SUBJ } \bar{1}, \text{SUBCAT } \bar{2}], \right. \\ \quad \left. \text{XCOMP } \langle \rangle, \text{LEX } + \right\rangle \end{array} \right]$$

The copula raises both the subject, if there is one ($\bar{1}$), and other arguments of the embedded adjective ($\bar{2}$). The predicative adjective is required to be LEX+. Therefore it forms a complex with the copula directly and all its arguments are raised.

The problem with this lexical item is that it specifically selects a predicative adjective. Müller selected all verbs that take part in complex formation via XCOMP, but those that were realized as full phrases – that is in so-called incoherent constructions – were selected via SUBCAT (COMPS in the notation we use here). The problem that results from this treatment is that two lexical items for the predicative copula are needed, one that selects NP and PP predicates and one for adjectival predicates. Similarly the lexical rule for resultative predication selects the result predicate via XCOMP. Since both PPs and adjectives can function as the result predicate in German but only structures with adjectives fulfill the criteria for coherent constructions, a more general treatment of the facts is desirable.

In the analysis presented here, the lexical item for *cut* as used in (78) is (79).

- (78) Er schneidet die Zwiebel klein / in Stücke.
he cuts the onions small into pieces

- (79) ARG-ST for *schneid-/cut-* as used in the resultative construction:

$$\left[\text{ARG-ST } \langle \text{NP} \rangle \oplus \bar{1} \oplus \langle [\text{PRD}+, \text{SUBJ } \bar{1} \langle \text{NP}_{ref} \rangle], \text{COMPS } \langle \bar{1} \rangle \right]$$

This lexical item is not special to German. It is the same for English and Danish (and other languages, see Verspoor 1997, Wechsler 1997, and Wechsler and Noh, 2001 for analyses of English and Korean). German forms a predicate complex, but English and Danish do not. This is a fact about the syntax of the respective languages but it is not represented in the lexical items. Hence, crosslinguistic generalizations are captured better in the analysis presented here.

6.4. Conclusion

This chapter provides the basic building blocks for predicational, specificational and equational constructions.

We have shown that the arguments provided by Van Eynde for an identity analysis without raising are not convincing. In addition, in his analysis there are problems with pronouns in predication structures, the analysis cannot account for question tags and pronouns in left dislocation structures, and the analysis does not extend to subjectless constructions and to account for intraposed APs.

We suggest returning to a raising analysis of predication that raises the complete value of SUBJ of the embedded predicate rather than identifying LOCAL values of raised subjects. The predication lexical rule was recoded as a unary branching immediate dominance schema, which allows

the inclusion of modifiers in the NP. In addition it was suggested to dispense with the XCOMP feature and to return to a COMPS-based analysis in which predicative and non-predicative arguments are selected uniformly via COMPS. This makes it possible to treat the various predication structures as optionally coherent constructions.

A. List of Phrases Covered/Rejected by the Grammar

NP

- (1) bogen
book.DEF
'the book'
- (2) den bog
the book
- (3) * den bogen
the book.DEF
- (4) den kloge bog
the smart.DEF book
- (5) en klog bog
a smart.INDEF book
- (6) * den klog bog
the smart.INDEF book
- (7) * en kloge bog
a smart.DEF book

Tense

- (8) Bjarne læser en bog.
Bjarne reads a book
'Bjarne is reading a book'
- (9) Bjarne læste en bog.
Bjarne read a book
'Bjarne read a book'

Tense + Perfect

- (10) Bjarne har læst bogen.

Constituent Order

- (11) Bjarne læser ikke en bog.
Bjarne reads not a book
'Bjarne is not reading a book'
- (12) at Bjarne læste en bog
that Bjarne read a book
'that Bjarne read a book'
- (13) Peter tror, at Bjarne ikke læste en bog.
Peter believes that Bjarne not read a book
'Peter believes that Bjarne did not read a book.'
- (14) at Bjarne ikke giver Max bogen
that Bjarne not gives Max book.DEF
- (15) * at Bjarne ikke giver bogen Max
that Bjarne not gives book.DEF Max

V2

- (16) Bogen læser Bjarne.
book.DEF reads Bjarne
'The book, Bjarne reads.'
- (17) * Bogen Bjarne læser.
book.DEF Bjarne reads
'The book, Bjarne reads.'
- (18) Bogen giver Bjarne manden.
book.DEF gives Bjarne man.DEF
- (19) * Manden giver bogen Bjarne.
man.DEF gives book.DEF Bjarne
- (20) Nu læser Bjarne bogen.
now reads Bjarne book.DEF
- (21) * Nu Bjarne læser bogen.
now Bjarne reads book.DEF

Negation + V2

- (22) Ingen bog læser Bjarne.
no book reads Bjarne
'Bjarne does not read any book.'

V2 + case

- (23) Han læser bogen.
he.nom reads book.DEF
'He reads the book.'
- (24) * Ham læser bogen.
he.acc reads book.DEF
- (25) Ham tror jeg vinder.
he.acc think I win
'As for him, I think he wins.'
- (26) Han tror jeg vinder.
he.nom think I win
'He thinks I win.'
- (27) Ham tror jeg du kender.
he.acc think I you know
'As for him, I think you know him.'
- (28) * Han tror jeg du kender.
he.nom think I you know

V2 + case + coordination

- (29) Ham elsker Max og hader Peter.
he.acc loves Max and hates Peter
'As for him, Max loves him and Peter hates him.'
- (30) Han elsker Max og hader Peter.
he.nom loves Max and hates Peter
'He loves Max and hates Peter.'

Vbase + case

- (31) at han læser bogen
that he.nom reads book.DEF
'that he reads the book.'
- (32) * at ham læser bogen
that he.acc reads book.DEF

that trace

- (33) Bjarne tror jeg vinder.
Bjarne think I wins
'As for him, I think he is going to win.'
- (34) * Bjarne tror jeg at vinder.
Bjarne think I that wins

Questions

- (35) Giver Bjarne manden bogen?
gives Bjarne man.DEF book.DEF
- (36) * Giver Bjarne bogen manden?
gives Bjarne book.DEF man.DEF

predicational structures

- (37) Max er ikke vinderen.
Max is not winner.DEF
'is he?'
- (38) Vinderen er Max ikke.
winner.DEF is Max not
'is he?'
- (39) * Klog er ikke Max.
smart is not Max
'Max is not smart.'
- (40) Klog er Max ikke.
smart is Max not
'Max is not smart.'

predicational structures + adjective + agreement

- (41) Drengen er stor.
boy.DEF is big
- (42) Huset er stort.
house.DEF is big
- (43) Drengene er store.
boy.DEF.PL are big

specificational structures

- (44) Vinderen er ikke Max.
winner.DEF is not Max
'is it?'

coordination

- (45) Bjarne og Max arbejder.
Bjarne and Max work
- (46) * Bjarne arbejder og.
Bjarne works and
- (47) Bjarne læser bogen og Zeitungen.
Bjarne reads books and newspapers
- (48) Bjarne kender ham og hans kone.
Bjarne knows him and his wife
'Bjarne knows him and his wife.'

Passive

- (49) Bogen bliver læst.
book.DEF was read
'The book was read.'
- (50) Der bliver arbejdet.
there was worked
'There was working.'
- (51) Max bliver anbefalet bogen.
Max is recommended book.DEF
'The book is recommended to Max.'
- (52) * Max bliver anbefalet han
Max is recommended he
- (53) * at ham bliver anbefalet bogen
that him is recommended book.DEF

Adjuncts

- (54) Bjarne læser bogen nu.
Bjarne reads book.DEF now

- (55) Bjarne læser nu bogen.
Bjarne reads now book.DEF
- (56) at Bjarne nu læser bogen
that Bjarne now reads book.DEF
- (57) at Bjarne læser bogen nu
that Bjarne reads book.DEF now
- (58) * at Bjarne læser nu bogen
that Bjarne reads now book.DEF
- (59) * Bjarne læser bogen ikke.
Bjarne reads book.DEF not
- (60) * at Bjarne læser bogen ikke
that Bjarne reads book.DEF not
- (61) * at Bjarne har nu læst bogen
that Bjarne has now read book.DEF
'that Bjarne has read the book now.'
- (62) at Bjarne sandsynligvis ikke læser bogen
that Bjarne probably not reads book.DEF
'that Bjarne probably does not read the book'
- (63) * at Bjarne ikke sandsynligvis læser bogen
that Bjarne not probably reads book.DEF

Adjuncts + Manner Adverbs

- (64) at Bjarne læser bogen forsigtig
that Bjarne reads book.DEF carefully
- (65) at Bjarne forsigtig læser bogen
that Bjarne carefully reads book.DEF
- (66) * at Bjarne læser forsigtig bogen
that Bjarne reads carefully book.DEF
'that Bjarne reads the book carefully'
- (67) at Bjarne forsigtig giver Max bogen
that Bjarne carefully gives Max book.DEF
- (68) at Bjarne giver Max bogen forsigtig
that Bjarne gives Max book.DEF carefully

- (69) * at Bjarne giver Max forsigtig bogen
that Bjarne gives Max carefully book.DEF
- (70) * at Bjarne giver forsigtig Max bogen
that Bjarne gives carefully Max book.DEF
- (71) Jeg tror at Bjarne arbejder ihærdigt på bogen.
I think that Bjarne works seriously on book.DEF
'I think that Bjarne works on the book seriously'
- (72) Jeg tror at Bjarne arbejder på bogen ihærdigt.
I think that Bjarne works on book.DEF seriously
'I think that Bjarne works on the book seriously'
- (73) Jeg tror at Bjarne ihærdigt arbejder på bogen.
I think that Bjarne seriously works on book.DEF
'I think that Bjarne works on the book seriously'
- (74) * at Bjarne arbejder nu på bogen
that Bjarne works now on book.DEF

Adjuncts + Manner Adverbs + V2

- (75) Bjarne arbejder ihærdigt på bogen.
Bjarne works seriously on book.DEF
'Bjarne works on the book seriously'

Interrogatives

- (76) Hvem læser bogen?
who reads book.DEF
'Who reads the book?'
- (77) Bjarne spørger hvad han læser.
Bjarne asks what he reads
'Bjarne asks what he reads.'
- (78) Bjarne spørger hvem der læser bogen.
Bjarne asks who EXPL reads book.DEF
'Bjarne asks who reads the book.'
- (79) * Bjarne spørger hvem læser bogen.
Bjarne asks who reads book.DEF
- (80) * Bjarne spørger hvem der der kommer.
Bjarne asks who EXPL EXPL comes

- (81) Bjarne tror jeg arbejder.
Bjarne think I works
'I think Bjarne works.'
- (82) Bjarne tror at jeg sandsynligvis arbejder.
Bjarne thinks that I work
'Bjarne thinks that I probably work.'
- (83) Bjarne tror jeg sandsynligvis arbejder.
- (84) hvem de troede der arbejder
who they believe there works
'Who do they believe works?'
- (85) hvem de troede arbejder
who they believe works
'Who do they believe works?'
- (86) * Bjarne arbejder der.
Bjarne works there
- (87) * Bjarne der arbejder.
Bjarne there works

Interrogatives + coordination

- (88) Bjarne spørger hvem der kommer og synger.
Bjarne asks who EXPL comes and sings
'Bjarne asks who comes and sings.'
- (89) * Bjarne spørger hvem kommer og synger.
Bjarne asks who comes and sings
- (90) Bjarne spørger hvad Max elsker og Peter hader.
Bjarne asks what Max loves and Peter hates
'Bjarne asks what Max loves and Peter hates.'

Object shift

- (91) Bjarne læser den ikke.
Bjarne is.reading it not
'Bjarne isn't reading it.'
- (92) at Bjarne ikke læser den
that Bjarne not is.reading it
'that Bjarne is not reading it'

- (93) * at Bjarne den ikke læser
that Bjarne it not is.reading
- (94) Bjarne har ikke læst den.
Bjarne has not read it
'Bjarne has not read it.'
- (95) * Bjarne har den ikke læst
Bjarne has it not read
'Bjarne has not read it.'
- (96) Har Bjarne ikke givet ham det?
has Bjarne not given him it
'Hasn't Bjarne given it to him?'
- (97) Læser Bjarne den ikke?
reads Bjarne it not
- (98) Læser Bjarne ikke den?
reads Bjarne not it (stressed pronoun)
- (99) Har Bjarne ikke læst den?
has Bjarne not read it
- (100) * Har Bjarne den ikke læst?
has Bjarne it not read
- (101) Bjarne læser det sandsynligvis ikke.
Bjarne is.reading it probably not
'Bjarne probably is not reading it.'
- (102) * Bjarne læser sandsynligvis det ikke.
Bjarne is.reading probably it not
'Bjarne probably is not reading it.'
- (103) * Giver Bjarne den ikke Peter?
gives Bjarne it not Peter
- (104) Giver Bjarne ham den ikke?
gives Bjarne him it not
- (105) Peter giver Bjarne det ikke.
Peter gives Bjarne it not
'Bjarne does not give it to Peter.'
- (106) Giver Bjarne ham ikke bogen?
gives Bjarne him not book.DEF
'Doesn't Bjarne give him the book?'

- (107) * Giver Bjarne den ham ikke?
gives Bjarne it him not
- (108) Giver han ham den ikke?
gives he him it not
- (109) ? Giver Bjarne Peter den ikke?
- (110) Arbejder Bjarne ikke på den?
works Bjarne not at it
'Doesn't Bjarne work on it?'
- (111) * Arbejder Bjarne den ikke på
works Bjarne it not at
- (112) * Arbejder Bjarne på den ikke
works Bjarne at it not
- (113) Bjarne afleverer bogen til ham.
Bjarne delivered book.DEF to him
'Bjarne delivered the book to him'
- (114) Bjarne afleveret den ikke til ham.
Bjarne delivered it not to him
'Bjarne did not deliver it to him.'
- (115) * Bogen afleveret ham ikke til
Bjarne delivered him not to

Object Shift + V Fronting

- (116) Læst har Bjarne den ikke.
read has Bjarne it not
'Bjarne did not read it.'
- (117) * Læst har Bjarne ikke bogen
read has Bjarne not book.DEF
- (118) * Den læst har Bjarne ikke.
it read has Bjarne not
- (119) at jeg ikke har kunnet læse det
that I not have could read it
'that I could not read it.'
- (120) * Kunnet læse har jeg det ikke
could read have I it not
'I could not read it.'

(121) Bjarne har ikke villet læse den.
 Bjarne has not wanted read.INF it
 'Bjarne did not want to read it.'

(122) * Læse har Bjarne den ikke villet.
 read.INF hat Bjarne it not wanted

Object Shift + V Fronting + Passive

head specifier structures

(123) * Bjarne læst den
 Bjarne read.PPP it

Preposition Stranding

(124) Hvad arbejder Bjarne på?
 what works Bjarne on
 'What does Bjarne work on?'

(125) En bog arbejder Bjarne på?
 a book works Bjarne on
 'A book, Bjarne works on.'

(126) Den arbejder Bjarne på?
 it works Bjarne on
 'Bjarne works on it.'

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